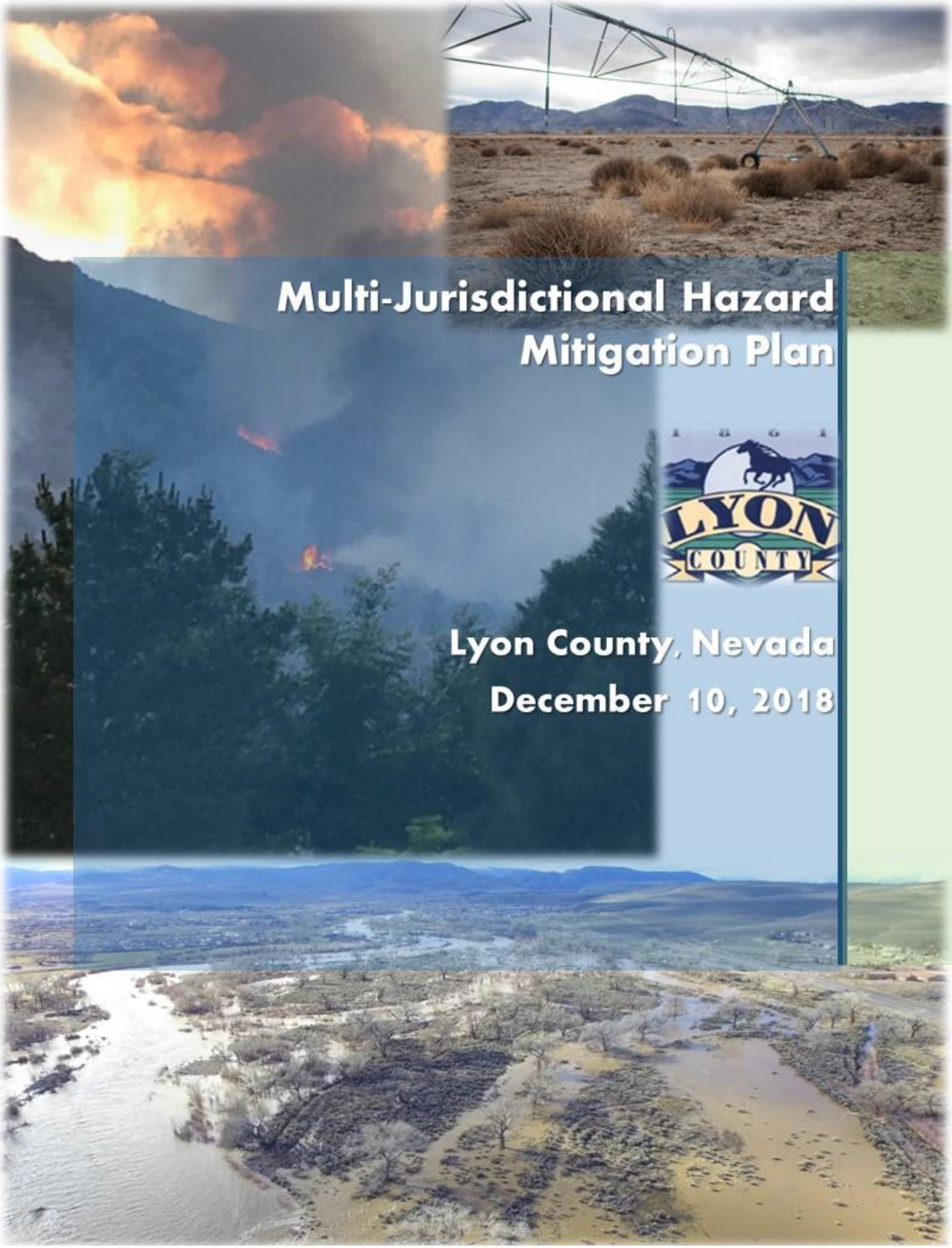

Multi-Jurisdictional Hazard Mitigation Plan

Lyon County, Nevada

December 10, 2018

Lyon County Multi-Jurisdictional Hazard Mitigation Plan 2018

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U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

December 10, 2018

Tammy J. Kinsley
Senior Planner
Lyon County Community Development
27 South Main Street
Yerington, NV 89447

Dear Ms. Kinsley:

We have completed our final review of the *Lyon County Multi-Jurisdictional Hazard Mitigation Plan*, officially adopted by Lyon County on December 6, 2018, and found the plan to be in conformance with Title 44 Code of Federal Regulations (CFR) Part 201.6 *Local Mitigation Plans.* A list of the status of participating jurisdictions is enclosed with this letter.

The approval of this plan ensures Lyon County's continued eligibility for project grants under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

Also, approved hazard mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Additional information regarding the CRS can be found at https://www.fema.gov/national-flood-insurance-program-community-rating-system or through your local floodplain manager.

FEMA's approval of the *Lyon County Multi-Jurisdictional Hazard Mitigation Plan* is for a period of five years, effective starting the date of this letter. Prior to December 10, 2023, Lyon County and all participating jurisdictions are required to review and revise the plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval in order to continue to be eligible for mitigation project grant funding. The enclosed plan review tool provides additional recommendations to incorporate into the plan during the plan maintenance process.

If you have any questions regarding the planning or review processes, please contact JoAnn Scordino, Community Planner, at (510) 627-7225 or by email at joann.scordino@fema.dhs.gov.

Sincerely,

for Juliette Hayes
Director
Mitigation Division
FEMA, Region IX

Enclosure

cc: Janell Woodward, State Hazard Mitigation Officer, Nevada Division of Emergency Management

www.fema.gov

U.S. Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

June 18, 2019

Tammy J. Kinsley
Senior Planner
Lyon County Community Development
27 South Main Street
Yerington, NV 89447

Dear Ms. Kinsley:

We have received documentation from the Central Lyon County Fire Protection District confirming its adoption of the *Lyon County Multi-Jurisdictional Hazard Mitigation Plan.* This jurisdiction is now in compliance with the planning requirements of the Disaster Mitigation Act of 2000.

The *Lyon County Multi-Jurisdictional Hazard Mitigation Plan* is valid for five years from the approval date, December 10, 2023 for all approved participants. The plan must be reviewed, updated and submitted to FEMA Region IX for approval at least once every five years. An updated list of the current status of participating jurisdictions is enclosed with this letter.

The approval of this plan ensures the Central Lyon County Fire Protection District's continued eligibility for project grants under FEMA's Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program. All requests for funding, however, will be evaluated individually according to the specific eligibility, and other requirements of the particular program under which applications are submitted.

If you have any questions regarding the planning or review processes, please contact the FEMA Region IX Community Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

Alison Kearns
Risk Analysis Branch Chief
Mitigation Division
FEMA, Region IX

cc: Janell Woodward, State Hazard Mitigation Officer, Nevada Division of Emergency Management

Status of Participating Jurisdictions as of June 18, 2019

Jurisdictions – Adopted and Approved

#	Jurisdiction	Date of Adoption
1	Lyon County	12/6/2018
2	Yerington, City of	12/10/2018
3	Fernley, City of	12/19/2018
4	Central Lyon Fire Protection District	6/13/2019

Jurisdictions – Approvable Pending Adoption

#	Jurisdiction

www.fema.gov

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Appendix

BLM	United States Bureau of Land Management
CIA	Central Intelligence Agency
CDC	Center for Disease Control
CEMP	Comprehensive Emergency Management Plan
cfs	cubic feet per second
CFR	Code of Federal Regulations
CLCFPD	Central Lyon County Fire Protection District
County	Lyon County
Cities	City of Fernley and the City of Yerington
CWSD	Carson Water Subconservancy District
DHS	Department of Homeland Security
DMA 2000	Disaster Mitigation Act of 2000
DOT	United States Department of Transportation
DWR	Division of Water Resources
ECC	Emergency Coordination Committee
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 Federal
FEMA	Emergency Management Agency
FBI	Federal Bureau of Investigation
GIS	Geographic Information System
HAZUS-MH	(abbreviation for **HAZ**ards **U**nited **S**tates) 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
InSAR	Interferometric Synthetic Aperture Radar
IRC	International Residential Code
JAVMA	Journal of the Federal coordinator of Meteorology
LEPC	Local Emergency Planning Committee
M	Magnitude
MMI	Modified Mercalli Intensity
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
mph	miles per hour
NDEM	Nevada Division of Emergency Management

NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOT	Nevada Division of Transportation
NERMP	Nevada Earthquake Risk Mitigation Plan
NFIP	National Flood Insurance Program
NBMG	Nevada Bureau of Mines and Geology
NOAA	National Oceanic and Atmospheric Association
NPS	National Park Service
NRS	National Response Center
NVE	Nevada Energy
NWS	National Weather Service
OFCM	Office of the Federal Coordinator for Meteorology
PDM	Pre-Disaster Mitigation
POC	Point of Contact
RFC	Repetitive Flood Claims
RL	Repetitive Loss
SARS	Severe Acute Respiratory Syndrome
SERC	State Emergency Response Commission
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
SPWB	State Public Works Board
SRL	Severe Repetitive Loss
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
State	State of Nevada
SR	State Route
UBC	Uniform Building Code
URM	Unreinforced Masonry Buildings
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
WHO	World Health Organization
WMD	Weapons of Mass Destruction
WNV	West Nile Virus

Across and throughout the United States, natural and human-caused disasters have led to increasing levels of destruction, death, injury, property damage, and interruption to businesses 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. Lyon County, Nevada, recognizes the consequences of these disasters and the need to reduce the impacts of natural and human-caused hazards.

The elected and appointed officials of Lyon County (the County), the City of Fernley (Fernley), the City of Yerington (Yerington) and Central Lyon County Fire Protection District (CLCFPD) 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 Lyon County Local Emergency Planning Committee prepared the *Lyon County, Nevada, Multi-Jurisdictional Hazard Mitigation Plan*. With the support of various County, City and Fire District officials, the State of Nevada, and the United States 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, City of Fernley, the City of Yerington, and the Central Lyon County Fire Protection District toward greater disaster resistance in full harmony with the character and needs of each community and the region.

People and property in Lyon 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 *Lyon County, Nevada Multi-Jurisdictional Hazard Mitigation Plan* has been prepared 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. This plan Identifies hazard mitigation actions intended to eliminate or reduce the effects of future disasters Throughout the County and the cities of Fernley and Yerington.

This section provides an overview of the Disaster Mitigation Act of 2000 (DMA 2000; Public Law 106-390), the adoption of the updated *Lyon County, Nevada, Multi-Jurisdictional Hazard Mitigation Plan* (MJHMP) 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.

1.2 ADOPTION BY THE LOCAL GOVERNING BODY AND SUPPORTING DOCUMENT

The requirements for the adoption of an MJHMP 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

Lyon County, the cities of Fernley and Yerington, are the jurisdictions represented in this MJHMP. The MJHMP meets the requirements of Section 409 of the Stafford Act and Section 322 of the DMA 2000.

The local governing body of the County (Lyon County Board of Commissioners), City of Fernley (Fernley City Council) and the City of Yerington (Yerington City Council) has adopted this MJHMP. The signed resolutions are provided in Appendix A.

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This section provides an overview of the MJHMP. This includes a review of the purpose and Authority of the MJHMP and a description of the document.

2.1 PLAN PURPOSE AND AUTHORITY

Congress approved the DMA 2000, also referred to as the 2000 Stafford Act amendments, 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 MJHMP meets the requirements of the DMA 2000, which calls for all communities to prepare hazard mitigation plans. By preparing this MJHMP, Lyon County, the City of Fernley and the City of Yerington are eligible to receive Federal mitigation funding after disasters and to apply for mitigation grants before disasters strike. This MJHMP starts an ongoing process to evaluate the risks different types of hazards pose to the County and the Cities, and to engage the County and the Cities with the communities 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 and the Cities 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 MJHMPs 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 MJHMP 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 MJHMP. Adoption legitimizes the updated MJHMP and authorizes responsible agencies to execute their responsibilities. The resolutions adopting this MJHMP are 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 MJHMP consists of the following sections.

• *Section 3 - Community Description*

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

• *Section 4 - Planning Process*

Section 4 describes the planning process, identifies Emergency Coordination 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 Emergency Coordination Committee identified and compiled relevant data on all potential natural hazards that threaten the County and Cities, and the immediately surrounding area. Information collected includes historical data on natural hazard events that have occurred in and around the County, City, and how these events impacted residents and their property.

The descriptions of natural hazards that could affect the County and Cities 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- 2017. The resulting information identifies the full range of hazards that the County and Cities could face and the 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 and Cities 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 Emergency Coordination 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, the Emergency Coordination 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.

• *Section 9 - Plan Maintenance Process*

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

• *Section 10 - References*

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

• *Appendices*

The appendices include the Adoption Resolutions, Area and Hazard Maps, Committee Meetings, Public Outreach and Involvement, the Maintenance Tools and the Vulnerability tables and area maps for Lyon County, City of Fernley and the City of Yerington.

This section describes the history, location, and geography of Lyon County, the City of Fernley, the City of Yerington, and the Central Lyon County Fire Protection District as well as their government, demographic information, and current land use and development trends.

3.1 LYON COUNTY

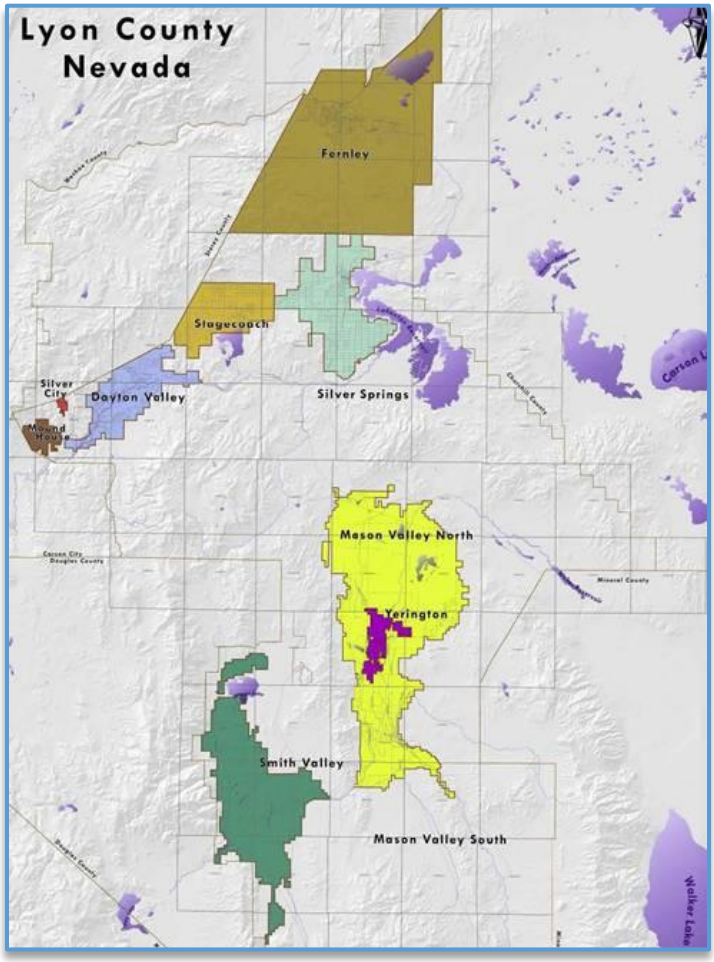
3.1.1 History, Location, and Geography

On October 31, 1864, Nevada became the 36th state in the union. Three years prior, the Nevada Legislature established Lyon County on November 24, 1861. Lyon County was named after Nathaniel Lyon, the first Union General to be killed in the Civil War. Dayton was the original County seat, then in 1911 the County seat was changed to Yerington.

Lyon County is located in west, central Nevada, its area totals 2,024 square miles. It includes two incorporated cities, the City of Fernley and the City of Yerington; seven additional communities:

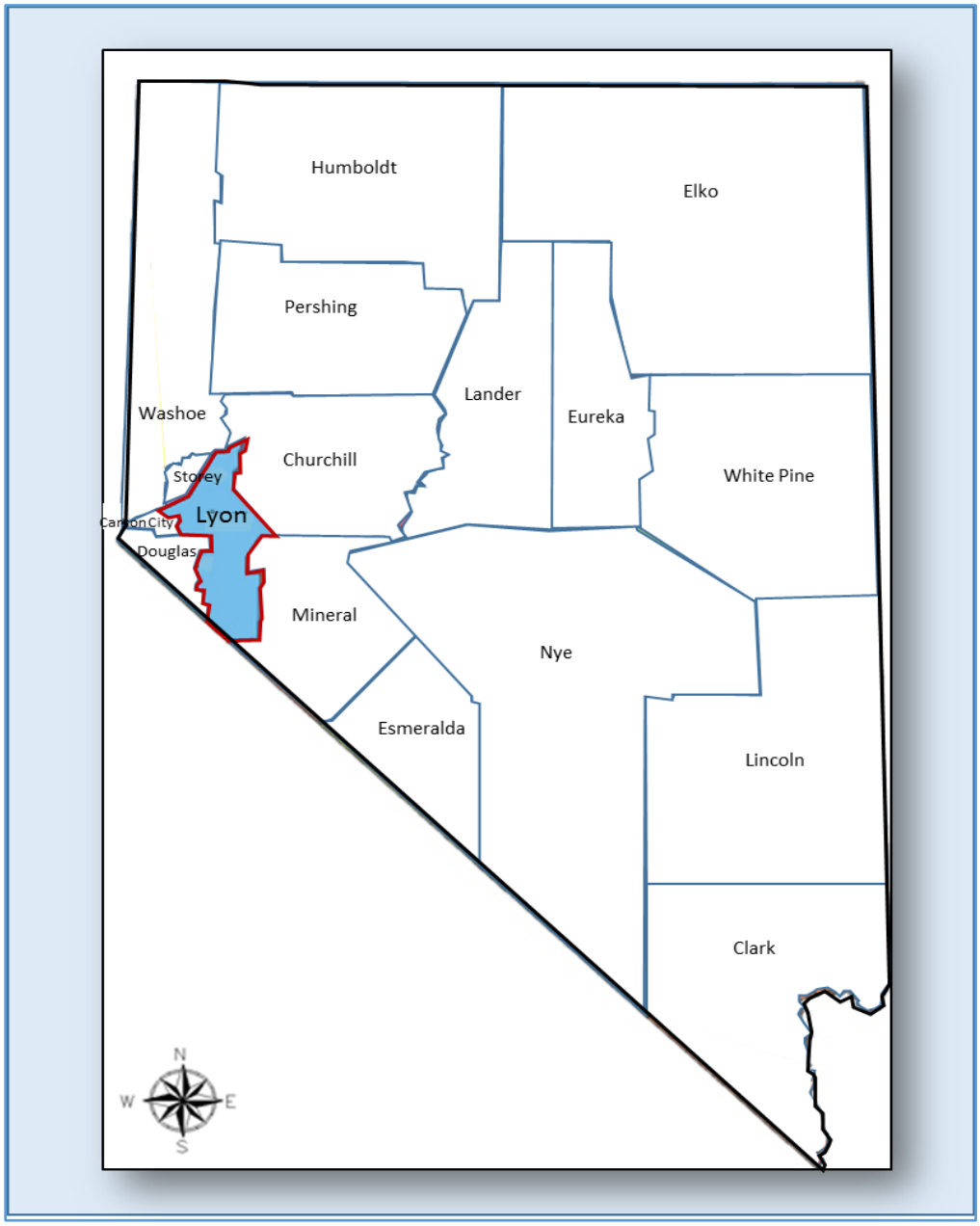
Dayton Valley	Mason Valley	Mound House	Silver City	Silver Springs
Smith Valley	Stagecoach			

Communities and Cities in Lyon County



Lyon County is bordered on the north by Storey, Washoe and Churchill Counties, to the west by Douglas County and the County of Carson City; on the south by Mineral County and the state of California, and to the east by Churchill and Mineral Counties.

Lyon County within the State of Nevada



Interstate 80, which runs from San Francisco to New York, cuts through the northern corner of the County. U.S. 50 runs east-west through the central portion of Lyon County, and U.S. Alt 95 is the major north-south corridor through the county. The southern part of the County, in the area of the unincorporated town of Wellington, is crossed by highways 208 and 338.

All of Lyon County lies within the Great Basin. The County terrain is quite varied, consisting of valleys and mountains, farm/ranch lands, rivers, and extensive undisturbed areas. The highest elevation in Lyon County is approximately 10,402 feet at East Sister Peak in the Sweetwater Mountains. The lowest elevation is approximately 4,014 feet at the Fernley Sink, which is part of the Fernley Wildlife Management Area. Major mountain ranges in Lyon County include the Pine Grove Hills, Desert Mountains, Pine Nut Mountains, Virginia Range, Singatse Range, and the Sweetwater Mountains. The largest valleys in Lyon County include Mason Valley, Smith Valley, Churchill Valley, and the Carson Plains. The Carson and Walker Rivers and the Truckee Canal flow through Lyon County.

The area has a high-desert, arid climate with over 300 days of sunshine a year. The County receives an average of 8.64 inches precipitation per year and 10.27 inches snowfall per year. In winter, average low temperatures range from 23 to 25 degrees Fahrenheit and average high temperatures range from 44 to 49 degrees Fahrenheit. In summer, high temperatures can be expected to range from 81 to 90 degrees Fahrenheit and low temperatures from 50 to 56 degrees Fahrenheit.

3.1.2 Government

Lyon County is governed by a five-member board of commissioners, elected from geographic districts. Each district (districts 1-5) elects a commissioner who serves “at-large,” which means the commissioners are elected by and represent all citizens in the County, for a staggered four-year term. The County Commissioners annually elect a chairperson, who serves as the Commission’s presiding officer.

The Lyon County Board of Commissioners also serve as the "ex-officio" board for the Central Lyon Vector Control District, the Mason Valley Mosquito Abatement District, the Walker River Weed Control District, and the Willowcreek General Improvement District.

Lyon County – Officials

County Commissioner District I	County Manager	Human Services Director
County Commissioner District II	Assessor	Information Technology (GIS)
County Commissioner District III	Clerk/Treasurer	Personnel/ Human Resources Director
County Commissioner District IV	Comptroller	Recorder
County Commissioner District V	Cooperative Extension	Sheriff
	Courts - Judges	Central Lyon County Fire District
	District Attorney	Mason Valley Fire Protection
	Emergency Manager	North Lyon County Fire District
	Facilities Manager	Smith Valley Fire Protection District

Lyon County Departments

Animal Services	Child Support	Mason Valley Mosquito Abatement
Assessor	Emergency Management	Personnel/ Human Resources
Facilities	Central Lyon Parks & Cemeteries Maintenance	Public Administrator
Clerk/Treasurer	South Lyon Parks & Cemeteries Maintenance	Public Health Nurse
Community Development	Health Officer	Public Guardian
Comptroller	Human Services	Public Works
Courts - Judges	Information Technology (GIS)	Recorder
Dayton Utilities	Juvenile Probation	Sheriff
District Attorney	Library	Western Regional Youth Facility

Lyon County Advisory Boards

Dayton Regional	Silver City
Mason Valley	Silver Springs
Mound House	Smith Valley
	Stagecoach

3.1.3 Demographics

According to the 2010 U.S. Census Bureau Lyon County, Nevada had a population of 51,980; Dayton, NV had 8,964; City of Fernley had 19,368; Silver Springs had 5,296, Smith Valley had 1,603; Stagecoach had 1, 874, the City of Yerington had 3, 048 and the Yerington Colony has 151.

The Nevada State Demographer, estimated the population in July 1, 2016 for Lyon County was 53,179 this accounted for 1.8% of Nevada's projected population of 2,940,058. The population projection for October 2017 in Lyon County was 54,422: City of Fernley was projected at 19,300 and the City of Yerington was projected at 3,202.

According to the U.S. Census Bureau Quick Facts, in 2016 approximately 24.9 percent of the total population was under 18 years, 54 percent was between 18 and 64 years, and 21.1 percent was 65 years and over. The County experienced a 2.3 percent growth rate from April 1, 2010 to July 1, 2016.

The County's nonfarm employment was 19,752 persons in 2014 (US Census Bureau Quick Facts). This is a 15.83% change from 2000 to 2014 showing a move from agricultural to nonfarm

employment. The economic base of the County primarily consists of agriculture, construction, manufacturing, educational services, retail trade, public administration, arts and entertainment. The following figure represents the employment within the county.

Figure 3-1: Lyon County Population Estimates

Lyon County, Nevada

2016 Population Estimates
53,179
Source: Vintage 2016 Population Estimates: Population Estimates

Median Household Income
$ 49,007
Source: 2012-2016 American Community Survey 5-year Estimates

Persons in poverty, percent
11.9 %
Source: 2016 Small Area Income and Poverty Estimates (SAIPE)

Educational Attainment: Percent high school graduate or higher
85.0 %
Source: 2012-2016 American Community Survey 5-year Estimates

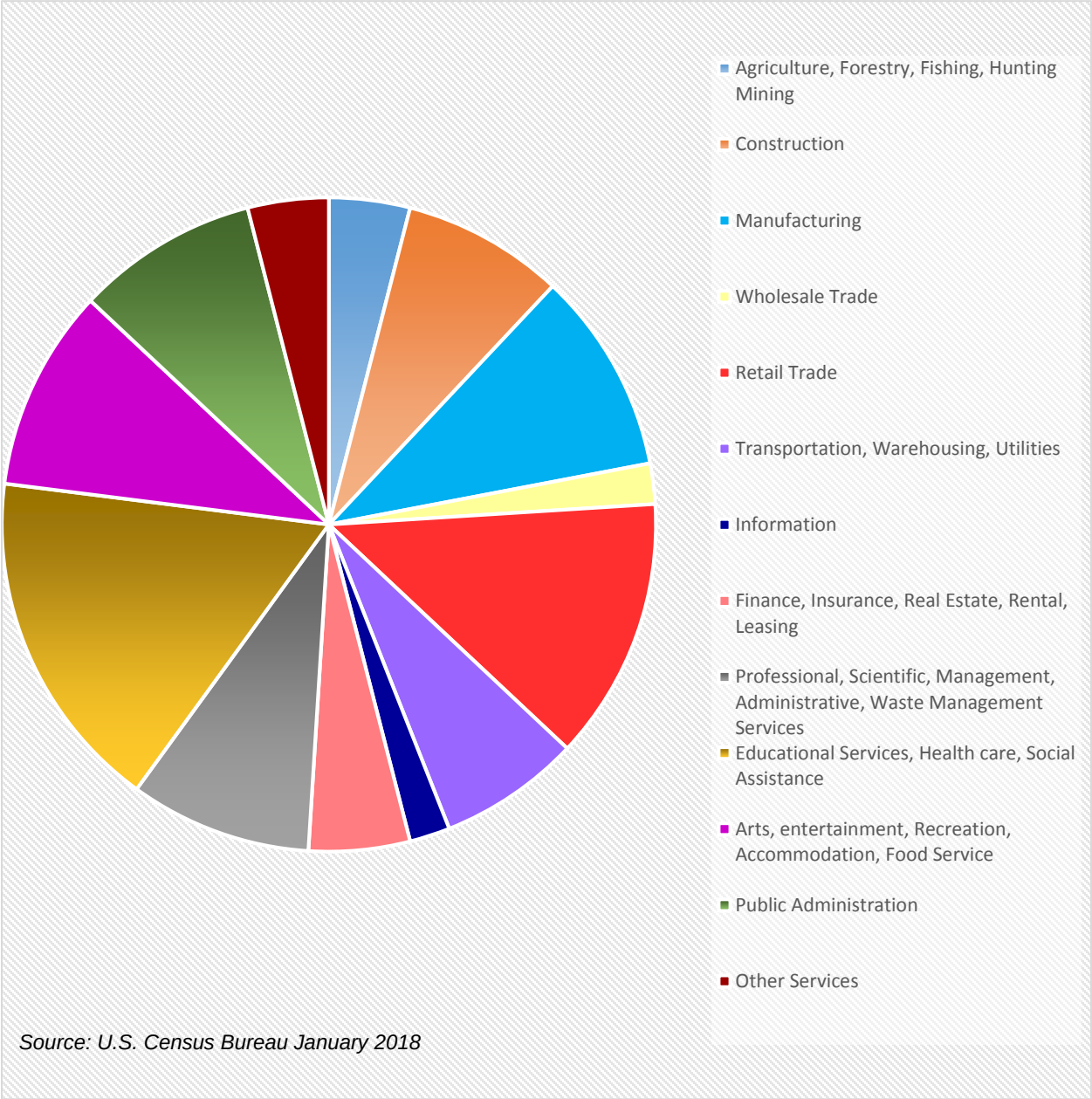
Median Housing Value
$ 143,200
Source: 2012-2016 American Community Survey 5-year Estimates

Total Housing Units
22,427
Source: 2012-2016 American Community Survey 5-year Estimates

Number of Companies
2,844
Source: 2012 Survey of Business Owners: Company Summary

Veterans
6,365
Source: 2012-2016 American Community Survey 5-year Estimates

Figure 3-2: Lyon County Employment Distribution



Lyon County comprises approximately 1,295,360 acres, of which approximately 75 percent of is in federal management or public land ownership. 25 percent of the county is privately owned and approximately 10 percent of the land use is agricultural.

Table 3-1. Land Ownership in Lyon County

Land Ownership	Acreage 2018	Percentage of County
BLM	572,924	44%
BOR	20,092	2%
FS	276,282	21%
FWS	15	.001%
Tribal	50,604	4%
State	19,466	2%
Private Lands	338,168	26%
Water	17,839	1%
Total	**1,295,390**	**100%**

All numbers are estimates and are subject to change. Source: Lyon County Assessor

3.1.4 Land Use and Development Trends

Lyon County population growth over the next five years is expected to range from .7 to 1.3 percent annually, increasing from 55,124 in 2018 to 57,181 in 2023. It is unlikely growth will be less than the forecasted rate, but could accelerate based on regional economic development.

More recently Lyon County has seen rapid growth in the region. Inevitably, in such a process, Lyon County and its communities have been affected by development, increased traffic volumes, encroachment into floodplains, services stretched to meet needs, and a declining agricultural land base. As a result in December 2010, Lyon County developed five major land use goals:

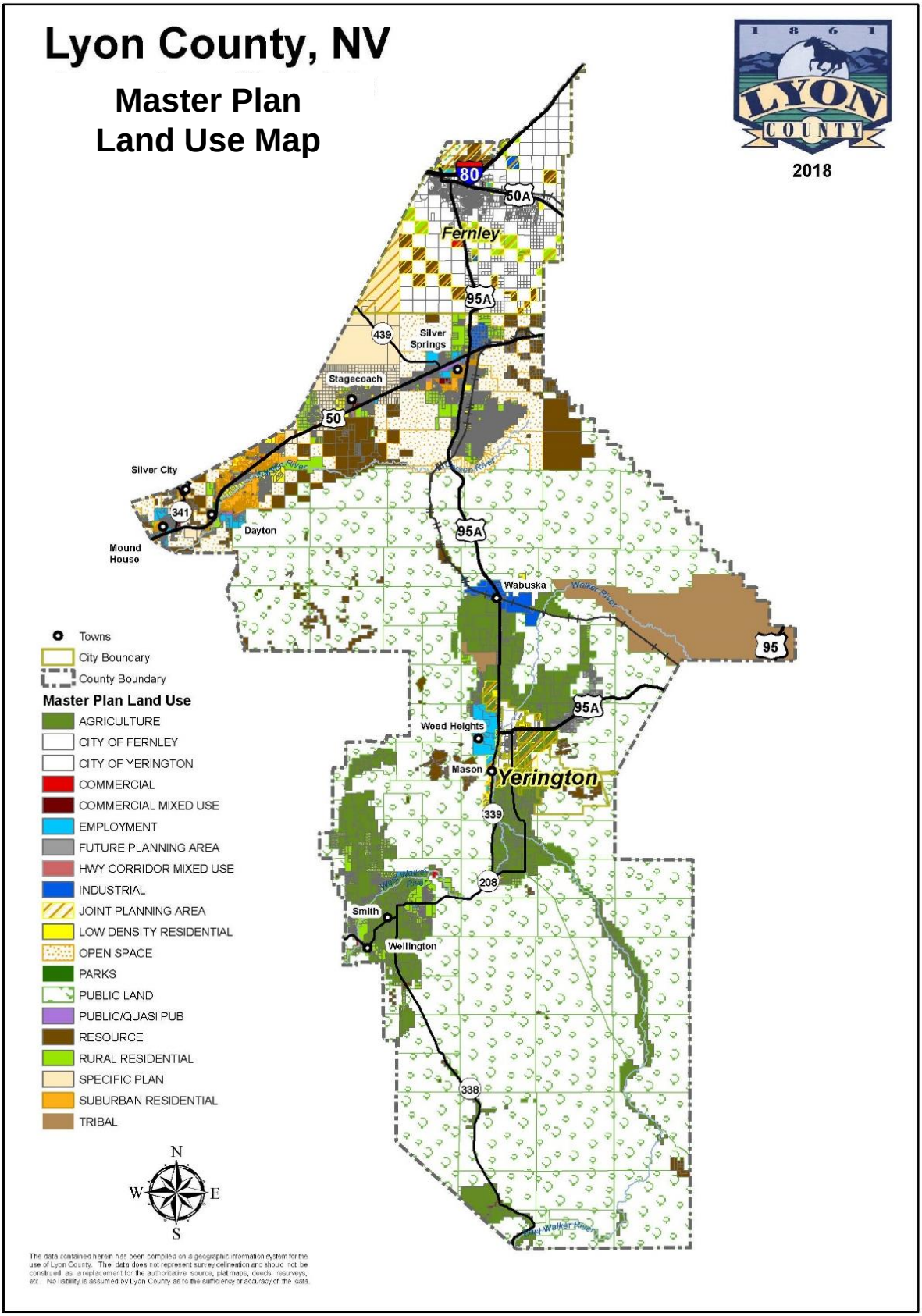
- **Orderly Growth Patterns:** Direct and manage development in the county so that it is orderly and fiscally responsible
- **Services Coordinated with Growth:** Coordinate future residential development with development of schools, parks, libraries, and other public services so as to maintain or improve per resident service levels
- **Diverse Economy:** Attract businesses that employ residents in primary jobs, as well as service jobs that meet the needs of local residents so that the economy will continue to be strong and diverse
- **Viable Agriculture:** Enhance the economic viability of agricultural lands and promote opportunities for rural and agricultural support uses that conserve and enhance our agricultural and rural way of life
- **Encourage Resource Sensitive Growth:** Designate development that will reduce energy use and minimize environmental impacts

Based upon input from the community and County leadership an overall approach for future growth and development in the County was identified and is explained in the Lyon County Comprehensive Master Plan - December 2010. Lyon County is approaching growth utilizing the "Community Core Concept," which encourages growth and development in and around the existing community cores (towns and established settlement areas) with a strong focus on balancing residential, employment, and retail uses. The concept encourages less growth in the unincorporated areas and promotes alternative development and conservation approaches for area of environmental significance or hazardous features, such as steep slopes, wetlands, or flood plains.

The Lyon County Master Plan establishes a planned pattern for development in the County and is designed to promote sound land use decisions. The master plan provides sufficient land for residential, commercial, agricultural, industrial, and public uses and locates these uses Appropriately in order to enhance community balance and character; to preserve and protect important natural resources; and to enable the County to provide adequate public services to the community.

The land use map directs urban development to the northwestern area of the County where it is intended that more intensive, mixed uses, conducive to an urban environment will, over time, be encouraged. With 8,637 residential lots in the planning stages, development will proceed slowly and carefully to mitigate impacts to existing residents. The majority of the population of Lyon County is located in the areas served by the Lyon County Utilities department.

In response to the planned increase in population, Lyon County is working to preserve agriculture and support Retail Trade and Mining, two of the largest economic sectors of the county. Growth in the economic sector of agriculture and mining includes material moving, construction and extraction, farming, fishing and forestry.


Lyon County, NV
Master Plan
Land Use Map
2018
Fernley
Silver Springs
Stagecoach
Silver City
Mound House
Dayton
Wabuska
Weed Heights
Mason
Yerington
Smith
Wellington
80
50A
95A
439
50
341
95
339
208
338
Towns
City Boundary
County Boundary
Master Plan Land Use
AGRICULTURE
CITY OF FERNLEY
CITY OF YERINGTON
COMMERCIAL
COMMERCIAL MIXED USE
EMPLOYMENT
FUTURE PLANNING AREA
HWY CORRIDOR MIXED USE
INDUSTRIAL
JOINT PLANNING AREA
LOW DENSITY RESIDENTIAL
OPEN SPACE
PARKS
PUBLIC LAND
PUBLIC/QUASI PUB
RESOURCE
RURAL RESIDENTIAL
SPECIFIC PLAN
SUBURBAN RESIDENTIAL
TRIBAL
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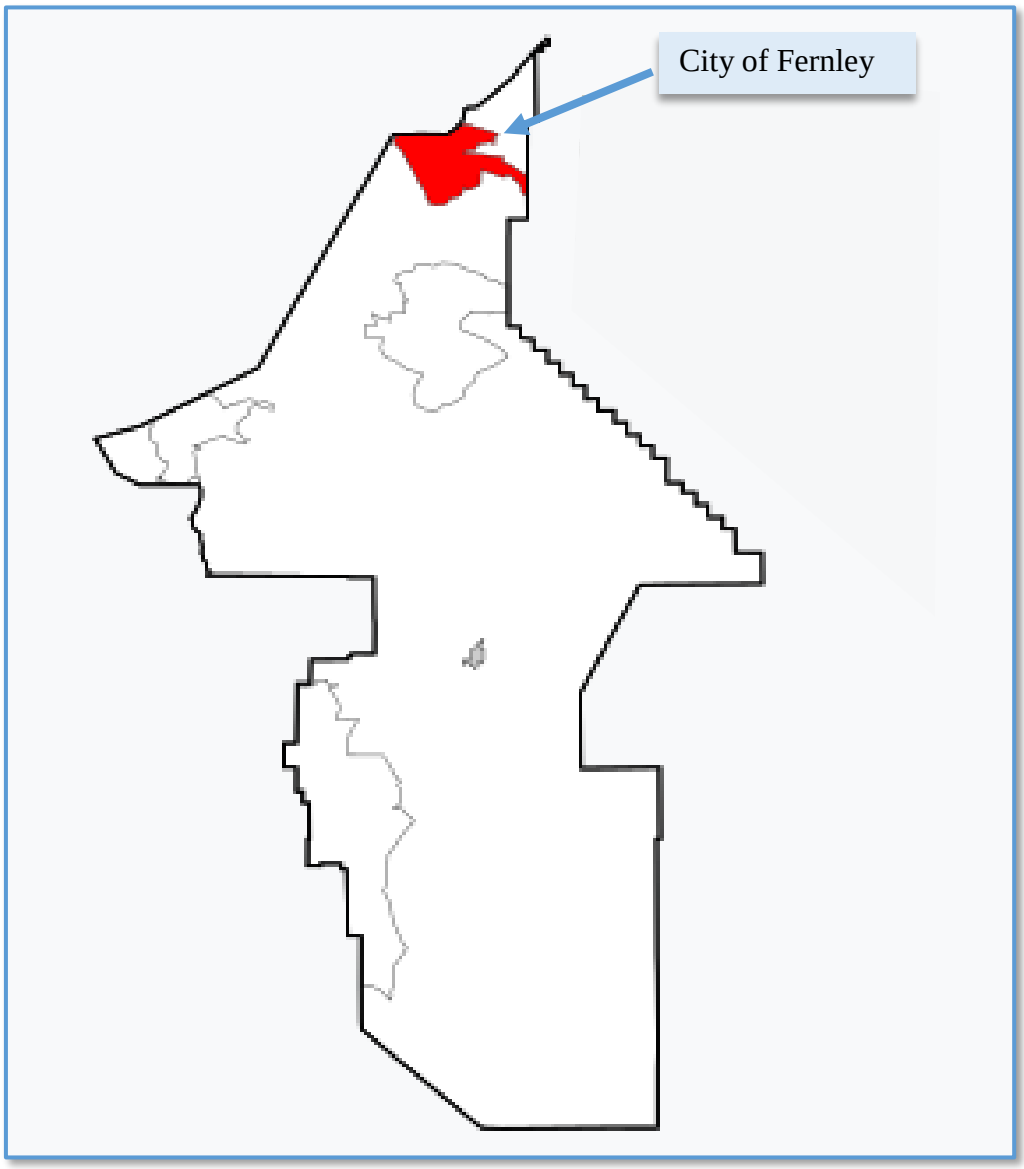
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.

3.2 CITY OF FERNLEY

3.2.1 History, Location, and Geography

The City of Fernley (Fernley) is located in the northern portion of Lyon County and is located approximately 45 miles north of the County seat (Yerington). Fernley, established in 1904, developed primarily as an agricultural and ranching community in close proximity to Reno. The City was incorporated in 2001. Fernley originally spanned the Lyon/Washoe County line, but due to a county boundary change in 2005, Fernley is now entirely in Lyon County. Fernley covers a total area of 128.8 square miles, 122.1 square miles of land and 6.7 square miles of water.

Exhibit of the City of Fernley within Lyon County, NV



3.2.2 Government

Fernley was established as a township in the 1930's with the Lyon County Board of Commissioners as the governing body for Fernley. In 1985, the citizens installed a self-governing town board separate from the Lyon County Board of Commissioners. Effective July 1, 2001, Fernley incorporated as a city and assumed additional functions. The City was formed as a general law City as allowed under Nevada state law.

The City of Fernley is governed by the Mayor and a five-member City Council, elected from the five geographic wards within the city. The Mayor is elected at large.

All matters of development and business go before either the Fernley City Council or the Fernley Planning Commission. The North Lyon County Fire Protection District provides fire protection and emergency medical services. The County provides a Sheriff Substation and the County Sheriff provides law enforcement within the City under an interlocal agreement between Lyon County and the City of Fernley.

City of Fernley–Officials

Mayor	City Manager
City Council member Ward I	City Treasurer - Finance
City Council member Ward II	City Clerk
City Council member Ward III	City Attorney
City Council member Ward IV	
City Council member Ward V	

City of Fernley Departments and other Service Operations

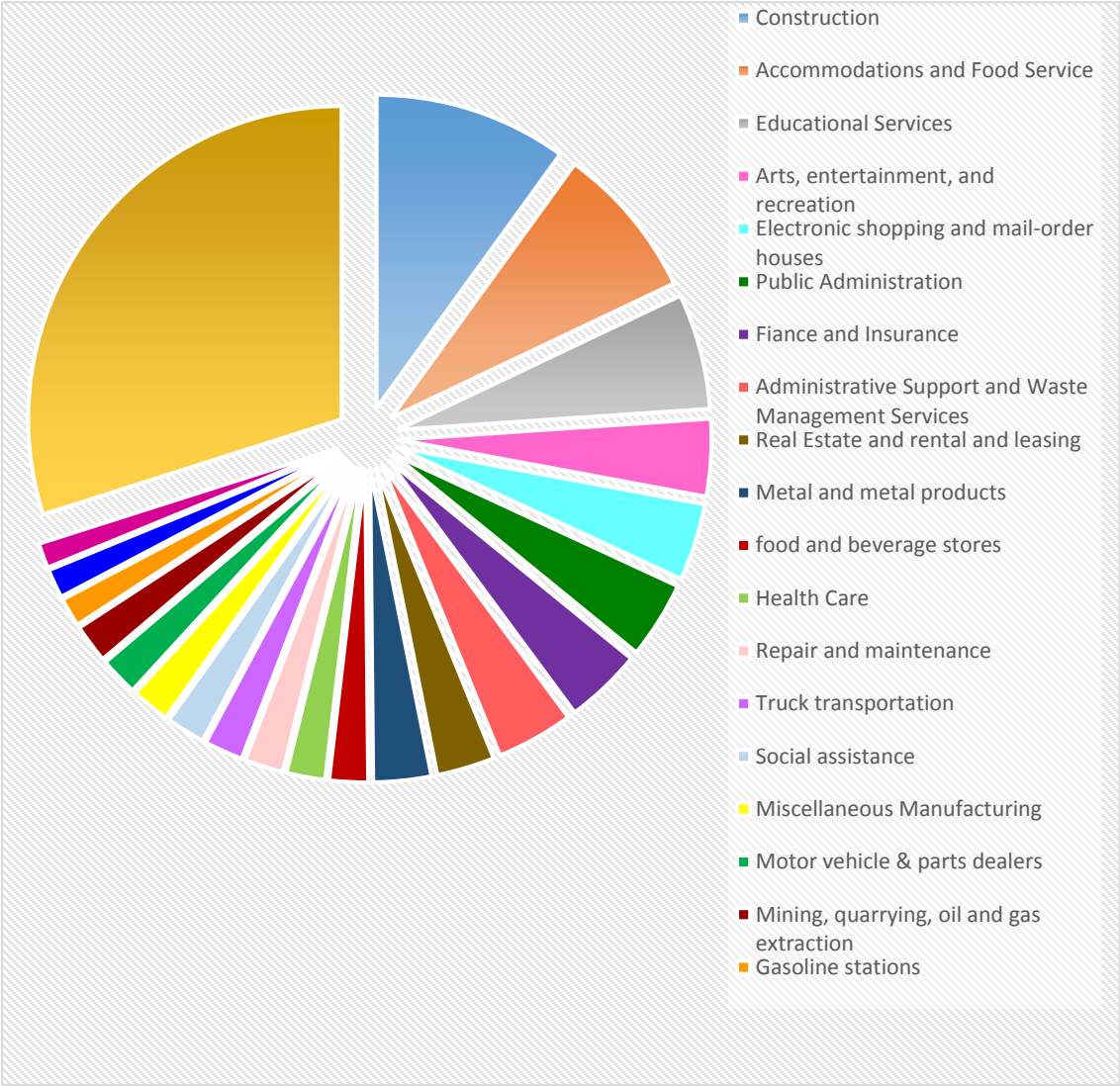
Animal Control	Canal Township Justice Court
Building Department	Social Services
Police	Fernley Branch Library
Public Works & General Services	Community Health Nurse
	Senior Center

3.2.3 Demographics

Fernley's total estimated population according to the U.S. Census Bureaus was 19,588 people as of July 1, 2016. Based upon the April 1, 2010 numbers, 27.7% percent of the population was under the age of 18 years, and 11.8% of the population was 65 years or older.

Based upon the ACS 5-Year Estimates (2012- 2016), the percent in civilian labor force, percent of population 16+ years was 57.4 % and Fernley noted an unemployment rate of 8.6% percent. The median household income in Fernley was $54,036 and the family median income was $56,957. Fernley's per capita income was $22,846 (in 2016 dollars) 2012-2016; and 11.9 percent of individuals were living below the poverty line.

Figure 3-3: City of Fernley Most Common Industry Distribution



Source: City-data.com March 2018

3.2.4 Land Use and Development Trends

The City of Fernley is a Community in Transition. Recently adopted Resolution 17-020 establishing policies related to how and where the City of Fernley chooses to grow, it has a direct impact on revenues and the City's ability to provide services to residents/customers. In addition created "A STRATEGIC COMMUNICATIONS PLAN FOR THE CITY OF FERNLEY, NEVADA FOR FISCAL YEAR 2018 THROUGH FISCAL YEAR 2020."

The City Council directed staff to develop a Capital Improvement Committee as an important tool for planning, reviewing, and prioritizing capital improvements for the upcoming budget cycle and for the next five years.

A strategic communications plan was developed in coordination with the organizational strategic plan. This effort was in response to the challenges within the City relating to growth and development and need for new or expanded service delivery. As part of this plan, the City is also working on continued Community Engagement Efforts.

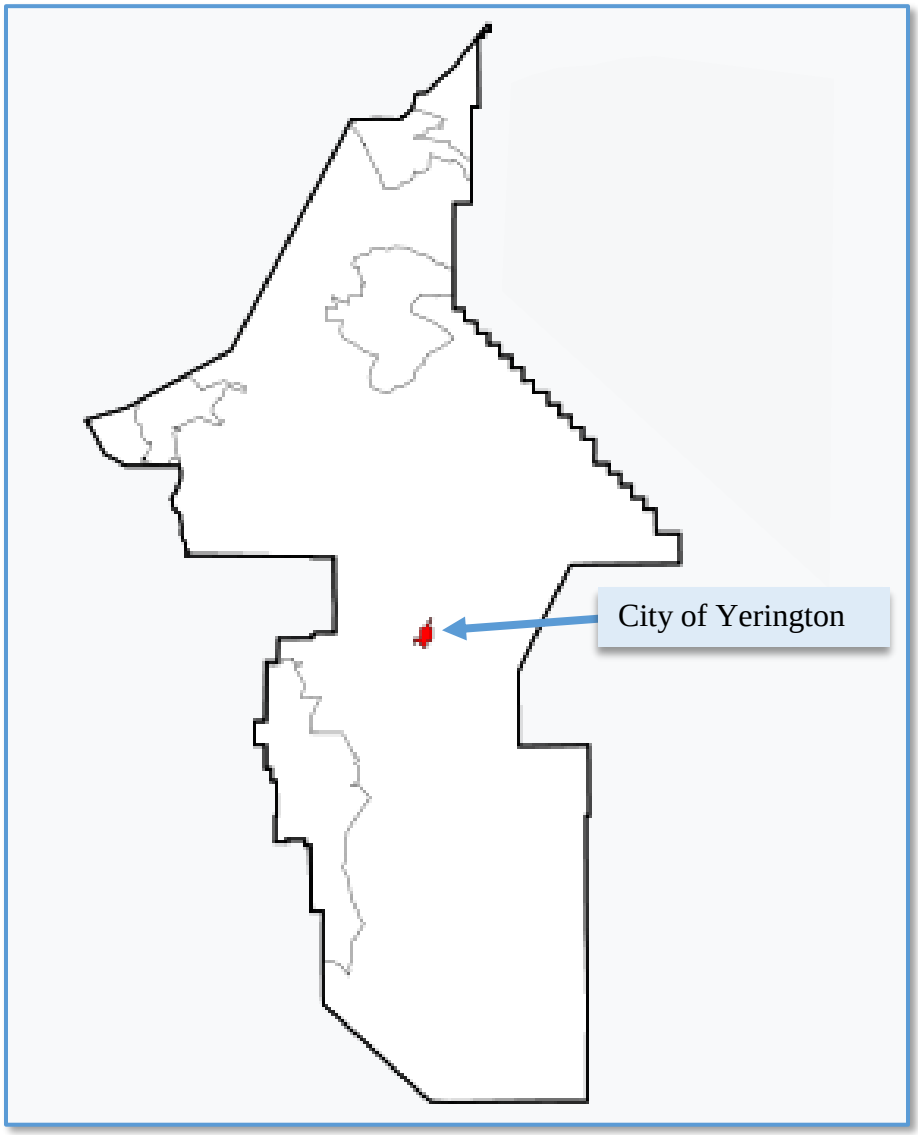
The City continues to work towards the future vision of opening the historic Depot to the public. The City was awarded a $300,000 CDBG Grant for the second phase of the Depot project. This funding will allow for the construction of a sewer line to the Depot. In addition, the City Purchased 8.5-acres adjoining the existing 1.2 acres of the depot property to the east and south for future site of a Community Center. The City has formed a key stakeholder group to collaborate on this future facility. The group includes Lyon County, the Fernley Community Foundation, Lyon County School District, the Boys and Girls Club of Truckee Meadows, Lyon County Sheriff's Office, and Western Nevada College. The City has executed a Memorandum of Understanding with the County for use of a portion of the land for the county's new 16,000 square foot Senior Center and Human Services offices. The County expects to break ground on this project late this spring.

3.3 City of Yerington

3.3.1 History, Location, and Geography

The City of Yerington (Yerington) is the county seat of Lyon County. The city is named after Henry M. Yerington, a Superintendent of the Virginia and Truckee Railroad, from 1868 to 1910. Yerington is located in the center of Lyon County at the intersection of US 95A and Nevada State Route 208 about 30 miles southeast of Carson City and about 56 miles southeast of Reno. The City of Yerington encompasses 8.6 square miles of total area, all of which is land.

Exhibit of the City of Yerington within Lyon County, NV



3.3.2 Government

City of Yerington is governed by a Mayor and City Council who are elected by the people of the City. The Mayor and City Council acting together are the Governing Body. All Governing Body members serve four-year terms. The Governing Body, being the elected representative of the people, adopts all ordinances and resolutions and determines the general goals and policies.

City of Yerington –Officials

Mayor	City Manager
City Council member I	Interim City Clerk
City Council member II	Police Chief
City Council member III	Public Works Director
City Council member IV	
City Council member V	

City of Yerington Departments and other Service Operations

Administration	Public Works Department
Building Department	Utilities Department
Finance Department	Fernley Branch Library
Fire Department	Community Health Nurse
Police Department	Senior Center

3.3.3 Demographics

The population for Yerington per the 2010 Census was 3,048 people. More recently per the Nevada State Demographer's populations of Nevada Counties and Incorporated Cities and Unincorporated Towns, the population for the City of Yerington was 3,142 at the end of 2016. Based upon the 2016 ACS 5-Year Estimates 4.8 percent of the population was under the age of 5 years, 56.1 percent was between the ages of 20 and 65 and 24.3 percent of the population was 65 years or older.

The eligible labor force for Yerington included 2,700 people, 42.2 percent were employed. The median household income was $40,690 and the median family income was $46,396. Yerington's per capita income was $24,435. In Yerington 10.6 percent of the population fell below the poverty line.

Figure 3-4 City of Yerington Population Estimate

Yerington city, Nevada

2016 Population Estimates
3,142
Source: Vintage 2016 Population Estimates: Population Estimates

Median Household Income
$ 39,489
Source: 2012-2016 American Community Survey 5-year Estimates

Persons in poverty, percent
15.7 %
Source: 2012-2016 American Community Survey 5-year Estimates

Educational Attainment: Percent high school graduate or higher
72.8 %
Source: 2012-2016 American Community Survey 5-year Estimates

Persons without health insurance, percent
24.6 %
Source: 2012-2016 American Community Survey 5-year Estimates

Median Housing Value
$ 102,000
Source: 2012-2016 American Community Survey 5-year Estimates

Total Housing Units
1,753
Source: 2012-2016 American Community Survey 5-year Estimates

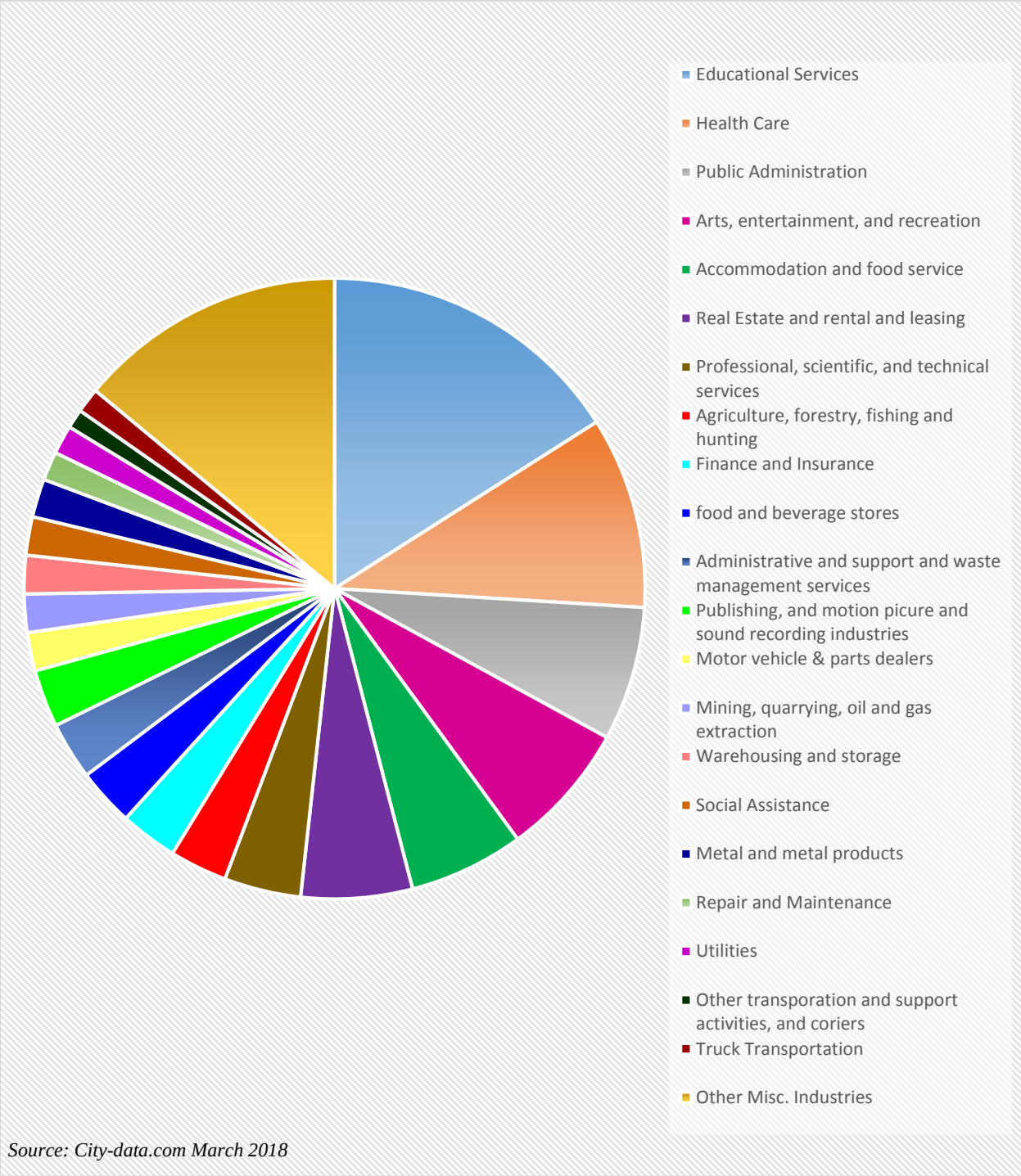
Number of Companies
260
Source: 2012 Survey of Business Owners: Company Summary

Male Median Income
$ 28,846
Source: 2012-2016 American Community Survey 5-year Estimates

Female Median Income
$ 14,042
Source: 2012-2016 American Community Survey 5-year Estimates

Veterans
288
Source: 2012-2016 American Community Survey 5-year Estimates

Figure 3-5: City of Yerington Most Common Industry Distribution



Source: City-data.com March 2018

3.3.4 Land Use and Development Trends

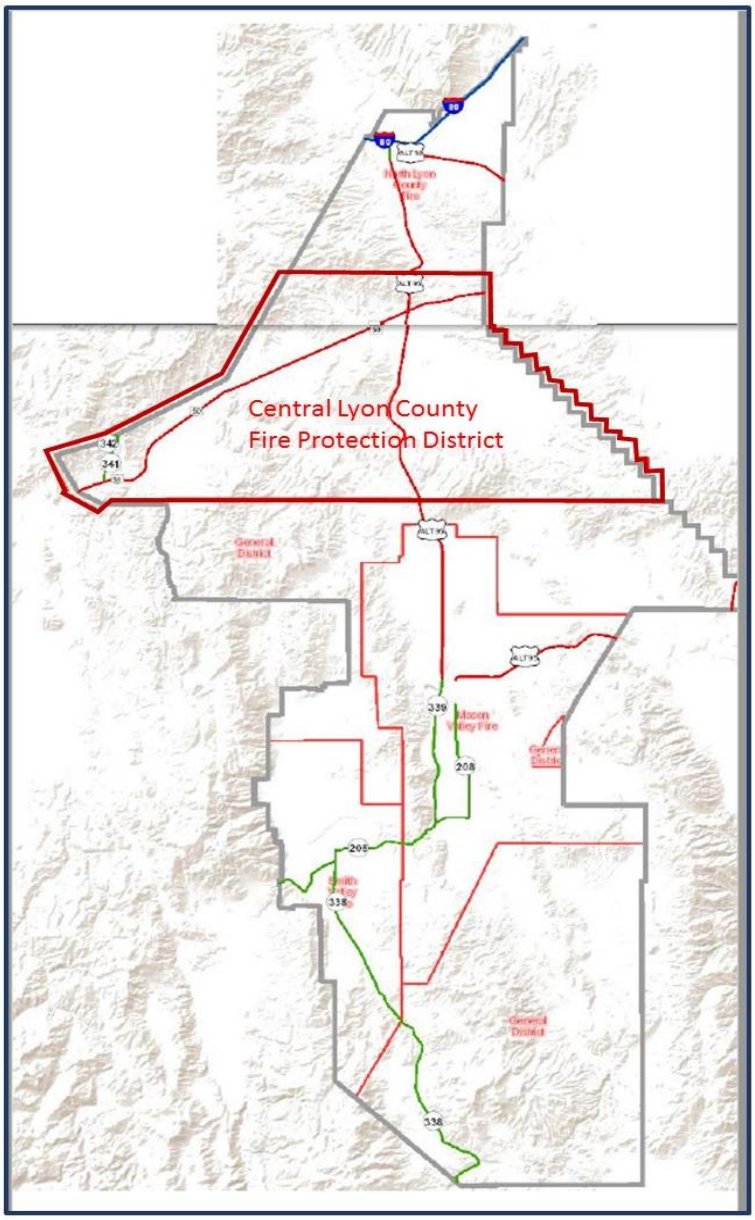
Yerington is the county seat located nearly in the center of Lyon County, Nevada. Lyon County has been one of the fastest growing County's in the nation due to its ideal business location being just minutes away from Reno and Carson City. Economic Development for the City of Yerington is a function administered by the City Manager.
The City of Yerington is seeing an increase in residential infill projects and continues to see an increase in mining and agriculture businesses to the south west. It is anticipated that this growth will continue through 2020.

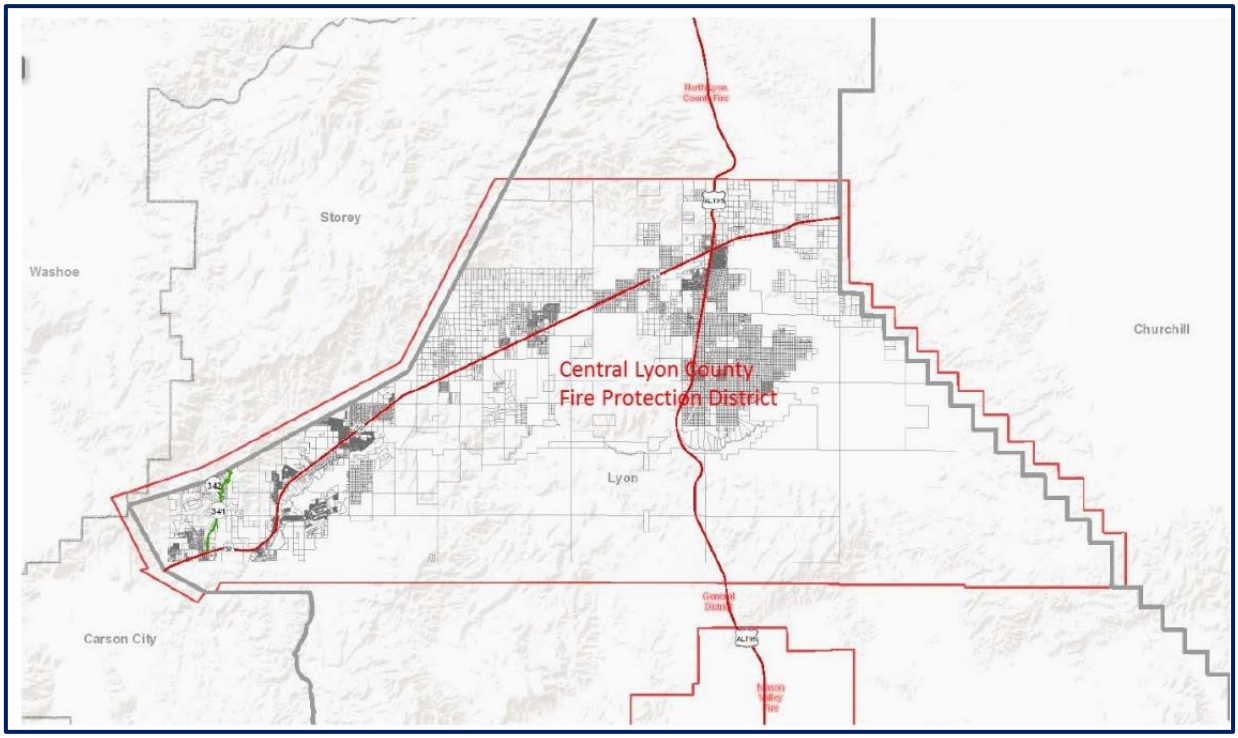
3.4 Central Lyon County Fire Protection District

3.4.1 History, Location, and Geography

The Central Lyon County Fire Protection District (CLCFPD) is comprised of more than a 600 square mile area, with an approximate population of 25,000. The District extends from Mound House at the Carson City County line to the west, east to Silver Springs at the Churchill County line and is bound to the north by Storey County and the North Lyon County Fire Protection District. The southern boundary is Township 15 North.

CLCFPD provides these communities with EMS (Emergency Medical Services) including paramedics and ALS (Advanced Life Support), Fire Suppression, all hazard emergency response and public education.





3.4.2 Government

The district is organized under the provisions of NRS Chapter 474 and is under the direction of an independent generally elected Fire Board of Directors. This District is governed by five directors elected at large, ease representing a designated area within the Fire District.

Board of Directors

District 1 District 2 District 3

District 4 District 5

The district is a combination organization with three branches of participation: Volunteer, Reserve and Career. The district currently has seven stations to serve the 600 square mile area.

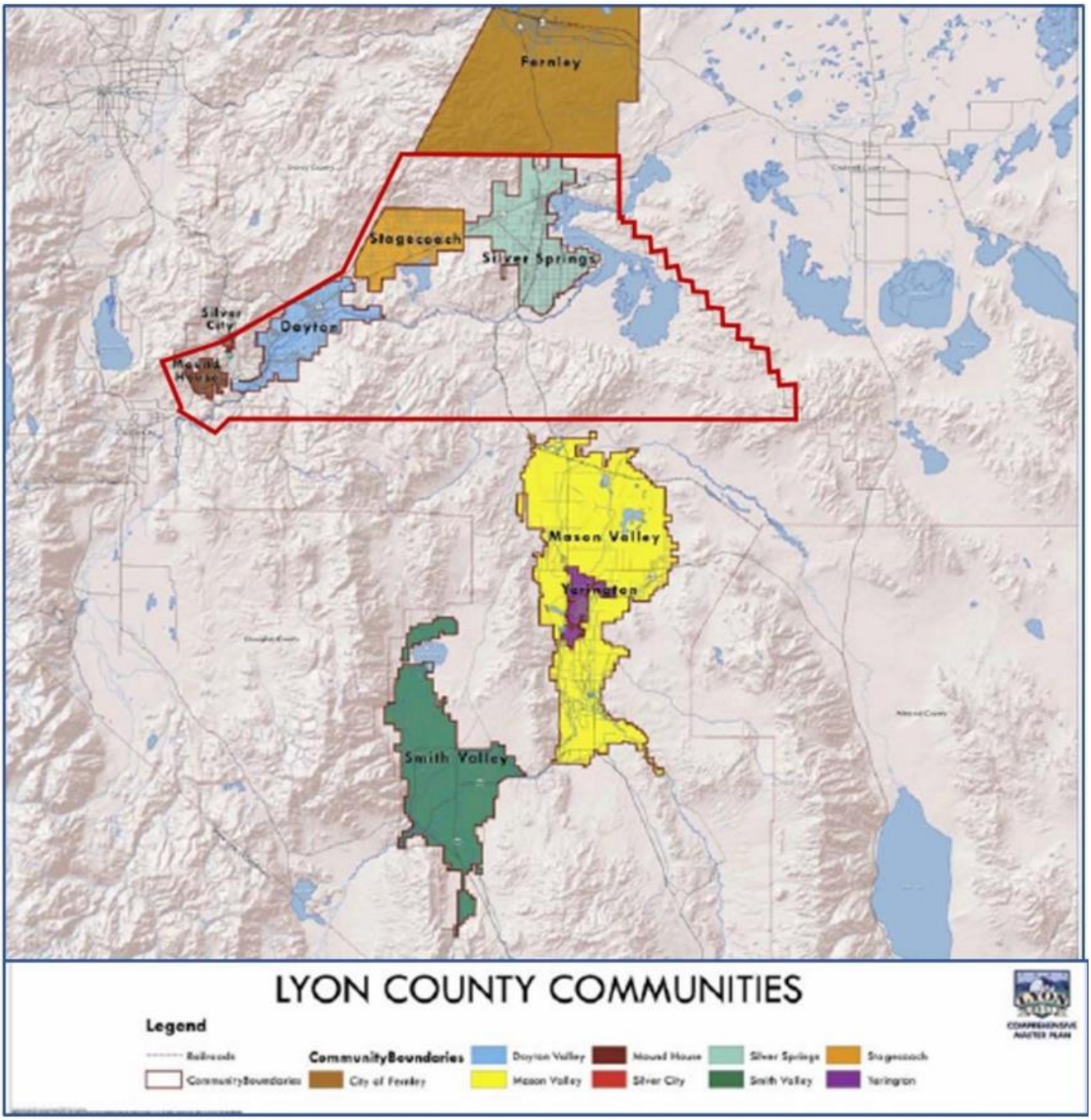
Table 3-2 CLCFPD Stations

Station Number	32	34	35	36	37	38	39
Service Area	Silver Springs	Silver City	Dayton/Sutro	Moundhouse	Stagecoach	Mark Twain	Dayton Valley
Branch	Volunteer	Volunteer	Career	Career/Volunteer /Reserve	Volunteer	Career/Volunteer /Reserve	Volunteer

3.4.3 Demographics

As stated above the CLCFPD serves a 600 square mile area of Lyon County. Within this area are the cities/towns of Moundhouse, Silver City, Dayton, Stagecoach and Silver Springs.

According to the 2010 U.S. Census Bureau Lyon County, Nevada had a population of 51,980. The service area that CLCFPD serves of Mound House had 16,878; Silver City had 215; Dayton, NV had 8,964; Stagecoach had 1,874 and Silver Springs had 5,296.



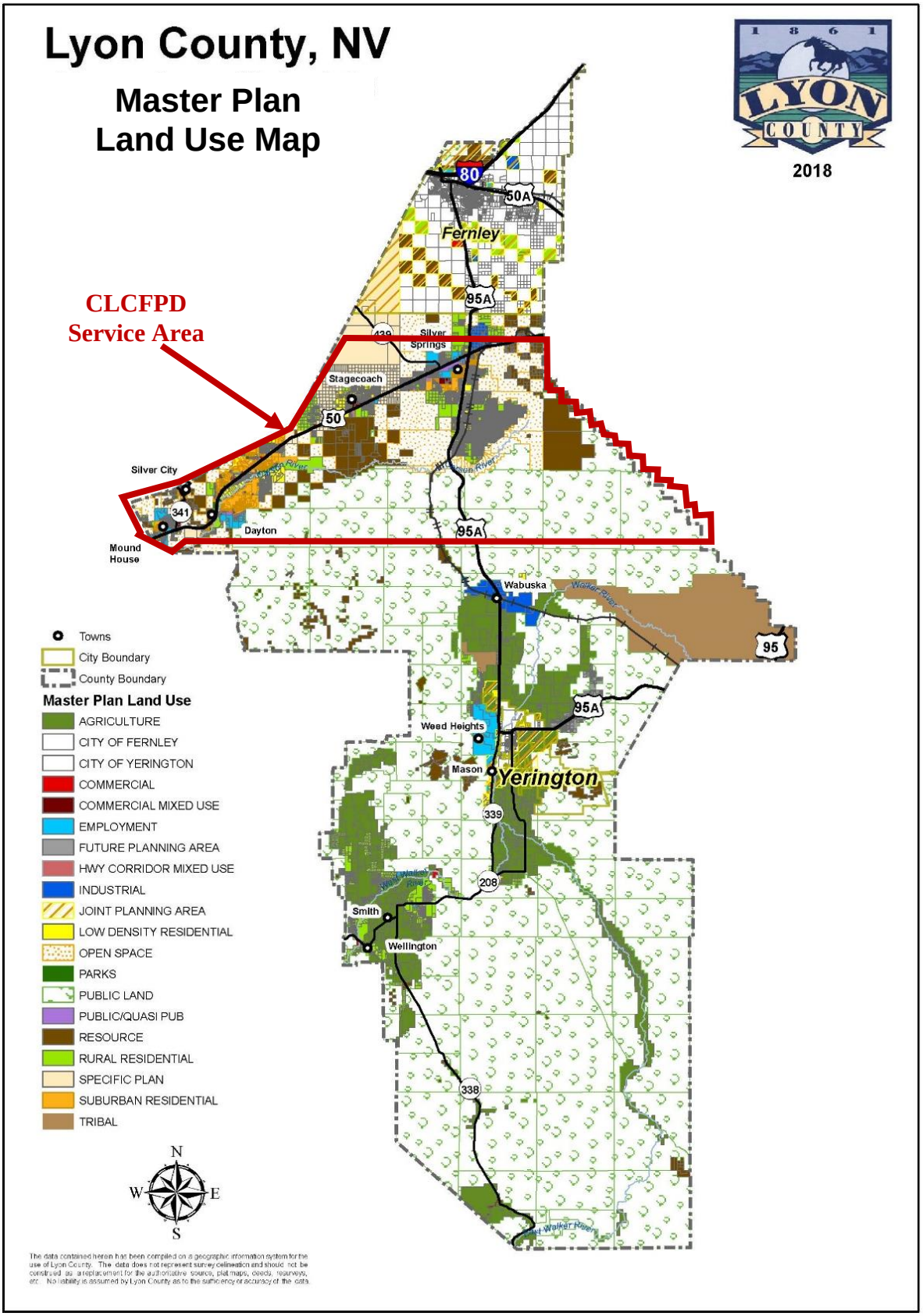
3.4.4 Land Use and Development Trends

The CLCFPD serves a majority of the developed (populated) areas of Lyon County. As such Lyon County's population growth over the next five years is expected to range from .7 to 1.3 percent annually, increasing from 55,124 in 2018 to 57,181 in 2023. It is unlikely growth will be less than the forecasted rate, but could accelerate based on regional economic development. Based upon input from the community and County leadership an overall approach for future growth and development in the County was identified and is explained in the Lyon County Comprehensive Master Plan - December 2010. Lyon County is approaching growth utilizing the "Community Core Concept," which encourages growth and development in and around the existing community cores (towns and established settlement areas) such as Moundhouse, Dayton Valley, Dayton/Sutro, Mark Twain areas, Stagecoach and Silver Springs; with a strong focus on balancing residential, employment, and retail uses. The concept encourages less growth in the unincorporated areas and promotes alternative development and conservation approaches for area of environmental significance or hazardous features, such as steep slopes, wetlands, or flood plains.

The Lyon County Master Plan establishes a planned pattern for development in the County and is designed to promote sound land use decisions. The master plan provides sufficient land for residential, commercial, agricultural, industrial, and public uses and locates these uses appropriately in order to enhance community balance and character; to preserve and protect important natural resources; and to enable the County to provide adequate public services to the community. These public services include the CLCFPD.

The land use map directs urban development to the northwestern area of the county, where it is intended that more intensive, mixed uses, conducive to an urban environment will, over time, be encouraged. With 8,637 residential lots in the planning stages, development will proceed slowly and carefully to mitigate impacts to existing residents. The majority of the population of Lyon County is located in the areas served by the CLCFPD.

In response to the planned increase in population, Central Lyon County Fire Protection District continues to provide services in the way of Plan Review, Inspections and Fire Investigations. The District offers programs and services to provide and outreach and education to the public within the services areas and within Lyon County. Such public education and outreach include Free Smoke Detectors to the public, Free Blood Pressure Screenings, CPR/AED and First Aid Training, Fire Extinguisher Training, Child (Car Seat) Safety Inspections, Defensible Space Education and outreach for homeowners and the Juvenile Fire Setter Program.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This section provides an overview of the planning process; identifies Emergency Coordination 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 update to the MJHMP.

Additional information regarding the Emergency Coordination 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

4.1 OVERVIEW OF PLANNING PROCESS

The County and Cities assisted by Lyon County Planning staff and the State of Nevada, Hazard Mitigation Officer prepared this update to the MJHMP. Each section of the initial MJHMP plan was reviewed for content and the committee revised every section of the plan. The first step in the planning update process was to establish an Emergency Coordination Committee composed of existing County, City of Fernley, and City of Yerington, and other agencies. Jeff Page, Lyon County Emergency Manager, Mayor Roy Edington, Jr. of the City of Fernley, and City Manager, Dan Newell of the City of Yerington, served as the primary Points of Contact (POC) for the County, and Cities and the public.

Once the Committee was formed, the following five-step planning process took place during the 7-month period from January 2018 to July 2018.

• **Organize resources:** The Committee identified resources, including County, Cities, staff, tribe, agencies, and local community members, which could provide technical expertise and historical information needed in the development of the update to the MJHMP.

• **Assess risks:** The Committee identified the hazards specific to the County, and developed the risk assessment for the 20 identified hazards. The Committee reviewed the risk assessment, including the vulnerability analysis, prior to and during the development of the mitigation strategy. Some of the hazards that were ranked as Low were not further evaluated for this update, in order for the group to focus on the "High" and "Medium" ranked hazards in the 7 month time frame to update this MJHMP. These "Low" hazards included: Avalanche, Expansive Soil, Tsunami and Seiche.

• **Assess capabilities:** The 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 Committee worked to develop a comprehensive range of potential mitigation goals, objectives, and actions. Subsequently, the Committee identified and prioritized the actions to be implemented.

• **Monitor progress:** The 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 Committee

As previously noted, the planning process began in January 2018. The Committee, was formed from attendees at all meetings and utilizing staff from the Emergency Coordination Committee (ECC), relevant County, City agencies, and community organizations. The Committee members are listed in Table 4-1. The Committee meetings are described in section 4.2.2. Meeting minutes, hand-outs and table-top exercise information are provided in Appendix C.

Table 4-1. Hazard Mitigation Plan Update Committee

Name	Department	Contribution
Bunny Bishop	NV Division of Water Resources	Attended meetings;
Bert Bryan	Walker River Irrigation District	Attended meetings; Reviewed Plan and provided edits and information
Michael Carlson	Lyon County Sheriff's Office	Attended meetings; Reviewed Plan and provided edits and information
Craig DePolo	NV Bureau of Mines & Geology	Attended meetings; Reviewed Plan and provided information and history of the Hazard Earthquake
Shari Dues	Lyon County School District	Attended meetings; Reviewed Plan and provided edits and information
Roy Edington	Mayor-City of Fernley	Attended meetings; Reviewed Plan and provided edits and information
Bill Elliott	NV Department of Emergency Management	Attended meetings; Reviewed Plan and provided edits and information
Josh Foli	Lyon County Comptroller	Attended meetings; Reviewed Plan and provided edits and information
Mark Fox	Nevada Highway Patrol	Attended meetings; Reviewed Plan and provided edits and information
Jeanne Freeman	Quad-Co Public Health Prep.	Attended meetings; Reviewed Plan and provided edits and information
Amy Geddes	Lyon County Library	Attended meetings; Reviewed Plan and provided edits and information
Dave Groneman	Central Lyon County Fire Protection District	Attended meetings; Reviewed Plan and provided edits and information
Rob Holley	Dayton Valley Conservation District	Attended meetings; Reviewed Plan and provided edits and information
Scott Huntley	North Lyon County Fire Protection District	Attended meetings; Reviewed Plan and provided edits and information
Tammy Kinsley	Lyon County Community Development - Planning Division	Attended meetings; Reviewed Plan and provided edits and information
Tim Logan	Lyon County School District	Attended meetings; Reviewed Plan and provided edits and information
Erin Lopez	Lyon County Manager office	Attended meetings; Reviewed Plan and provided edits and information

Rob Loveberg	Smith Valley Fire and Protection District	Attended meetings; Reviewed Plan and provided edits and information
Al McNeil	Lyon County Sheriff's Office	Attended meetings; Reviewed Plan and provided edits and information
Abel Ortiz	Lyon County Sheriff's Office	Attended meetings; Reviewed Plan and provided edits and information
Cari Rioux	Quad-Co Public Health Prep.	Attended meetings; Reviewed Plan and provided edits and information
Eric Schmidt	Do Co. Lyon County GIS	Attended meetings; Reviewed Plan and provided edits and information
Erin Singley	Lyon County Assessor	Attended meetings; Reviewed Plan and provided edits and information
Chris Smallcomb	NOAA	Attended meetings; Reviewed Plan and provided edits and information
Jessica Smith	Walker River Irrigation District	Attended meetings; Reviewed Plan and provided edits and information
Darren Wagner	Yerington Police Department	Attended meetings; Reviewed Plan and provided edits and information
Janell Woodward	NV Department of Emergency Management	Attended meetings; Reviewed Plan and provided edits and information
Mike Workman	Lyon County Utilities	Attended meetings; Reviewed Plan and provided edits and information

4.2.2 Participants

- Lyon County
- City of Fernley
- City of Yerington
- Lyon County Sheriff's Office
- Lyon County School District
- Lyon County Utilities Department
- Lyon County Library
- Central Lyon County Fire Protection District
- North Lyon County Fire Department
- Nevada Highway Patrol
- NOAA
- Smith Valley Fire Protection District
- Walker River Irrigation District
- Bureau of Mines and Geology, UNR
- Nevada Department of Emergency Management
- Yerington Police Department

▪ Quad- County Public Health Preparedness

4.2.3 Emergency Coordination Committee Meetings

• *January 25, 2018*

During the kick-off meeting, at the Lyon County Administrative Building the Committee discussed the objectives of the DMA 2000, the hazard mitigation planning process, the public outreach process, and the steps involved in developing the update to the MJHMP and achieving the County's and the Cities goals. A presentation on Hazard Mitigation and the process to update the plan was presented by Lyon County Planning staff. The planning process was discussed including the purpose of the plan. Also the 2013 Hazard Mitigation Actions were handed out to the group along with the existing plan documents for Lyon County. The group conducted a table-top exercise to rank the hazards for Lyon County, the Cities of Fernley and Yerington for this update. The 2013 ranking and the State of Nevada's ranking was provided to the group as a current reference.

• *March 7, 2018*

At the second meeting to update the plan, the group reviewed and discussed the hazard ranking outcomes from the first meeting attendees. It was discussed to possibly move Infestation to a Medium risk, instead of a Low risk. It was also decided that the hazards Volcano, Tornado and Tsunami/Seiche would be removed from the assessment as no history of occurrence has taken place in the County or cities in the past ten years, for these hazards, but could be added to future plans if these hazards have impacts in the future. The specific hazards evaluated for recent history and to gather information, were Drought, Epidemic, Hazardous Materials, Infestation, and Terrorism/WMD. Mayor Edington of Fernley stated that during a drought, there is the possibility of wells going dry, and the re-drilling of wells can occur. It was recommended that we contact the state for the number of wells in Lyon County that may have gone dry during the last drought. It was decided by the group to revisit the hazard Infestation, after community input has been received.

• *April 26, 2018*

At this meeting the group discussed edits to Sections 1 through 5 based on comments and edits received. The hazards Earthquake, Expansive Soils, Flood, Land Subsidence and Wildfire were discussed. Presented at the meeting were the updated maps for Earthquake faults and wildland fire history since 2000. The group decided to remove Expansive Soil from evaluation because Lyon county and cities do not have a history of this hazard. The group reviewed the Sections 6 Vulnerability Assessment and Section 7 Capabilities Assessment from the current 2013 HMP and decided to update the plan to have all three jurisdictions in the section and then refer back to the specific tables for each in the Appendix F through H. It was also decided that we would utilize current Assessor and GIS information for the Vulnerability Assessment.

• *May 31, 2018*

During the meeting the group received a presentation on Severe Winter Storm and Extreme Snowfall from Chris Smallcomb of NOAA. During his presentation he discussed key points of the number of days with an event where 77. The most frequent weather hazards are high wind or heavy snowfall and flooding events. The majority or the reporting took place during a severe drought which spanned 2012 to 2016. Dust storms, extreme heat and wildland fire related to flash flood became a concern during this period. He introduced to the group the Data source of www.ncdc.noaa.gov/stormevents. He discuss notable weather events and discussed the future impact potential of weather hazards based on a ranking of high risk, moderate risk and low risk. Also during this meeting the Hazard, Terrorism/WMD was presented by Sheriff McNeil. He presented information from the RAND think tank and presented information on Agro-terrorism as Lyon County and the cities have a high risk to this hazard as there are large producing agricultural and livestock producing businesses in this area of Nevada. Other hazards reviewed and edited for the update were Dam/Canal Failure and Volcano. It was decided that Canals be added to the hazard Dams and that Volcano, not be evaluated further in this update, due to no significant history. Public Outreach was discussed. A hard copy of the Mitigation Questionnaire was presented and handed out to the group for their input on the questions and if any other information should be added or deleted. It was decided that we would have the questionnaire available online and be put on the County and Cities' websites with a link to the online questionnaire to reach more citizens. Also made available at the County public table outside the Board of Commissioners meeting room.

June 2, 2018 – Public Outreach Event

A public information and event booth was set up with the Central Lyon County Fire District and in coordination with the Carson Water Subconservancy District at the Oodles of Noodles event on Saturday, June 2, 2018. At this public event the current 2013 MJHMP document was available and the Mitigation Questionnaire and link to the online Questionnaire was handed out to the general public. Also at this event large size maps of the Hazards, Earthquake, Flood and Wildland Fire were on display for the public to view and ask questions. Sign-in sheets were available for those citizens wanting more specific information on the MJHMP and copies of maps for their specific areas of the county. 100 questionnaire cards were distributed.

• *July 18, 2018*

This was the last meeting of the committee. At this meeting the information received from the online questionnaire and the hard copy questionnaire were discussed with the group. The rankings of the hazards by the group and the ranking of the hazards from the community were discussed. Although the general public ranked the hazards Terrorism/WMD as Low, it was decided by the group, that it should remain as Medium and that Extreme Heat ranked by the public as High would remain as medium also. Infestation was moved to Low based on the public's ranking of this hazard. At this meeting the Mitigation Goals were reviewed again and the Goals and Potential Actions were ranked using FEMA's tool the STAPLE+E. Each committee member ranked the 55 actions in the plan update. To evaluate the High Priority

Actions and Mitigation Projects. Final edits were received from the group and the next steps to complete the 2018 update were discussed.

4.3 PARTICIPATION AND PUBLIC INVOLVEMENT

In May 2018, the County distributed a questionnaire to the public through the County and City offices. All entities were able to put a link to the online questionnaire on their local webpages and through social media. In addition the questionnaire and information regarding the plan update was distributed at a public event, "Oodles of Noodles" in Dayton, Nevada on June 2, 2018. Also information of the plan update was posted in the local paper. The press release can be found in Appendix C. The questionnaire and the results can be found in Appendix D. The information gathered from the public response was evaluated and considered by the Local Emergency Planning Committee during their development and prioritization of the mitigation strategy. The response to the questionnaire was good, with receiving 33 online responses and 10 written responses. The information gathered, aided in the Planning Committee to re-review the hazard rankings and finding that the committee and overall consensus from the public received responses were exactly in line with each other, meaning that the committee and general public ranked the hazards the same. The County also emailed letters to the neighboring Counties, and other State and local entities, regarding the update of the MJHMP to the following:

- State NDEM, NDOT, NDWR
- State Assembly & Senate Representatives
- City of Fernley
- City of Yerington
- Counties of Carson City, Churchill, Douglas, Mineral, Storey and Washoe
- Dayton Valley Conservation District
- Carson Water Subconservancy District
- Dayton Area Chamber of Commerce
- National Weather Service (NOAA)
- Yerington Paiute Tribe
- NV Energy
- SWG
- NVDPS
- East Fork Fire
- Quad-County Public Health Preparedness

4.4 INCORPORATION OF EXISTING PLANS AND OTHER RELEVANT INFORMATION

During the planning process, the Committee reviewed and incorporated information from existing plans, studies, reports, and technical reports into the MJHMP. A synopsis of the sources used follows in Table 4-2. The Lyon County Manager, Jeff Page, who is also the County's Emergency Manager, the Fernley City Manager and the Yerington City Manager have the ultimate responsibility for initiating the monitoring, evaluating and updating of the activities along with the personnel of the ECC.

Table 4-2

Incorporation of Existing Plans and Studies	
Lyon County	
Plan/Study	**Findings/Incorporation**
Lyon County Comprehensive Master Plan 2010	This document is a general, long-range, policy and implementation guide for elected and appointed officials in making choices concerning the overall needs, growth and development of the County and its communities. It outlines the County's vision and goals for the future and forms the basis for other County plans and regulations.
Lyon County Title 12 Flood Control, Chapter 1, (2010)	It is the purpose of this chapter to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed: A. To protect human life and health; B. To minimize expenditure of public money for costly flood control projects; C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; D. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; E. To ensure that potential buyers are notified that property is in an area of special flood hazard; F. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; and G. To maintain eligibility for state and federal disaster relief. (Ord. 543, 6-17-2010)

State of Nevada Enhanced Hazard Mitigation Plan 2013	The standard version of the SHMP was originally submitted by the Nevada Division of Emergency Management (NDEM) and approved by FEMA in 2004; it was updated in 2007, updated and enhanced in the 2010 iteration. Since 2010, the Nevada Hazard Mitigation Planning Committee (NHMPC), NHMPC Planning Subcommittee, NDEM staff Nevada Bureau of Mines and Geology staff at the University of Nevada Reno contributed to the current 2013 update of the Enhanced State Hazard Mitigation Plan (SHMP).
FEMA Flood Insurance Study 32019CV000B for Lyon County October 20, 2016	This Flood Insurance Study (FIS) revises and updates information about the existence and severity of flood hazards in the geographic area of Lyon County, Nevada, including the Cities of Fernley and Yerington and unincorporated areas of Lyon County (hereinafter referred to collectively as Lyon County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Lyon County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development.
Lyon County Title 10, Chapter 7 and Lyon County Building Design Criteria & Building Permit Information 2015	These regulations concern zoning districts, variances, and general development and construction standards within Lyon County. These include the adopted 2012 IBC and IRC codes.
NNICC 2012 Northern Nevada Code Amendments 2013	These regulation amendments concern general development and construction standards within the City of Fernley. These include the adopted 2012 IBC and IRC codes.
Carson River Watershed Regional Floodplain Management Plan (Carson Water Subconservancy District) updated 2013	This plan provides strategies for floodplain management that can be applied regionally as well as locally.
Lyon County Emergency Preparedness Guide	This brochure, funded through the U.S. Department of Homeland Security, is the result of statewide participation from public safety officials and first responders in addressing “Evacuation and Mass Care” preparedness. It was developed to provide helpful tips and techniques to citizens for emergency conditions.

Living with Fire - A Guide for Homeowners – Great Basin Version (2006 edition)	Lyon County Emergency Management has made this information brochure, produced by the University of Nevada Cooperative Extension, to its citizens to inform, mitigate and prepare citizens from wildfire hazard threat.
Winter Storm Brochure	Produced by the National Disaster Education Coalition: American Red Cross, FEMA, IAEM, IBHS, NFPA, NWS, USDA/ CSREES, and USGS. Lyon County has provided this brochure on the Emergency Management website for its citizens to prepare and mitigate for the threat of winter storm hazards.
Carson River Geographic Response Plan 2006	This is a regional plan covering five counties in two states. The plan was developed to protect the health, safety, environment, and property (both public and private) from the effects of hazardous materials incidents in or near the Carson River.
City of Fernley	
City of Fernley Comprehensive Master Plan 2001	The purpose of the Comprehensive Plan, in conjunction with the Fernley Development Code, is to provide a coordinated set of guidelines for decision-making to guide the future growth and development of the City.
2012 International Building. Energy, Mechanical and Plumbing Codes	To ensure quality construction for the City's residents and visitors, by the Building Department. Regulates building construction and occupancy through these codes.
2012 International Fire Code	To ensure quality construction for the City's residents and visitors, by the Building Department. Regulates building construction and occupancy through these codes.
2012 Northern Nevada Amendments by NNICC	To ensure quality construction for the City's residents and visitors, by the Building Department. Regulates building construction and occupancy through these codes.
City of Yerington	
City of Yerington Title 9 and Title 10	These regulations concern zoning districts, variances, and general development and construction standards within the City. These include the adopted 2012 IBC and IRC codes.
City of Yerington Title 12	It is the purpose of this title to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to: A. Protect human life and health; B. Minimize expenditure of public money for costly flood control projects;

	C. Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; D. Minimize prolonged business interruptions; E. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and bridges located in areas of special flood hazards; F. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future blighted areas caused by flood damage; G. Ensure potential buyers are notified of property located in areas of special flood hazards; H. Ensure those who occupy the areas of special flood hazards assume responsibility for their actions; and I. Maintain qualifying standards for participation in the national flood insurance program. (1973 Code § 18.01.030)

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

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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 threat 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 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 the Disaster Mitigation Act of 2000 (DMA 2000) and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: RISK ASSESSMENT

Identifying Hazards

Requirement 44 CFR § 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 of the types of all natural hazards that affect the jurisdiction?

Source: FEMA 2008.

The first step of the hazard analysis is the identification and screening of hazards, as shown in Table 5-1. During the January 2018 MJHMP meeting the Committee (comprised of representatives from County departments and agencies, City of Fernley representatives, City of Yerington representatives, other District representatives) reviewed the State of Nevada's identified hazards in the State of Nevada Hazard Mitigation Plan as well as the previous 14 hazards in the 2013 MJHMP. The committee identified 12 hazards (11 natural hazards and 1 human-caused hazard) with the addition of three new hazards to this update which could pose a threat to Lyon County, the City of Fernley and the City or Yerington.

Table 5.1 Identification and Screening of Hazards

Hazard	Should it Be Profiled	New to the Plan?	Explanation
Avalanche	No		***The County does not include the climate and terrain factors necessary for avalanche conditions.***
Dam/Canal Failure	Yes	added Canals	***The County has three Dams and the City of Fernley has one Canal.***
Drought	Yes		***Historical Statewide drought declarations in 2002, 2004, 2007, 2008, 2009, 2010, 2012, 2013, 2014, & 2015.***
Earthquake	Yes		***Historical data for this hazard exists for the County.***
Epidemic	Yes	Yes	***This hazard is addressed in the State Multi-Hazard Mitigation Plan and new information and statistics have come forth during the 2017-2018 year.***
Expansive Soil	No		***No historical record of this hazard in the County.***
Extreme Heat	Yes		***Historically extreme temperatures have occurred, prolonged heat waves are rare.***
Floods	Yes		***Historical data for this hazard exists for the County.***
Hail & Thunderstorm	Yes		***Historical data for this hazard exists for the County.***
Hazardous Materials	Yes		***Hazardous Material facilities are located in the County, with historic occurrences of this hazard. Also major hazardous material transportation routes transect the County.***
Infestation	Yes	Yes	***Weed and insect infestations are known.***
Land Subsidence & Ground Failure	Yes		***Minimal to no historical record of this hazard in the County, but concern exists due to the aquifers beneath a majority of the County.***
Landslide	Yes		***Select portions of the County are vulnerable to slope instability. No significant events in populated areas.***
Severe Winter Storm & Extreme Snowfall	Yes		***Historical data for this hazard associated with Windstorms exists for the County.***
Terrorism/WMD	Yes	Yes	***Mitigation concerns coordinated with the Lyon County Sheriff's office and the State of Nevada Division of Emergency Management.***
Tornado	No		***Minimal to no historical record of this hazard in the County.***
Tsunami/Seiche	No		***No historical record of this hazard in the County.***

Volcano	No		***No historical record of this hazard in the County.***
Wildland Fire	Yes		***Historical and recent data for this hazard exists for the County.***
Windstorm	Yes		***Historical data for this hazard associated with Severe Winter Storms exists for the County.***

Assigning Vulnerability Ratings

During the initial planning meeting the members were tasked with prioritizing the hazards by their total impact to the community. An exercise requiring the members to complete a form, which tabulated their ratings of each hazard was accomplished. The exercise formula took in to 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 the scoring criteria.

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

Table 5-2: Vulnerability Ratings Rubric

	Rank	Frequency	Magnitude/Severity	Warning Time	Duration
Lowest	**1**	1000+ years	1-5% Damaged; No deaths; Local	>48 hrs	1-3 Days
	2	100-1000 years	5-15%; No deaths; City. Community	24 to 48 hrs	4-7 Days
	3	10-100 years	15-30%; < 5 Deaths; County	12 to 42 hrs	8-14 Days
	4	5-10 years	30-50%; > 5 Deaths; State	6 to 12 hrs	15-20 Days
Highest	**5**	0-5 years	50+%; Significant Deaths; Region IX	<6 hrs	20+ Days

While obtaining total scores for each hazard, the members utilized these scores to analyze and prioritize the hazards to focus upon during profiling, vulnerability assessment and mitigation action strategy. Table 5-3 is a summary of the hazards scoring results of both the members present at the meetings and those who provided feedback via email. The Committee members determined that 15 hazards pose a threat to Lyon County, the cities of Fernley and Yerington. Of the 15 hazards, there are three new hazards to this update. They are Epidemic, Infestation and Terrorism/WMD.

Table 5-3 Hazard Ranking Results

Lyon County		
High Risk	**Medium Risk**	**Low Risk**
Wildfire *Earthquake* *Drought* *Windstorm* *Floods* *Hazardous Materials Event*	*Extreme Heat* *Hail and Thunderstorm* *Severe Weather Storm & Extreme Snowfall* *Dam/Canal Failure* *Landslide* *Terrorism/WMD* *Epidemic* *Land Subsidence & Ground Failure*	*Infestation* *Volcano* *Tornado* *Expansive Soil* *Avalanche* *Tsunami/Seiche*
City of Fernley		
High Risk	**Medium Risk**	**Low Risk**
Wildfire *Earthquake* *Drought* *Windstorm* *Floods* *Hazardous Materials Event*	*Extreme Heat* *Hail and Thunderstorm* *Severe Weather Storm & Extreme Snowfall* *Dam/Canal Failure* *Landslide* *Terrorism/WMD* *Epidemic* *Land Subsidence & Ground Failure*	*Infestation* *Volcano* *Tornado* *Expansive Soil* *Avalanche* *Tsunami/Seiche*
City of Yerington		
High Risk	**Medium Risk**	**Low Risk**
Wildfire *Earthquake* *Drought* *Windstorm* *Floods* *Hazardous Materials Event*	*Extreme Heat* *Hail and Thunderstorm* *Severe Weather Storm & Extreme Snowfall* *Dam/Canal Failure* *Landslide* *Terrorism/WMD* *Epidemic* *Land Subsidence & Ground Failure*	*Infestation* *Volcano* *Tornado* *Expansive Soil* *Avalanche* *Tsunami/Seiche*

Central Lyon County Fire Protection District		
High Risk	**Medium Risk**	**Low Risk**
Wildfire *Earthquake* *Drought* *Windstorm* *Floods* *Hazardous Materials Event*	*Extreme Heat* *Hail and Thunderstorm* *Severe Weather Storm & Extreme Snowfall* *Dam/Canal Failure* *Landslide* *Terrorism/WMD* *Epidemic* *Land Subsidence & Ground Failure*	*Infestation* *Volcano* *Tornado* *Expansive Soil* *Avalanche* *Tsunami/Seiche*

All of the jurisdictions ranked the following hazards as a high potential hazard, they are wildland fire, earthquake, drought, windstorm, floods and hazardous materials event. The hazards that pose a medium risk are extreme heat, hail and thunderstorm, severe weather storm and extreme snowfall, dam/canal failure, landslide, terrorism/WMD, epidemic, land subsidence & ground failure and infestation. The remainder hazards, Volcano, Tornado, Expansive Soil, Avalanche and Tsunami/Seiche as reviewed through the screening process were considered to pose no threat to life and property in the County or Cities due to the low likelihood of occurrence or the low probability that life and property would be significantly affected. Although the two hazards Tornado and Volcano, were addressed in the 2013 MJHMP, the Committee decided, that because no historical evidence or occurrences of these hazards has taken place in the County or cities, that they would not be included in this update. Should the risk from these hazards increase in the future, the MJHMP can be updated to incorporate a vulnerability analyses for these hazards. The committee determined that terrorism should be addressed in this public document. However, due to the sensitivity of this hazard, while the risk will be identified, it will not be discussed further in the vulnerability analysis or mitigation strategies.

The high and moderate ranked hazards will be carried through to the Risk Assessment and will be addressed in the Mitigation Strategy. The hazards with a “low” rating will have a Hazard Profile developed but will not be carried through to the Risk Assessment or Mitigation Strategy, as currently and historically those hazards have occurred in unpopulated areas having little to no impact, measureable magnitude, or feasible mitigation actions. The “low” ranked hazards were determined not to be in this update but will be reviewed in future updates in order to monitor the possible impact of these hazards in relation to the growth within the county and the cities, and increasing visitor appeal.

The Lyon County’s Hazard Rating results generally correspond with ratings determined in

the State of Nevada Standard Hazard Mitigation Plan. Earthquake was also ranked high in the State Plan; however, hazardous materials and terrorism are ranked as medium in the State Plan. The Committee and the general public ranked Hazardous Materials as high, which may be due to the many travel corridors that bisect the County and travel through both the City of Fernley and the City of Yerington.

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 44CFR §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 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 and Cities 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 Dam/Canal Failure

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington – High

5.2.1.1 Nature

Dam or a canal failure involves unintended releases or surges of impounded water resulting in downstream flooding. The high velocity, debris-laden wall of water released from a dam or canal failure results in the potential for human causalities, economic loss, lifeline disruption, and environmental damage. While dam failure may involve the total collapse of a dam, this is not always the case as damaged spillways, overtopping from prolonged rainfall, or other problems, including the unintended consequences from normal operations, can result in a hazardous situation being created. The same is for a canal failure. The failure can be a break or breach in a canal wall or embankment, causing damage to property, homes, businesses and environmental damages. Due to the lack of advance warning, failures from natural events, such as earthquakes, or landslides, may be particularly severe.

Dam or canal failure may be caused by a variety of natural events, human-caused events, or a combination thereof. Dam or canal failure usually occurs when the spillway capacity is inadequate and water overtops the dam or canal, or when internal erosion through the dam foundation or canal embankment occurs (also known as piping). Factors contributing to dam or canal failure events are structural deficiencies from poor initial design or construction, lack of maintenance or repair, or the gradual weakening of the dam or canal through the normal aging process.

5.2.1.2 History

In Nevada, there have been no dam failure declarations, however, the following incidents are on record:

- In 1984, the concrete liner of the Bishop Creek Dam in Elko County failed resulting in a 25 cubic feet per second seep. The seep eventually removed approximately 800 cubic yards of material from the toe of the dam (Association of State Dam Safety Officials, 2002).
- In 1985, a mine tailings dam owned by the Oling house Mining Company failed from an embankment collapse from saturation in Wadsworth, Nevada. Tailings were reported 1.5 km downstream.
- In 2005, rainfall runoff overtopped the Schroeder Dam in Beaver Dam State Park located in eastern Nevada by one foot. The top surface of the dam was not damaged, but the downstream face of the dam was severely eroded. Erosion in several of the gullies may have reached as far as the core material. The dam was an earth-fill dam with a thirty-five foot concrete spillway on the east side. Prior to this event the dam was considered a low-hazard dam; mitigation at this site is ongoing.
- In 2006, failure of the Rogers Dam occurred as a result of very high flows in the Humboldt River concrete control sections of the dam were undermined making it

useless. The concrete portion of the dam was completely undercut by four to five feet allowing the river to flow underneath the dam, unimpeded. No one was injured and no property damage was reported. However, the main effect of the Rogers Dam failure was that the reservoir behind the dam is diverted into a canal which provides water to 60 percent of the ranches in the valley, representing about 20,000 acres of land.

- On January 5, 2008, a 50-foot breach failure occurred at the 100 year old earthen "Truckee" canal, owned by the Bureau of Reclamation, but maintained and run by the Truckee Canal Irrigation District, located in the City of Fernley, NV. Approximately 590 properties were damaged. No lives were lost.

Furthermore, many dams and older canals in Nevada suffer from poor design or encroachment of development into the potential floodplain below the dam or canal. As a result, many dams fail to pass an Inflow Design Flood (IDF) inspection commensurate with their hazard potential and size (Association of State Dam Officials, 2002). There however, is no record of dam failure for any dam located in or affecting Lyon County and only one canal breach in 2008. There have been no dam failure or canal failure events in Lyon County or the cities since the last plan update in 2013.

5.2.1.3 Location, Extent, and Probability of Future Events

Lyon County has three "high hazard" dams within its purview: Eldorado Canyon Dam, Sheep Camp Detention Dam and Topaz Dam. Both Eldorado Canyon and Sheep Camp Detention Dams are located by the town of Dayton; Eldorado Canyon Dam is about 3 miles southeast of Dayton and Sheep Camp Detention Dam is about 2 miles northwest of Dayton. Topaz Dam is located in California, but has a high hazard rating from the Nevada Division of Water Resources (NDWR) because failure of Topaz Dam could affect Lyon County, specifically in the towns of Wellington and Smith Valley area. There is one earthen canal located in the City of Fernley.

Additional dams, of lower hazard ratings, are scattered throughout Lyon County, from Fernley, to Smith Valley, to east of Yerington. A map indicating these locations is provided in Appendix B as Figure B-4.

The probability of future dam or canal failures is difficult to determine, due to age of the infrastructure and the unpredictability of climate affects. If a severe winter produces much spring runoff, routine maintenance and inspections of the dams and canals will be required to avoid overtopping and breaches in the structures.

5.2.2 Drought

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington - High

5.2.2.1 Nature

Drought is a normal, recurrent feature of virtually all climatic zones, including areas of both high and low rainfall, although characteristics will vary significantly from one region to another. There is no universally accepted quantitative definition of drought. Generally, the term is applied to periods of less than average or normal precipitation over a period of time sufficiently prolonged to cause a serious hydrological imbalance resulting in biological losses and/or economic losses. Drought differs from normal aridity, which is a permanent feature of the climate in areas of low rainfall. Drought is the result of a natural decline in the expected precipitation over an extended period of time, typically one or more seasons in length. Other climatic characteristics, such as high temperature, high wind, and low relative humidity, impact the severity of drought conditions.

Four common definitions for drought are provided as follows:

- Meteorological drought is defined solely on the degree of dryness, expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- Hydrological drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- Agricultural drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- Socioeconomic drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of weather-related supply shortfall. It may also be referred to as a water management drought.

A drought's severity depends on numerous factors, including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation. Due to its multi-dimensional nature, drought is difficult to define in exact terms and also poses difficulties in terms of comprehensive risk assessments.

Drought differs from other natural hazards in three ways. First, the onset and end of a drought are difficult to determine due to the slow accumulation and lingering of effects of an event after its apparent end. Second, the lack of an exact and universally accepted definition adds to the confusion of its existence and severity. Third, in contrast with other natural hazards, the impact of drought is less obvious and may be spread over a larger geographic area. These characteristics have hindered the preparation of drought contingency or mitigation plans by many governments.

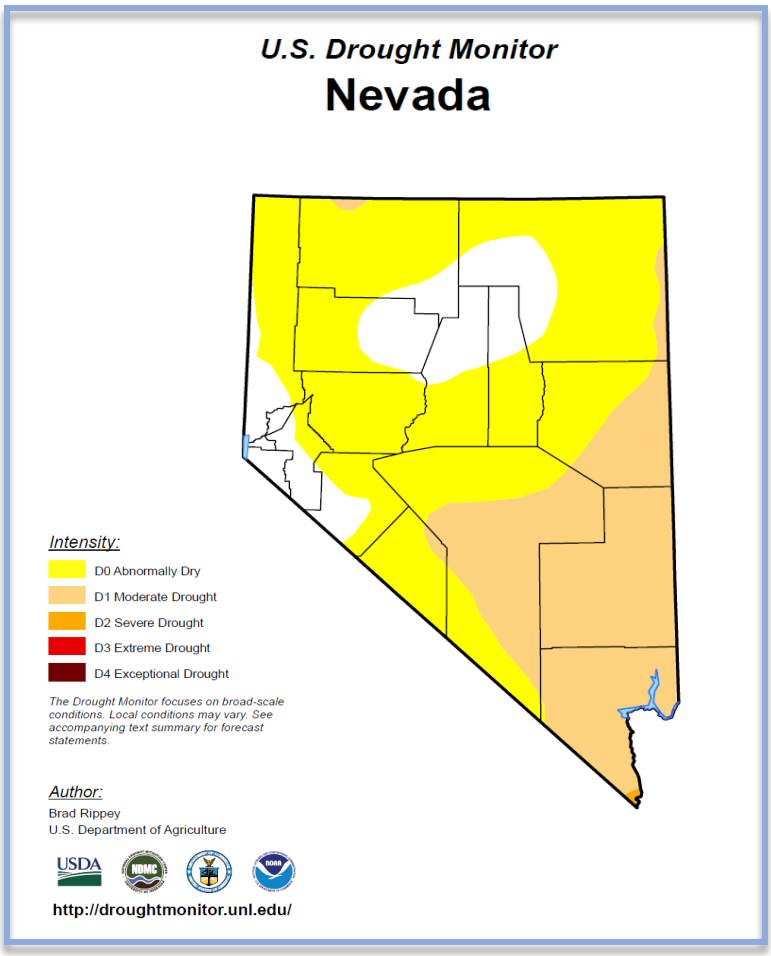
The effects of drought increase with duration as more moisture-related activities are impacted. Non-irrigated croplands are most susceptible to precipitation shortages. Rangeland and irrigated

agricultural crops may not respond to moisture shortage as rapidly, but yields during periods of drought can be substantially affected. During periods of severe drought, lower moisture in plant and forest fuels create an increased potential for devastating wildfires. In addition, lakes, reservoirs, and rivers can be subject to water shortages that impact recreational opportunities, irrigated crops, and availability of water supplies for activities such as fire suppression and human consumption, and natural habitats of animals. Insect infestation can also be a particularly damaging impact from severe drought conditions.

5.2.2.2 History

Nevada is the driest State in the Nation and on average receives less than 15 inches of rain per year. Parts of Southern Lyon County receive and average of up to 25 inches per year, but the majority of Lyon County receives less than 15 inches per year. Despite the low standard for precipitation, drought conditions in Lyon County have been demonstrated on a high frequency cycle every 6 to 10 years in recent history. Based upon the U.S. Drought Monitor, Lyon County experienced periods of drought from the summer of 2001 to April 2005, from 2007 to 2010 and again beginning in 2012. Furthermore, the State of Nevada has experienced two statewide drought declarations since 2002.

Figure 5-2 U.S. Drought Monitor – April 19, 2018



5.2.2.3 Location, Extent, and Probability of Future Events

The occurrence of drought is regional in nature and scope, which holds true for the Lyon County. As illustrated in **Figure 4-3** above, when drought occurs it typically affects the entire County, to include the cities of Fernley and Yerington, Lyon County unincorporated, and the unincorporated communities, as well as the entire State of Nevada.

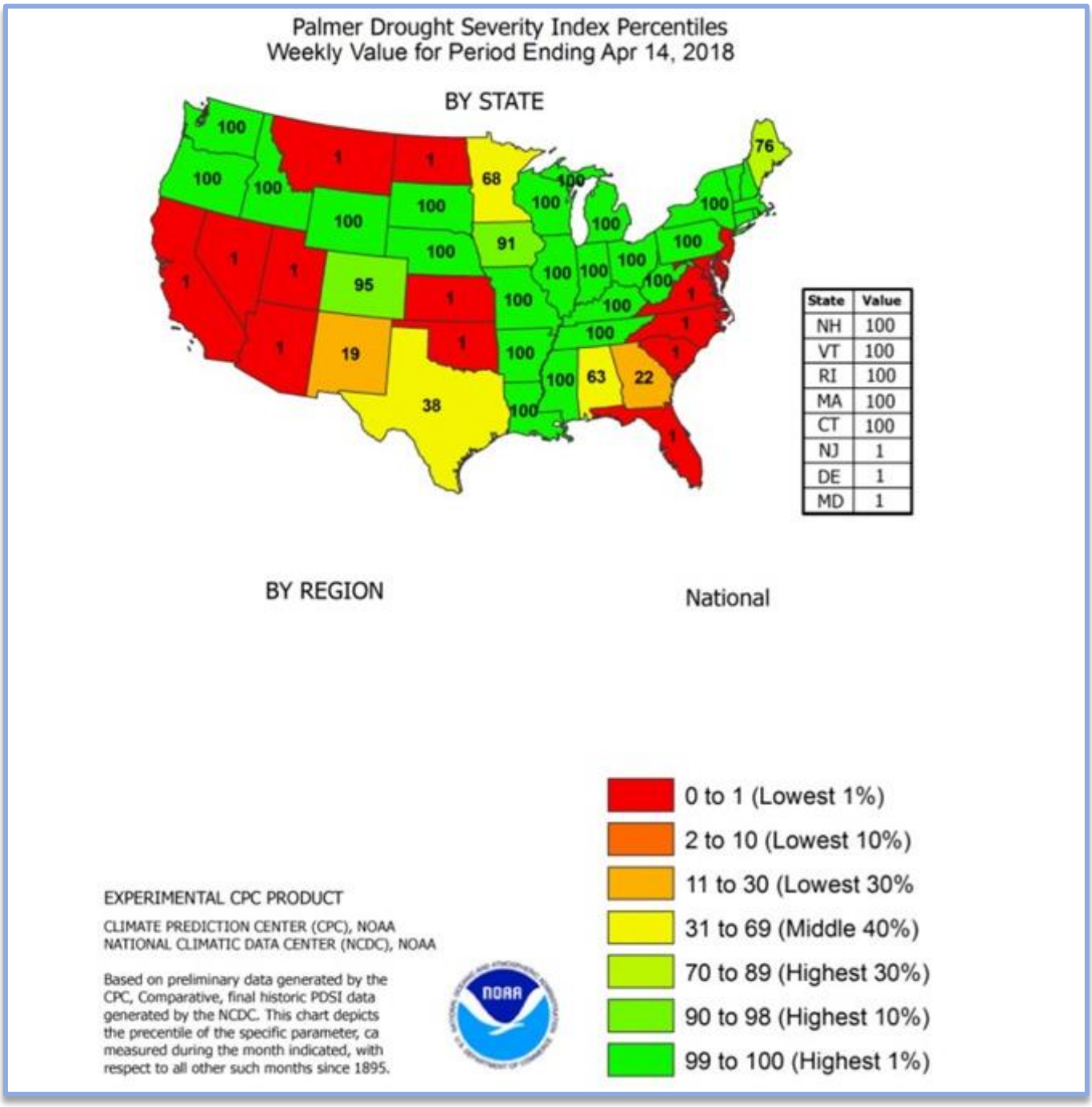
Years of below average flows in rivers are not uncommon and many water users are prepared to cope with one year of low streamflows by resorting to supplemental sources such as reservoirs and groundwater. For most of Nevada's water users, who depend mostly upon surface water, problems can begin to occur when below average flows are experienced for two or more consecutive years. Over time, reservoir and groundwater levels tend to decline due to increased uses and these supplemental sources may become depleted. Droughts can also create quality problems for both surface water and groundwater sources. The decreased flows experienced during a drought tend to result in diminished quality for the remaining water.

Drought conditions occurring in Lyon County can have an impact on the viability of agriculture, industry as well as water recreational activities. Drought conditions would impact the amount of water available for crops grown for commercial and domestic use, and could be reduced by the snow pack available in our local mountain passes, which could have a negative results on the areas water related sporting and tourism activities. Additional impacts to Lyon County industry may include a negative impact on the capabilities of firefighters in the area, as water shortages may result in reduced water flow and pressure available to combat Wildland and structure fires that may take place in the region.

Probability of Future Events: In Lyon County, population growth and water shortages have combined to interact with the natural environment to inhibit both the replenishment of water supplies and the ability of the regional purveyors to deliver water to county residents. From 2009 to 2016 Lyon County saw a population increase by 52.6 percent. This growth continues and Lyon County's Master Plan recognizes the importance of "efficient use of water resources," however, Lyon County still remains highly susceptible to drought. In the past two decades the population served by the SNWA has more than doubled to approximately 1.7 million people. In addition, rainfall has been far below average in the Western States resulting in lower than normal flow in the lower Colorado River.

Drought severity is commonly measured utilizing the Palmer Drought Severity Index (PDSI) developed in 1965. The PDSI measures the departure of moisture from normal conditions by calculating estimated soil moisture from observed temperature and precipitation values. Based on Nevada's history with drought between 1895 and 2005, the northern portion of Lyon County can expect severe or extreme drought at least 15 percent of the time and the southern portion of the County at least 10 percent of the time. (**Figure 5-3**).

Figure 5-3 Palmer Drought Severity Index 2018



State	Value
NH	100
VT	100
RI	100
MA	100
CT	100
NJ	1
DE	1
MD	1

Climate Change:

There is an expectation that the effects of climate change will result in rising snow levels. The rising snow levels will result in a large fraction of winter precipitation falling as rain instead of snow. As a result of the predicted changing precipitation source, maintaining, and creating additional resources will become even more important for storing water supply.

Disruption of services is highly variable: in urban areas with municipal water systems and reservoir storage, disruption may be quite minimal during a typical few -year drought. In that same drought, however, disruption of water supplies to rural and agricultural communities, it may be considerable as those areas depend more on ground water which can be depleted quickly in drought conditions.

Drought is one of the least predictable hazards. The current state of seasonal weather prediction science is such that it is nearly impossible to predict well in advance the beginning or the ending of droughts with meaningful confidence levels. As per the date of this update Lyon County and the cities are not within the drought period that began in 2012. With that said, periods of drought have regularly occurred in the recent history of Lyon County, Nevada, and as such drought can be expected to occur with some regularity in the future.

5.2.3 Earthquake

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington -High

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 can cause massive damage and extensive casualties in a few seconds. Common effects of earthquakes are ground motion and shaking, surface fault ruptures, and ground failure. Ground motion is the vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter. Soft soils can amplify ground motions.
In addition to ground motion, several secondary natural hazards can occur from earthquakes, such as the following:

- **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.

- **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. Pour water 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 can cause severe damage to property.

- **Landslides/Debris Flows** occur as a result of horizontal seismic inertia forces induced in the slopes by the ground shaking. The most common earthquake-induced landslides include shallow, disrupted landslides such as rock falls, rockslides, and soil slides. Debris flows are created when surface soil on steep slopes becomes totally saturated with water. Once the soil liquefies, it loses the ability to hold together and can flow downhill at very high speeds, taking vegetation and/or structures with it. Slide risks increase after an earthquake during a wet winter. The severity of an earthquake can be expressed in terms of intensity and magnitude. Intensity is based on the damage and observed effects on people and the natural and built environment. It varies from place to place depending on the location with respect to the earthquake epicenter, which is the point on the Earth's surface that is directly above where the earthquake occurred. The severity of intensity generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake.

The Richter scale is often used to rate the strength of an earthquake and is an indirect measure of seismic energy released. The scale is logarithmic, with each 1-point increase corresponding to a 10-fold increase in the amplitude of the seismic shock waves generated by the earthquake. However, in actual energy released, each 1-point increase on the Richter scale corresponds to about a 32-fold increase in energy released. Therefore, a magnitude (M) 7 earthquake is 100 times (10×10) more powerful than an M 5 earthquake and releases 1,024 times (32×32) the energy.

The Modified Mercalli Intensity (MMI) scale is another way of rating earthquakes. This method attempts to quantify the intensity of ground shaking. Intensity in this scale is a function of distance from the epicenter (the closer a site is to the epicenter, the greater the intensity at that site), ground acceleration, duration of ground shaking, and degree of structural damage. The MMI rates the level of severity of an earthquake by the amount of damage and the perceived shaking, as shown in **Table 5-4**.

Table 5-4. Modified Mercalli Intensity Scale

MMI Value	Description of Shaking Severity	Summary Damage Description	Full Description
I	Micro	Little to None	Not felt.
II	Minor	Little to None	Felt by persons at rest, on upper floors, or favorably placed.
III	Minor	Hanging Objects Move	Felt indoors. Hanging objects swing. Vibration like passing of light trucks. Duration estimated. May not be recognized as an earthquake.
IV	Light	Hanging Objects Move	Hanging objects swing. Vibration like passing of heavy trucks or sensation of a jolt like a heavy ball striking the walls. Standing motorcars rock. Windows, dishes, doors rattle. In the upper range of IV, wooden walls and frames creak.
V	Light	Pictures Move	Felt outdoors; direction estimated. Sleepers wakened. Liquids disturbed, some spilled. Small unstable objects displaced or upset. Doors swing, close, open. Shutters, pictures move. Pendulum clocks stop, start, change rate.
VI	Moderate	Objects Fall	Felt by all. Many frightened and run outdoors. Persons walk unsteadily. Windows, dishes, glassware broken. Knickknacks, books, etc., fall off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry D cracked.
VII	Strong	Nonstructural Damage	Difficult to stand. Noticed by drivers of motorcars. Hanging objects quiver. Furniture broken. Damage to masonry D, including cracks. Weak chimneys broken at roofline. Fall of plaster, loose bricks, stones, tiles, cornices. Some cracks in masonry C. Small slides and caving in along sand or gravel banks. Concrete irrigation ditches damaged.
VIII	Very Strong	Moderate Damage	Steering of motorcars affected. Damage to masonry C, partial collapse. Some damage to masonry B, none to masonry A. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, and elevated tanks. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Cracks in wet ground and on steep slopes.
X	Very Violent	Extreme Damage	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land.
XI	Very Violent	Extreme Damage	Rails bent greatly. Underground pipelines completely out of service.
XII	Very Violent	Total Damage	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.

Sources: Association of Bay Area Governments 2003; USGS 2009.
Masonry A: Good workmanship, mortar, and design; reinforced, especially laterally, and bound together by using steel, concrete, etc.; designed to resist lateral forces.
Masonry B: Good workmanship and mortar; reinforced, but not designed in detail to resist lateral forces.
Masonry C: Ordinary workmanship and mortar; no extreme weaknesses like failing to tie in at corners, but neither reinforced nor designed against horizontal forces.
Masonry D: Weak materials, such as adobe; poor mortar; low standards of workmanship; weak horizontally.

History

Nevada is the third most seismically active state in the United States (after Alaska and California), with the vast majority of quakes occurring in the western portion of Nevada. Lyon County is located in the Walker Lane belt, which is a transition zone between the strike-slip plate boundary system and extensional tectonics of the Basin and Range Province (where all of Nevada is located). The belt contains many strike-slip faults which in addition to the normal-slip faults lead to a higher earthquake hazard. Four different fault zones are present in Lyon County: Antelope Valley, Smith Valley, Sweetwater and Singatze Range
2008 HAZUS-MH analysis has Nevada ranked 7th nationally in estimated losses ($77.8 million) on an annualized basis due to earthquakes and Lyon County has an annualized earthquake loss of 1.0 to 5.0 million dollars. **Table 5-5** illustrates the large historic earthquakes near Lyon County.

Table 5-5. Large Historic Earthquakes near Lyon County

Date	Magnitude	Near
1994	5.8	Double Spring Flat
1959, March 23	6.3	Dixie Valley
1954, December 16	6.8	Dixie Valley
1954, December 16	7.1	Fairview Peak
1954, August 24	6.8	Stillwater
1954, July 6	6.0	Fourmile Flat
1954, July 6	6.6	Rainbow Mountain
1932	7.1	Cedar Mountain
1852?	7.3	Fallon

Source: Nevada Bureau of Mines and Geology, Presentation to the Nevada Hazard Mitigation Planning Committee. 2011

Small earthquakes occur on a very regular basis, for example, the week of July 25, 2018 a series of rather small magnitude earthquakes occurred around the City of Yerington and the City of Fernley, these ranged in magnitude from .06 to .08. On July 31, 2018 a M1.3 event occurred 4.5 miles southwest of Dayton, NV. However, due to the low magnitude very little
shaking, if any, would have been felt.

Location, Extent, and Probability of Future Events

Figure 5-4 illustrates the locations of the identified fault zones in Lyon County. **Figure 5-5** illustrates the locations of earthquakes in Nevada from 1852 to 2008. The cities of Dayton and Yerington are closer to earthquakes of a higher magnitude, M5 or greater. A number of M4 to M5 earthquakes have occurred in the southern portion of Lyon County, however, most are a significant distance from any city or community.

Figure 5-4. Fault Zones

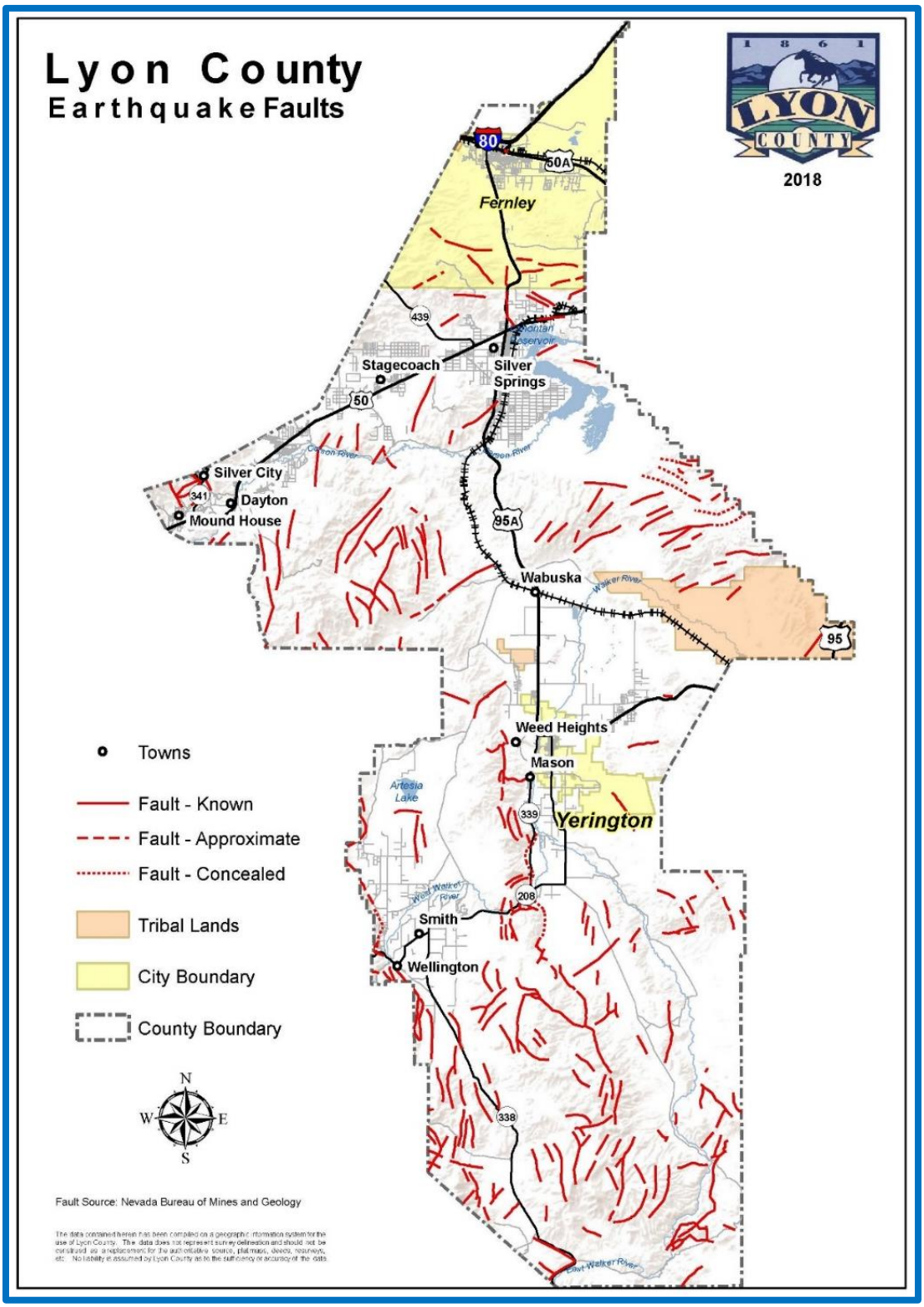
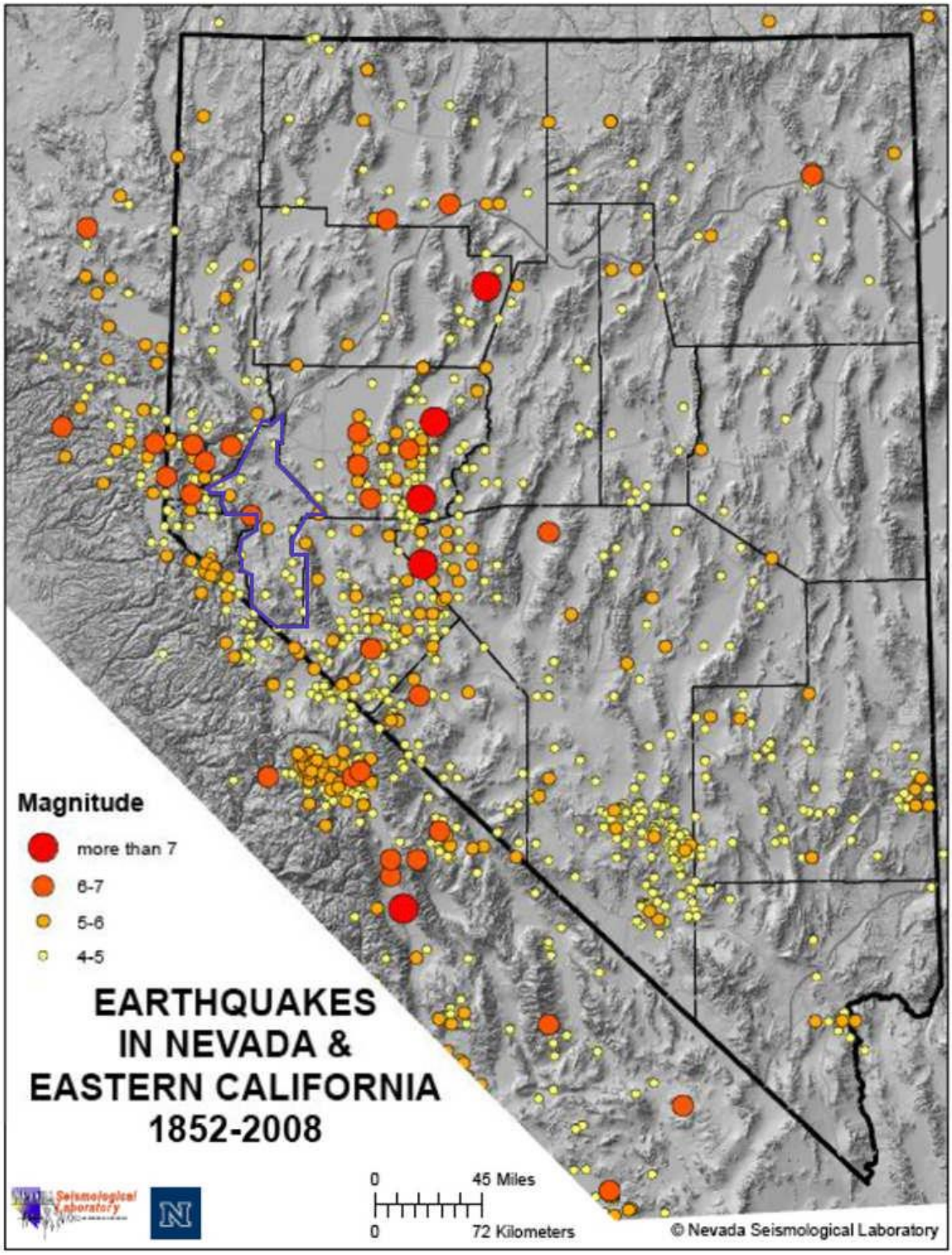


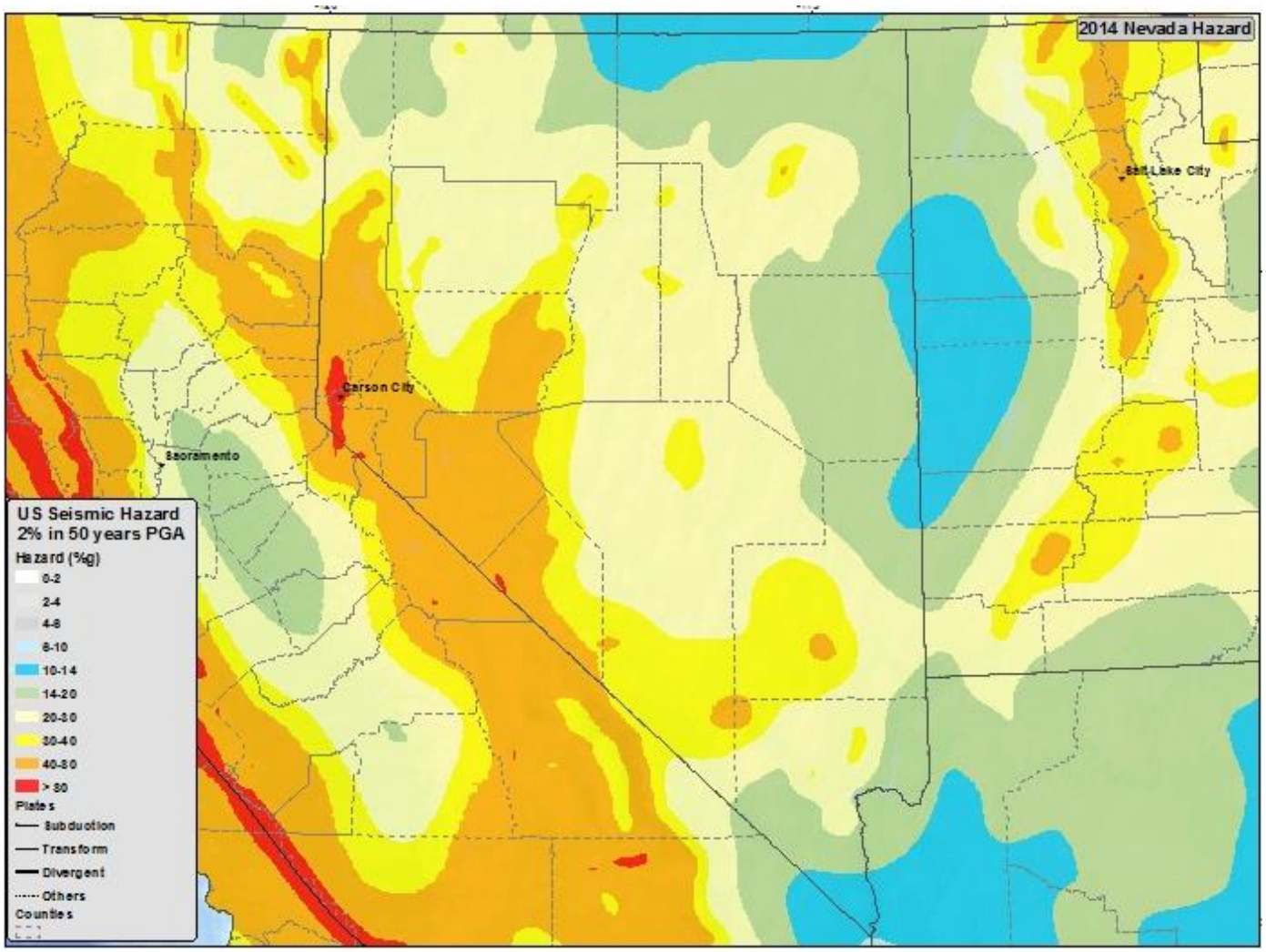
Figure 5-5. Historic Earthquakes



Source: Nevada Seismological Lab

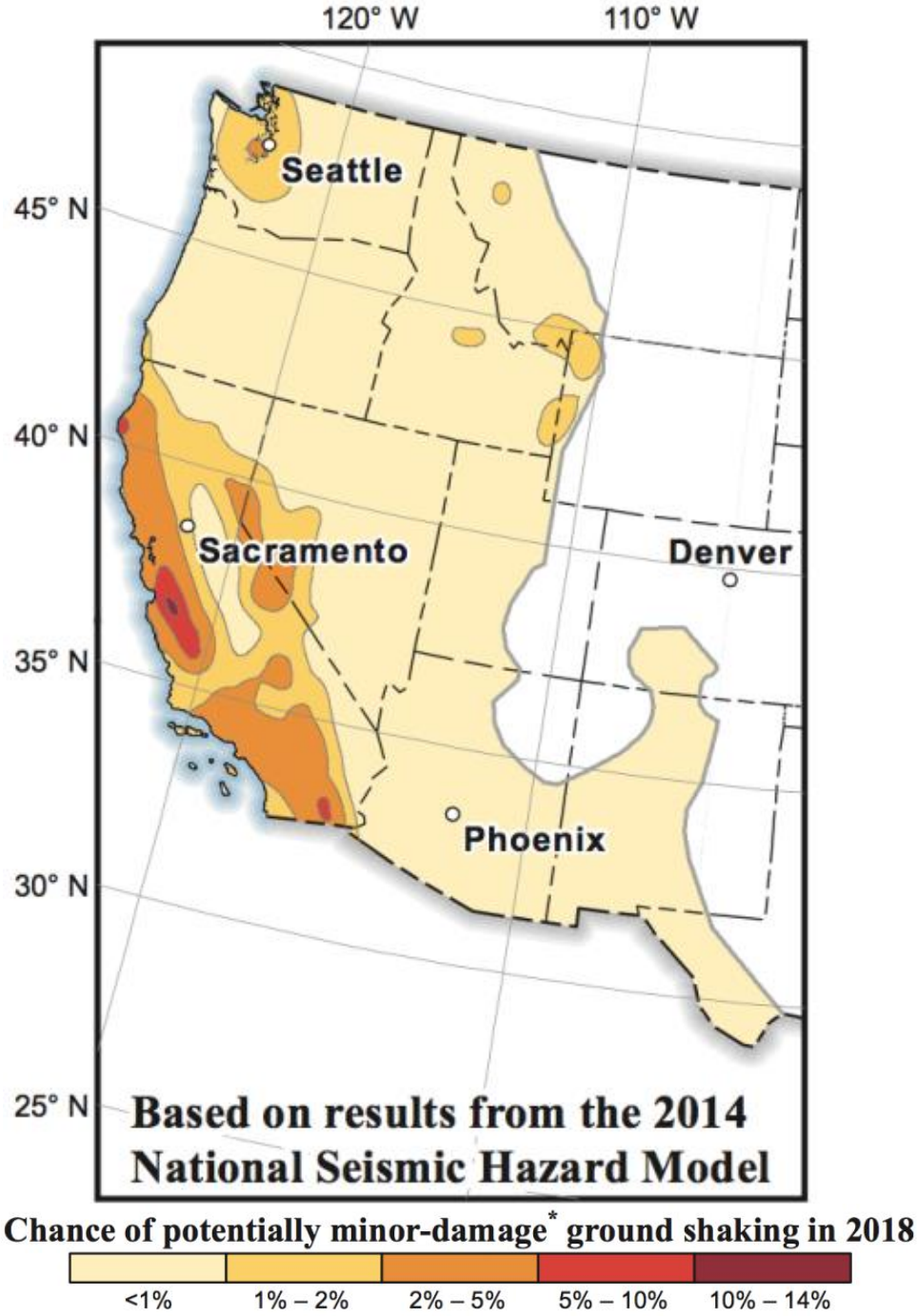
Extent: The strength of an earthquake's ground movement can be measured by peak ground acceleration (PGA). PGA measures the rate in change of motion relative to the established rate of acceleration due to gravity (g = 980 centimeters per second, per second). PGA is used to project the risk of damage from future earthquakes by showing earthquake ground motions that have a specified probability (e.g., 10 percent, 5 percent, or 2 percent) of being exceeded ground motion values are used for reference in construction design for earthquake resistance and can also be used to assess the relative hazard between sites when making economic and safety decisions.

Figure 5-6 Earthquake – 2017 Seismic Hazard Map



Source: USGS Earthquake Hazards Program Information by Region – Nevadahttps://earthquake.usgs.gov/earthquakes/byregion/nevada-haz.php

Figure 5-7 Earthquake Probability 2018 One-Year Model



* equivalent to Modified Mercalli Intensity VI, which is defined as: "Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight."

Source USGS Earthquake Hazards Program https://earthquake.usgs.gov/hazards/induced/index.php#2018

5.2.4 Epidemic

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington - Medium

5.2.4.1 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. An epidemic can result from even one case of illness if that illness is unheard of in the affected population (e.g., 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).

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. The incidences and severity of infectious diseases in the U.S. 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' disease, Lyme disease, toxic shock syndrome, and Ebola virus disease); acquired immunodeficiency syndrome (AIDS) appeared; and tuberculosis (including multidrug-resistant strains) reemerged (Schlipköter & Flahault, 2010).

In a report titled *Emerging Infections: Microbial Threats to Health in the United States*, the Institute of Medicine 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 (1992). 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, centralized processing of the food supply, population growth, and increased urbanization.

In response to the threat of emerging infectious diseases, the Centers for Disease Control and Prevention (CDC) launched a national effort to protect the U.S. public in a plan titled *Addressing Emerging Infectious Disease Threats*. Based on the CDC's plan, major improvements to the U.S. health system were implemented, including improvements in surveillance, applied research, public health infrastructure, and prevention of emerging infectious diseases (Hughes, 1998).

Despite improvements, infectious diseases causing lower respiratory infections, diarrheal diseases, and tuberculosis are among the top ten leading causes of death in humans worldwide (*The top 10 causes*, 2018), and influenza and pneumonia are the eighth leading cause of death in the U.S. (Centers for Disease Control and Prevention [CDC], 2016). Infectious diseases are still a threat to public health today as global interdependence and world travel continue to increase, and our success in combatting these threats depends on our ongoing ability to adapt to and get ahead of these new challenges (Morens & Fauci, 2013).

The CDC has established a list of over 70 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, but is not limited to, the following:

- Anthrax
- Arboviral diseases (including Chikungunya and West Nile virus)
- Babesiosis
- Botulism
- Brucellosis
- Campylobacteriosis
- Chlamydia infection
- Cholera
- Cryptosporidiosis
- Dengue virus infections
- Diphtheria
- Ehrlichiosis and anaplasmosis
- Giardiasis
- Gonorrhea
- *Haemophilus influenzae*, invasive disease
- Hansen's disease (leprosy)
- Hantavirus infection
- Hepatitis (A, B, C)
- HIV infection
- Tuberculosis
- Legionellosis
- Listeriosis
- Lyme disease
- Malaria
- Measles
- Meningococcal disease
- Mumps
- Novel influenza A virus infections
- Pertussis
- Plague
- Poliovirus infection
- Rabies, human and animal
- Rubella
- Salmonellosis
- Severe Acute Respiratory Syndrome-associated coronavirus disease
- Shiga toxin-producing *Escherichia coli*
- Shigellosis
- Smallpox
- Spotted fever rickettsiosis
- Syphilis
- Tetanus
- Toxic shock syndrome
- Tuberculosis
- Tularemia
- Typhoid fever
- Vancomycin-resistant *Staphylococcus aureus*
- Varicella
- Vibriosis
- Viral hemorrhagic fever (including Ebola virus disease)
- Yellow fever
- Zika virus infection ("National Notifiable Diseases Surveillance System", 2018)

5.2.4.2 History

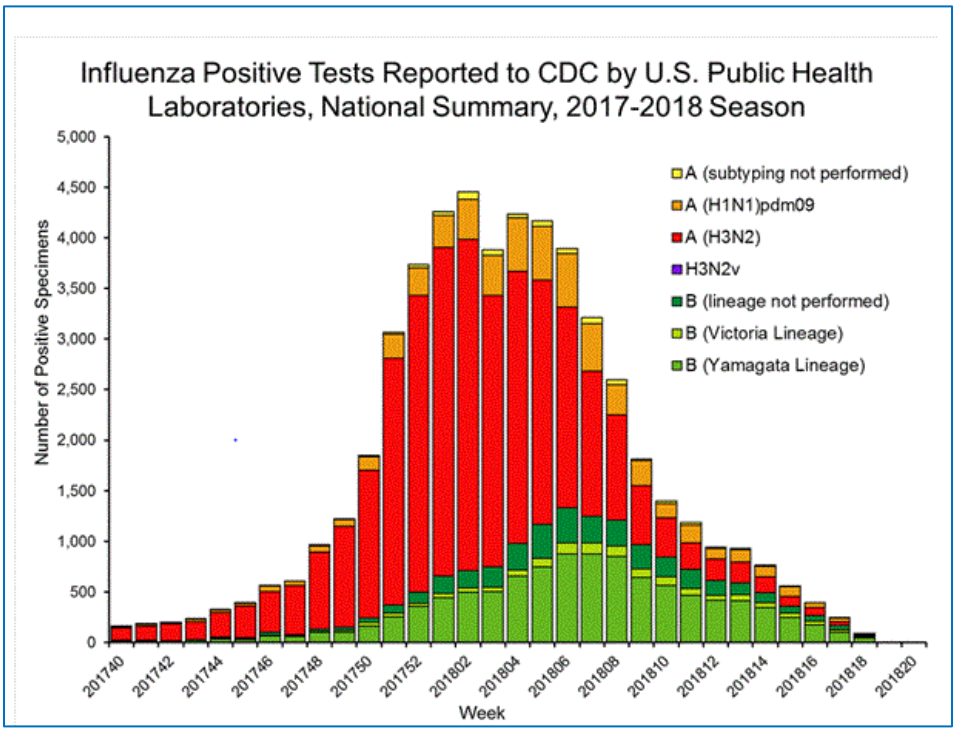
Some recent incidences of major infectious diseases affecting the U.S. include the following:

Influenza

The influenza pandemic of 1918 and 1919, known as the Spanish Flu, had the highest mortality rate in recent history for an infectious disease. At least 50 million persons were killed worldwide, some 550,000 of which were in the U.S. alone (Stern, Cetron, & Markel, 2010).

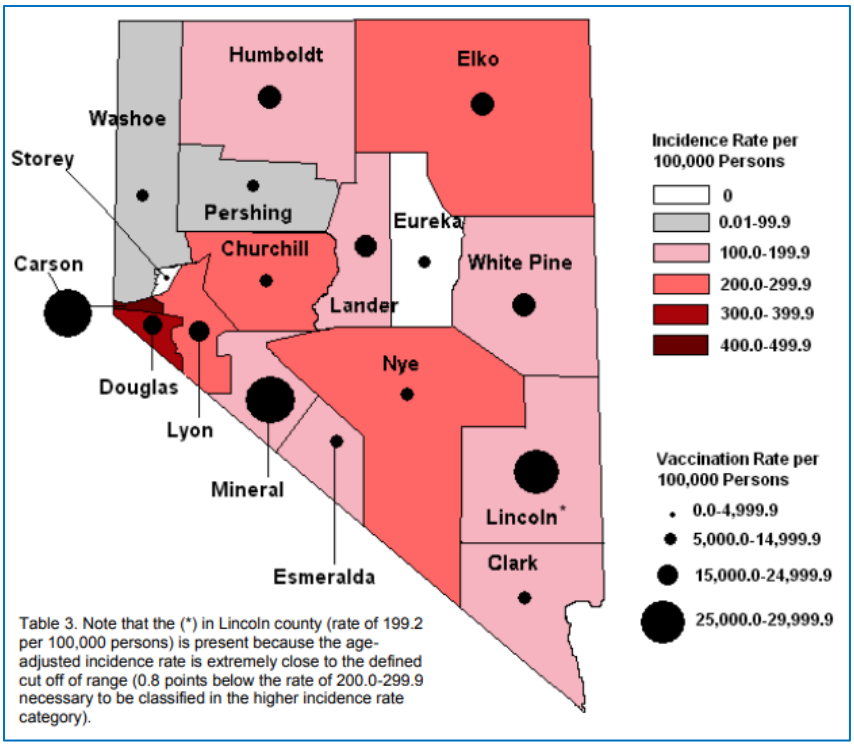
In April 2009, a strain of influenza known as H1N1, or swine flu, was first recognized in Mexico and entered the U.S. in Southern California. H1N1 was recognized as a worldwide pandemic by the World Health Organization in May 2009. H1N1 varied from other influenzas in that it seemed to spare populations born before 1950 due to that group's prior exposure to similar strains (Skountzou et al., 2010). The CDC responded to the novel strain by inoculating the U.S. public through vaccinations. The state of Nevada saw 4,624 cases of H1N1 during the 2009 flu season, with 100 cases in Lyon County (Nevada Division of Public and Behavioral Health, 2013). Although H1N1 had low a mortality rate, the high variability and unpredictable nature of influenza viruses reinforces the need for sustained preparedness efforts (Jhung et al., 2011).

Figure 5-8: Percentage of Visits for Influenza-like Illness (ILI)



Source: U.S. Viral Surveillance – World Health Organization (WHO) Collaborating Laboratories ad National Respiratory and Enteric Virus Surveillance System (NREVSS) with the U.S. Outpatient Influenza-like illness Surveillance Network (ILINet) Posted week ending May 5, 2018

Figure 5-9: Age-Adjusted H1N1 Influenza Incidence and Vaccination by County, 2009-2010



Source: Nevada Division of Public and Behavioral Health Office of Public Health Informatics and Epidemiology. (2013). H1N1 influenza incidence and vaccination rates in Nevada, 2009-2010 (K. Hobron, Author). Retrieved from http://www.dpbh.nv.gov/Programs/OPHIE/Docs/professionalpaper/

West Nile Virus

In late August 1999, an epidemic of West Nile virus (WNV) occurred in the New York City metropolitan area causing 62 cases and 7 deaths. The virus is transmitted by mosquitoes and has since become endemic to the Unites States. There were 2,002 cases and 121 deaths from WNV in the U.S. in 2017, with 53 cases and 2 deaths in the state of Nevada ("West Nile virus", n.d.).

The 1999 epidemic represents the first time WNV had been detected in the U.S. and serves as a reminder that with changes in climate and weather patterns, migration patterns of birds, and other unknown variables, existing or emerging infectious diseases can impact the U.S. at any time (Dalovisio, 2003).

Severe Acute Respiratory Syndrome

Better known as SARS, Severe Acute Respiratory Syndrome is a respiratory illness caused by a coronavirus. According to the World Health Organization (WHO), SARS infected a total of 8,098 people in a 2003 outbreak, and resulted in 774 deaths worldwide. In the United States, there were eight laboratory confirmed cases, with no deaths. All cases were travel-related, and there was no further spread of SARS within the U.S. SARS is thought to be transmitted by close person-to-person contact and through respiratory droplets produced by coughing or sneezing ("Fact sheet", n.d.).

In April 2004, the Chinese Ministry of Health reported nine cases of SARS with one death. Investigations showed the outbreak started as a result of laboratory exposure to the virus ("SARS update", n.d.). There have been no reports of SARS cases anywhere in the world since 2004, but the travel related nature of the illness demonstrates how quickly an infectious disease can be imported into the U.S. from abroad.

Norovirus

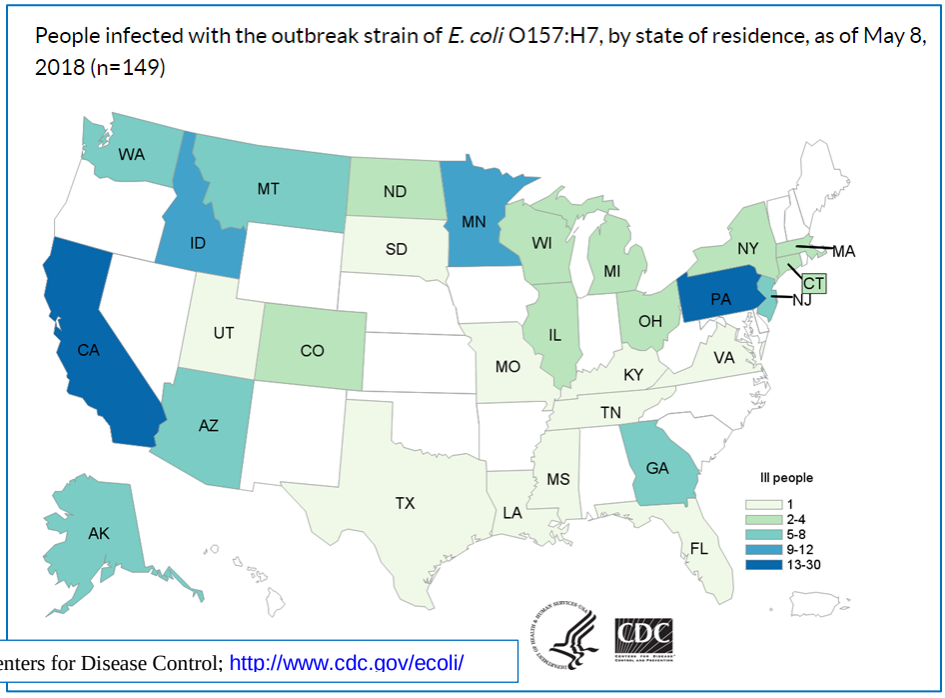
Among all age groups, norovirus is the leading cause of acute gastroenteritis, with 19-21 million cases annually. It contributes to 56,000-71,000 hospitalizations and 570-800 deaths each year. Norovirus is highly contagious and can be transmitted person-to-person or via contaminated food, water, surfaces, or objects. It is responsible for 58% of domestically-acquired foodborne illnesses. Norovirus is most common during the winter, but people can get it any time of the year. There can be up to 50% more norovirus illness in years that a new strain of the virus is circulating ("Burden of norovirus", n.d.).

Escherichia coli

Though many strains of *Escherichia coli*, or *E. coli*, bacteria are innocuous, others can cause illnesses including diarrhea, urinary tract infections, respiratory illness, and pneumonia. Some strains are known as "Shiga toxin-producing" *E. coli*, or STEC, because of the toxin they produce. The most well-known STEC associated with outbreaks in the U.S. is *E. coli* O157:H7 ("*E. coli*", n.d.).

In October 2010, a rare strain of *E. coli* O157:H7 associated with Gouda cheese caused a multistate outbreak. There were 38 total cases across 5 states, including 2 cases in Nevada ("Multistate outbreak", n.d.). The CDC estimates there are 265,000 STEC infections in the United States annually ("*E. coli*", n.d.).

Figure 5-10 E.coli outbreak strain by State



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

Table 5-6: Historic Occurrences of Epidemics Registered in Nevada

Date	Details
Feb 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.
Oct 2004	Norovirus confirmed at a major public accommodation facility on the Strip.
Apr 2009	H1N1 virus confirmed by the WHO as a worldwide epidemic. There were 4,624 cases of H1N1 in Nevada, with 100 cases in Lyon County.
Feb 2014	A canine positive for bat rabies resulted in a four county (Carson City, Douglas, Lyon, and El Dorado) contact investigation. This investigation consisted of 47 individuals with potential exposure to rabies.
Oct-Dec 2015	Norovirus outbreak caused over 2,000 staffers, faculty, and students in the Washoe County School District to be sickened.
July-Sept 2017	There are 12 confirmed cases of West Nile virus in Lyon County.
Mar 2017	A community wide pertussis outbreak occurred in three counties (Carson City, Douglas, and Lyon). This outbreak lasted three months, consisted of 10 cases and over 100 contacts that required assessment and post exposure prophylaxis.

5.2.4.3 Location, Extent, and Probability of Future Events

An epidemic in Lyon County would create a regional response requiring coordination among public health, healthcare partners, Lyon County, 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, pregnant women, or individuals who currently experience respiratory or immune deficiencies. These segments of the population are present within the County. 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 CDC, and the Nevada Division of Public and Behavioral Health (DPBH). This provides a positive, balancing influence to the overall outcome of a disease disaster event.

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. Another growing threat to health is climate change, which is expected to have a significant impact on vector-borne and waterborne infectious diseases worldwide (Shuman, 2010).

Epidemics constitute a significant risk to the population of Nevada, particularly as it relates to the frequency in which the Lyon County population travels 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 Lyon County.

Climate Change:

Temperature dependencies are seen in correlations between disease rates and weather variations over weeks, months or years and in close geographic associations between key climate variables and the distributions of important vector-borne diseases. These temperature dependencies can impact both humans and livestock. Temperature has also been found to affect food-borne infectious diseases.

5.2.5 Extreme Heat

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington - Medium

5.2.5.1 Nature

According to the NWS, extreme heat occurs when temperatures reach high levels or when the combination of heat and humidity causes the air to become oppressive and stifling. Generally, extreme heat is considered to be 10 degrees F above a county's mean temperature over an extended period of time. However, extreme heat can manifest itself in several ways:

- During a period of time of sweltering humidity, which reaches levels commonly associated with moist tropical regions, stress on the body can be exacerbated when atmospheric conditions cause pollutants to be trapped near the ground.
- In an excessively dry condition, strong winds and blowing dust can worsen the situation.
- When there is a rise in the heat index, the body's perception of the "apparent" temperature is based on both the air's real temperature and the amount of moisture present in the air. Humidity and mugginess make the temperature seem higher than it is. In high humidity, an 85 degree F day may be perceived as having reached 95 degrees F.

During heat or extreme heat, local NWS offices can issue heat-related messages as conditions warrant, including:

- **Excessive Heat Outlook**: when the potential exists for an excessive-heat event in the next three to seven days. The NWS will provide an indication of areas where people and animals may need to take precautions against the heat. It is based on a combination of temperature and humidity over a certain number of days. An outlook is used to indicate that a heat event may develop. It is intended to provide information to those who need considerable lead time to prepare for the event, such as public utilities, emergency management personnel, and public health officials.
- **Excessive Heat Watch:** when conditions are favorable for an excessive heat event in the next 12 to 48 hours. The term "watch" is used when the risk of a heat wave has increased, but its occurrence and timing are still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so, such as cities that have excessive-heat event mitigation plans. Also, a watch notice is issued when heat indices in excess of 105 degrees F during the day, combined with nighttime low temperatures of 80 degrees F, or higher, are forecast to occur for two consecutive days.
- **Excessive Heat Warning/Advisory:** when an excessive heat event is expected in the next 36 hours. These warnings are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurrence. The warning is issued when these conditions are present: a heat index of at least 105 degrees F for more than three hours per day for two consecutive days, or a heat index of more than 115 degrees F for

any period of time. The warning is used for conditions posing a threat to life or property. An advisory is for less-serious conditions, but still cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life and/or property.

5.2.5.2. History

Records regarding temperature averages and record highs is available for the Lyon County cities and communities of Dayton, Fernley, Silver City, Silver Springs, Smith and Yerington from The Weather Channel. Based upon the available information for 2018, the highest recorded temperature is 104 degrees Fahrenheit, recorded in Fernley. The most recent Heat Wave that occurred was July 26-31, 2016. Stagnant high-pressure, dry conditions, and ample sunshine allowed temperatures to soar above 10 + at Yerington for 6 consecutive days. The length of extreme heat was unusual. The warmest temperatures was 105 on July 30. Typically in Western Nevada heat health impacts tart increasing dramatically when high temperatures are 105+ and overnight lows are around 70+. **Table 5-7** shows the recent record high temperatures for 2018 recorded for each of the available cities.

Table 5-7. Record High Temperatures for Lyon County Cities and Communities

City/Community	Month	Temperature (degrees Fahrenheit)
Dayton	July	99
	August	101
	September	
Fernley	July	104
	June	102
	August	
Silver City	July	99
	August	99
	September	
Silver Springs	June	98
	July	103
	August	101
	September	102
Smith	July	97
	August	99
Yerington	June	101
	July	103
	August	101

Source: The Weather Channel. 2018, http://www.weather.com

5.2.5.3. Location, Extent, and Probability of Future Events

When an excessive heat event occurs, it likely affects the low elevations in the County; all Lyon County cities are located in these lower elevation areas. Once higher elevations are reached, the unincorporated areas of the County, extremely high heat levels are less likely.

The hottest months are July and August; with average temperatures in the cities ranging from 90 degrees F to 95 degrees F in July and 88 degrees F to 93 degrees F in August.

Based on historical occurrences in various cities throughout the County, Lyon County can expect to experience average temperatures equal to or greater than 95 degrees F every July, every year. The County can also expect temperatures to exceed 100 degrees F every summer. It is highly likely that high heat events will occur within a calendar year affecting Lyon County (1/1=100 percent chance of occurring). Event history is 100 percent likely per year.

5.2.6 Flood

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington - High

5.2.6.1 Nature

A flood occurs when the existing channel of a stream, river, canyon, or other watercourse cannot contain excess runoff from rainfall or snowmelt, resulting in overflow on to adjacent lands. A floodplain is the area adjacent to a watercourse or other body of water that is subject to recurring floods. Floodplains may change over time from natural processes, changes in the River channels change as water moves downstream, acting on the channel banks and on the channel bottom. On the outside of a channel curve, the banks are subject to erosion as the water scours against them. On the inside of a channel curve, the banks receive deposits of sand and sediment transferred from the eroded sites. In areas where flow contains a high-sediment load, the course of a river or stream may shift dramatically during a single flood event. As noted in the 2010 Nevada Standard Hazard Mitigation Plan, much of Nevada is part of the Great Basin (an area of internal drainage, in which streams are not connected to rivers that flow to the oceans), as a result, flood waters will commonly drain into interior lakes, wetland areas or playas. The following describes various types of flooding:

- **Channel flooding** is characterized by lateral channel migration during major flows, which results in abrupt changes in the horizontal alignment or location of the channel. Other characteristics include localized channel bed and bank-scour in addition to the potential for over-bank flow inundation.
- **Sheet flooding** is characterized by channel having minimal capacity, water flowing across broad areas at relatively shallow depths, and gently sloping terrain. Damage from these events include localized scour and deposition of extensive amounts of sediments and debris typically associated with sheet flow. If the depth of the water is high enough, water may encroach into low-lying structures within the floodplain.
- **Alluvial fan flooding** refers to flooding occurring on the surface of an alluvial fan or similar landform characterized by high-velocity flows, active erosion processes, sediment transportation and deposition, and unpredictable flowpaths. Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation, variable flow paths, localized scour and the deposition of debris. Alluvial flooding is potentially more dangerous than riverine flooding due to its unpredictable nature resulting in difficulties associated with threat identification.
- **Flash flooding** is characterized by the time scale in which it develops: a flash flood generally develops in less than six hours. Flash flood waters also move at very fast speeds and have the power to move boulders, tear out trees, and destroy both buildings and transportation infrastructure. During a flash flood, walls of water can reach heights of 10 to 20 feet. This combination of power and suddenness makes flash floods particularly dangerous. They are likely to occur in areas with steep slopes and sparse vegetation. These floods arise when storms produce a high volume of rainfall in a short period, over a watershed where runoff collects quickly as well as in the mountain areas resulting in the massive melting of the snow pack leading to heavy run off. They are likely to occur in areas

with steep slopes and sparse vegetation. They often strike with little warning and are accompanied by high velocity flow.

Various factors determine the severity of floods such as rainfall intensity and duration, watershed conditions (slope, soil type, presence of vegetation) and the existence of flood control features, both natural and human-built.

5.2.6.2 History

Typically underestimated due to the arid climate, few perennial streams, and low precipitation, flooding is the most common hazard occurring in the state of Nevada. The National Climatic Data Center's (NCDC) Storm Event Database has flood records dating back to 1993. From 1993-2017, there have been 18 different flooding events that affected Lyon County; total damages to private property and public facilities are reported at $29.681 million. Since 1965, five Presidential Disaster Declarations have been issued for flood events affecting Lyon County. **Table 5-8** provides details on each of the floods listed in the Storm Event Database.

The Carson River and Walker River are the main sources of flooding. Although the Truckee River does not pass through Lyon County, the associated Truckee River Canal does pose a flooding hazard to the County. The Nevada State Hazard Mitigation Plan ranks the Walker River as the 3rd most vulnerable river for flooding, with approximately $83 million in potential losses, and the Carson River at 4th, with approximately $70 million in potential losses.

Table 5-8. Lyon County Floods from 1993 – present

Date	Damage
January 2017	A strong atmospheric river brought heavy rain with widespread flooding on the 8th and 9th. There was a period of snow on the 7th, as well as freezing rain in some lower valleys into the morning of the 8th. Pre-emptive planning caused the closure of public schools and courts in Washoe County on the 9th. Many roads were closed due to flooding, overwhelmed and blocked culverts, and debris flows in the Reno-Sparks, Carson City, and Minden areas on the 8th. A damage estimate from Washoe County Emergency Management for the entire county in January was over $15M, with much of the damage between the 7th and 9th. In Storey County, a damage estimate from flooding and snow in January was $6M for public infrastructure. Twenty five structures, including at least 10 homes (one 8-plex and two single-family homes), were damaged by flood waters in Dayton by the morning of the 9th. Flooding of the two single family homes in East Dayton may have been largely due to breaks in ditches and culverts incapable of handling the exceptionally large volume of water. Water depth varied from 6 inches to as much as 3 feet on the south side of the Carson River. Standing flood waters lasted for at least several days after the initial flood surge on the 8th. Schools were closed county-wide on the 9th. The damage estimate from the Lyon County Emergency Manager is considered very low-end and could actually be several million dollars for Dayton alone. In February, a Federal Disaster Declaration was approved for the January flooding.
June 2017	Hot temperatures brought isolated, high-based thunderstorms with strong outflow winds and a very localized flash flood. Thunderstorms with heavy rainfall persisted for almost 2 hours in the hills east of Yerington (near the Lyon/Mineral County line). A deputy sheriff reported a large wall of water coming down from the hills (in a typically dry wash). A National Weather Service employee investigated the scene a week later and noticed high water marks as much as 2.5 feet above Prospect St, with water damage to landscaping for multiple properties. Appreciable sediment was noted on Bybee Ln, Almond Rd, and Prospect St, with damage to Bybee Ln. (unpaved road). Damage roughly estimated based on little or no known home damage (mainly landscaping, unpaved roads).

June 2017	Low pressure near the northern California coast and daytime heating combined to bring strong to severe thunderstorms to the western Nevada Basin and Range on the 24th and 25th. A mud and debris flow caused the closure of the Ramsey Weeks Cutoff between Highway 50 and Alternate US 50 on the afternoon of the 24th.
July 2011	FLASH FLOOD: Multiple thunderstorms formed and trained over the Pine Grove Hills range south of Yerington on the afternoon of the 7th. This caused flash flooding over portions of East Walker and Pine Grove Roads near the Flying M Ranch. A significant amount of water over East Walker and Pine Grove Roads was reported; one truck was reported to be in the water with water up to the bottom of its cab. The deepest water was in the area of the Flying M Ranch.
June 2011	Snowmelt from a much above normal snowpack combined with little reservoir storage (nearly full reservoirs) to cause minor to moderate flooding of lowlands in the Mason Valley from mid June through mid July. Heavy snowmelt caused minor to moderate lowland flooding late in June and into early July in the Mason Valley south of Yerington with some backyards and crop fields flooded. Total property damage reported was $50,000.
July 2010	FLASH FLOOD: Southerly flow aloft around a ridge of high pressure over the Four Corners along with a disturbance moving through California brought significant moisture (around 1 inch precipitable water) for heavy rain with thunderstorms on the 16th. Water over Desert Creek Road was reported.
January 2008	A 40-foot-long break in the Truckee Canal released floodwater into portions of Fernley, Nevada on the morning of January 5th. Local newspapers reported that approximately 1,500 people had to be evacuated from their homes. Water 2 to 4 feet deep affected as many as 500 homes. The Reno Gazette-Journal newspaper reported that more than $1.75 million in federal disaster housing assistance had been provided. In addition to this, Fernley City officials estimated that the cost to repair roads would be over $720,000. Total property damage reported was $6.6 million.
May 2006	River flooding occurred in southern Lyon County during the latter half of May. Areas along both the mainstem Walker River and the West Walker River experienced flooding. The main flooding occurred in agricultural and lowland areas. Basements and yards were flooded in the Mason and Yerington areas, and residents were forced to use sandbags to protect their property. Farm buildings were also affected by the flooding in Mason. Total property damage reported was $50 thousand.
January 2006	Flooding continued across western Nevada into early January. However, rivers and streams reached flood stage and then started to recede on January 1st. The entire Truckee River was below flood stage by the evening of the 1st. The entire Carson River was below flood stage by early on the 3rd. Total property damage reported was $165,000.
December 2005	In Dayton, flooding from the Carson River flooded the Marina Street area. River Road was also closed. Water covered part of U.S. Highway 50 in Dayton and Stagecoach. Floodwaters with depths up to four feet covered some areas in Dayton, Silver City, and Stagecoach. Power outages were reported by residents in Mason Valley and Yerington. Total property damage reported was $30,000.

Date	Damage
July 2004	FLASH FLOOD: Flash flooding occurred in the city of Stagecoach. Some streets were underwater including Iroquois Trail, the Apache area, the Raindance area, and Boyer Lane. No property damage was reported.
July 2003	FLASH FLOOD: The Lyon County Sheriff reported flash flooding in rural Lyon County about 10 miles southeast of Yerington. Several gravel roads were washed out or covered by debris and needed clearing and/or repair. Total property damage reported was $5,000.
August 2002	FLASH FLOOD: With monsoonal flow and ample moisture left over from the previous day's storms, several clusters of thunderstorms formed over the region. At 4:15 pm, the Lyon Co. Sheriff's Office reported a flash flood with 1 ft. of standing water and mud on highway 50 between Dayton and Stagecoach. Just a few minutes later at 4:19 pm, a cluster of storms a little farther north dropped 3/4 inch hail in the northwest section of Reno. The storms continued to redevelop over the next few hours, causing another flood with 1 ft. of standing water, this time near the Reno Tahoe Airport on Terminal Way between Mill and Plumb St. Heavy downpours from another cluster of storms caused flash flooding in the Virginia City Highlands between 5:00 and 6:00 pm PDT. In just 20 minutes, 1.23 inches of rain fell, washing out roads and delaying the transport of fire equipment. No property damage was reported.
January 1997	The floods of January 1997 were caused by several factors and affected several areas of Nevada. The heaviest rainfall occurred January 1st and 2nd, but additional rainfall occurred throughout the month. One example of what became a typical experience during this storm is as follows: From December 30, 1996 to January 6, 1997 an incredible amount of rainfall and snowmelt runoff poured out of the Sierra Nevada, an estimated 25 inches of rain and snowmelt runoff occurred during the period on the Squaw Creek Basin during this period. Flood devastation was widespread across western Nevada. Most of the damage occurred from the Truckee, Carson, and Walker Rivers early in January. As reported by the American Red Cross, two deaths and at least 50 injuries occurred in western Nevada. For Lyon County specifically: Widespread devastation occurred in the towns of Dayton (from the Carson River), Wellington and Smith (from the West Walker River), and Yerington (from the mainstem Walker River). The greatest destruction was inflicted on the town of Yerington. Over 250 homes received extensive damage from flood waters. Estimated damage for private property in Yerington alone was near $15 million. Over 30 homes were damaged in the Wellington and Smith areas, bringing damage estimates here to $1.5 million. Damage to public facilities in the county was over $3 million. Parts of Highway 208 and 339 in the Wilson Canyon area were completely washed away. Damage to agricultural land was widespread. Total property damage reported for the entire event was $640 million.
July 1995	FLASH FLOOD: Strong thunderstorms developed in a moist, unstable airmass over northern portions of Nevada. A thunderstorm dumped up to one inch of rain over northwest Reno in a 10 minute period, causing local street flooding. Remote sensors at Kings Canyon west of Carson City measured a quarter-inch of rain in a 20 minute period. No property damage was reported.
May 1995	A strong Pacific storm spread moderate to locally heavy snow over the Lake Tahoe/Truckee area and the east slopes of the central Sierra. Eight to ten inches of snow fell near Markleeville in a 24 hour period, beginning at 1500 PDT on May 1st. Heavy rains fell down below 7000 feet causing significant snowmelt which lead to urban and small stream flooding. Street flooding was reported in Mammoth and Markleeville. Streams were at bankfull in Sierra Valley, with widespread reports of minor flooding. No property damage was reported.
March 1995	This storm brought heavy snow and high winds to the eastern Sierra as well as locally heavy rain to extreme western Nevada. Flooding occurred in Douglas County, where damage to roads and building was estimated at $1.2 million.

Date	Damage
March 1995	This storm system brought urban and small stream flooding to Western Nevada, extreme Western Nevada as well as to lower valleys in the eastern West-Central Nevada. U.S. Highway 395 south of Reno was closed for a time due to water over the roadway. This same highway was closed from the Nevada-California state line south to Bridgeport due to rock and mud slides. Four businesses and eight homes sustained flood damage in Genoa. A bridge in Sparks was partially washed out. There was $33,000 in damage to a home near Stateline due to flooding of a small stream and $100,000 in damage to a culvert. River flooding occurred in the Carson City area when the Carson River crested about six inches above Flood Stage during this event. Several homes along the river were flooded, while a rural subdivision became isolated when the Carson River washed out the access road to the subdivision. Farther east, flooding along the Carson River damaged five businesses and one home in Dayton. Total property damage reported was 1.5 million.

Source NOAA Storm Event Database 2018 https://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType

5.2.6.3. Location, Extent, and Probability of Future Events

Figures B-6 through B-11 (**Appendix B**) illustrate the locations of the 100 year, 100 to 500 year and over 500 year floodplains in Lyon County. Flooding is present throughout Lyon County, but the areas most susceptible to flooding are the City of Yerington and the Communities of Dayton, Mason Valley and Silver Springs. Additionally, the southern portion of Lyon County and part of the far eastern portion of the county is mapped as Zone D, which is an area with "possible, but undetermined flood hazards." **Figure B-8** illustrates the FEMA Flood Hazard Zones for the City of Fernley. While this does not illustrate major flooding susceptibility for the City of Fernley we know from the January 2008 events, that the City of Fernley is highly susceptible to flooding; these events received a Federal disaster declaration.
In recent history the floods of January 1997 and January and June 2016 -2017 were the worst Lyon County has seen. In the Yerington area flooding surpassed both the 100 year and the 500 year floodplains.

The magnitude of flooding that is used as the standard for floodplain management in the United States is a flood with a probability of occurrence of 1 percent 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, as well as the 500-year flood (0.2 percent probability of occurrence in any given year), is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps are used to support the NFIP.

FEMA has prepared a digital FIRM (DFIRM), effective January 16, 2009, for the Cities of Fernley and Yerington and most recently a FIRM effective October 20, 2016 for the incorporated and unincorporated areas of Lyon County. **Table 5-9** lists the date of the initially mapped FIRM and the emergency/regular program entrance date into the NFIP.

Table 5-9 Date of Initially Mapped FIRM and Emergency/Regular Program Entrance Date into NFIP for Lyon County and the Cities

County/Community Name	Date of Initially Mapped FIRM	REG-EMER DATE into NFIP	Current Effective Map Date
City of Fernley	09/30/82	06/04/03	01/16/09
City of Yerington	09/30/82	09/30/82	01/16/09
Lyon County	09/30/82	09/30/82	10/20/16

Source FEMA Flood Map Service Center https://www.fema.gov/cis/NV.html

Climate change studies state that increased warming increases the capacity of the atmosphere to hold moisture, which leads to more water vapor in the atmosphere. Individual storms supplied with increased moisture might produce more intense precipitation events. Further warmer conditions between summer thunderstorms can additionally dry and compact the soil, making it more impervious to heavy rain, increasing the rate of run off during flash floods.

Aside from severe storms, flooding is the most frequent natural hazard event in Lyon County. Floods can cause a tremendous amount of damage within the county and the cities; not only to private property but also a majority of that damage is generally limited to transportation infrastructure. In contrast though, flash-flooding resultant from summer thunderstorms could happen anywhere within the county, but not nearly at the level of a winter flood event.

Although a flood is not going to occur with the frequency of a severe storm, individual citizens, families, and businesses of the county and cities should to be prepared to address floods when they occur. As in the case of earthquake, fire, and other natural disasters, citizens should prepare themselves before such an event takes place. To be able to effectively address flood problems, citizens, families, and businesses should:

1. Have a plan, including a set of alternate travel routes.
2. Store extra supplies of food and water.
3. Store other related supplies such as flashlights, batteries, firewood, etc.
4. Have a battery-operated radio within their home or business.
5. Stay aware of weather trends, especially after considerable periods of snowfall and early season warm spring run-off.

5.2.7 Hail and Thunderstorm

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington – Medium

5.2.7.1 Nature

Hail is a solid form of precipitation; it consists of balls or irregular lumps of ice, each of which is referred to as a hail stone. Hail has a diameter of .20 inches or more and can grow to 6.0 inches and weigh more than 1.1 pounds. Any thunderstorm which produces hail that reaches the ground is known as a hailstorm. When updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere they freeze, becoming hail. When the thunderstorm's updraft can no longer support the weight of the ice or the updraft weakens, the hail falls.

Unlike ice pellets, hail stones are layered and can be irregular and clumped together. Hail is made of thick and translucent layers, alternating with layers that are thin, white and opaque; a cross-section through a large hailstone shows an onion-like structure. A storm's updraft blows forming hailstones up the cloud. As the hailstone ascends it passes into areas of the cloud where the concentration of humidity and super cooled water droplets varies. The hailstone's growth rate changes depending on the variation in humidity and super cooled water droplets that it encounters. When the hailstone moves into an area with a high concentration of water droplets, it captures the latter and acquires a translucent layer. Should the hailstone move into an area where mostly water vapor is available, it acquires a layer of opaque white ice.

Often large hail is observed immediately north of a tornado track - but the presence of hail does not always mean a tornado and the absence of hail does not always mean there is not a risk of tornadoes. Hail can cause serious damage to plants, cars, homes, buildings and crops. Hail results in nearly $1 billion in damage annually to property and crops in the United States. A hail stone of .39 inches in diameter (1 centimeter) falls at a rate of about 20 miles per hour. A stone of 3.1 inches in diameter (8 centimeters) falls at a rate of about 110 miles per hour.

5.2.7.2 History

Hail storms have occurred throughout Lyon County's history. Fortunately, the vast majority of the time the hail storms have been small in size and have not been destructive. Since 1982 nine hail storms have been reported by the NCDC Storm Event database. One event resulted in injuries, loss of life and property damage. On May 27, 2008 a woman lost control of vehicle on slick pavement, due to an accumulation of small hair. She was ejected from her SUV as it rolled down an embankment. The woman was pronounced dead at the scene of the accident. The event also resulted in two injuries and five thousand dollars of property damage.

As reported by the Storm Event database, **Table 5-10** below illustrates Lyon County's history of hail storms.

Table 5-10. Lyon County Hailstorms from 1950 to present

Location	Date	Hail Magnitude	Deaths	Injuries	Property Damage
County Unincorporated (north of Yerington)	7/28/1982	1.75 in.	0	0	0
County Unincorporated (north west of Yerington)	6/13/1986	1.75 in.	0	0	0
County Unincorporated (north west of Yerington)	7/13/1990	1.00 in.	0	0	0
Dayton	7/30/1997	1.75 in.	0	0	0
Dayton	7/11/2001	1.00 in.	0	0	0
Lux	5/27/2008	0.25 in.	1	2	5K
Silver Springs	7/21/2008	1.25 in.	0	0	0K
Weed Heights	7/21/2008	0.75 in.	0	0	0K
Yerington Airport	07/04/2013	1.00 in.	0	0	0
Simpson	07/05/2015	1.00 in.	0	0	0

Source: NCDC Storm Event database. 2018, http://www.ncdc.noaa.gov/stormevents/

5.2.7.3. *Location, Extent, and Probability of Future Events*

All of Lyon County and the Cities of Fernley and Yerington are susceptible to hail and thunderstorm events, but the areas that have experienced the most extreme events include the County Unincorporated outside of Yerington, and the communities of Dayton, Lux, Silver Springs and Weed Heights.

The severity of hail events is based upon multiple factors including the size of the hail, the winds and the objects in the path of the hail storm. Storms that produce high winds in addition to hail are most damaging and can result in numerous broken windows and damaged siding. Hailstorms can cause extensive property damage affecting both urban and rural landscapes. Fortunately, most hailstorms produce marble-size or smaller hailstones. These can cause damage to crops, but they normally do not damage buildings or automobiles. Larger hailstones can destroy crops, livestock and wildlife and can cause extensive damage to buildings, including roofs, windows and outside walls. Vehicles can be total losses. When hail breaks windows, water damage from accompanying rains can also be significant. A major hailstorm can easily cause damage running into the millions of dollars.

The following table, **Table 5-11**, illustrates hail intensity by size.

Table 5-11. TORRO Hailstorm Intensity Scale

Size Code	Intensity Category	Typical Diameter (inches)*	Size Comparison+	Typical Damage Impacts
H0	Hard Hail	.20	Pea	No damage
H1	Potentially Damaging	.20-.59	Mothball	Slight general damage to plants, crops
H2	Significant	.39-.79	Marble, grape	Significant damage to fruit, crops, vegetation
H3	Severe	.79-1.18	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	.98-1.57	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
H5	Destructive	1.18-1.97	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	1.57-2.36	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	1.97-2.95	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
H8	Destructive	2.36-3.54	Large orange > soft ball	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	2.95-3.94	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>3.94	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

* Approximate range (typical maximum size in bold), since other factors (e.g. number and density of hailstones, hail fall speed and surface wind speeds) affect severity
+ Hail size exemplified by comparing it with the size of common objects
TORRO = The Tornado and storm Research Organization
Source: http://www.torro.org.uk/site/hscale.php

Based upon Lyon County's history, the probability of hail and thunderstorm activity in the County and Cities will continue at a small magnitude. Ten hail events have occurred since 1982 (a 9 in 30 years chance of occurring – 9/30 = 30 percent), therefore, the probability of a future hailstorm in Lyon County is roughly a 30 percent chance per year.

5.2.8 Hazardous Materials Events

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington - High

5.2.8.1 Nature

Hazardous materials are substances that may have negative effects on health or the environment. Exposure to hazardous materials may cause injury, illness, or death. Effects may be felt over seconds, minutes, or hours (short-term effects) or not emerge until days, weeks, or even years after exposure (long-term effects). Also, some substances are harmful after a single exposure of short duration, but others require long episodes of exposure or repeated exposure over time to cause harm.

The toxicity of a specific substance is one important factor in determining the risk it poses, but other factors can be just as important, if not more so. Factors affecting the severity of an accidental release include:

- Toxicity
- Quantity
- Dispersal characteristics
- Location of release in relation to population and sensitive environmental areas
- Efficacy of response and recovery actions

Hazardous materials can be found almost everywhere in our society. Paints, solvents, adhesives, gasoline, household cleaners, batteries, pesticides and herbicides, and even medicines are all potential sources of hazardous materials. This plan does not focus on the hazards contained in everyday products, but rather on the hazards associated with potential releases of hazardous substances from transportation corridors (mobile incident) and fixed facilities (fixed incident) within the County.

Hazardous materials are generally classified by their primary health effects on humans. Some common types include the following:

- Anesthetics and narcotics are substances that depress the central nervous system.
- Asphyxiates are substances that interfere with normal breathing and can cause suffocation.
- Explosives are substances that pose a risk of exploding; fires and chemical effects may also be a danger.
- Flammable materials are substances that catch fire easily, though they may also pose other dangers, such as explosion or chemical effects.
- Irritants cause burns or irritation to body tissues such as eyes, nose, throat, lungs, or skin.

Mobile incidents include those that occur on a roadway or a railroad. Mobile incident-related releases are dangerous because they can occur anywhere, including close to human populations, assets and utilities, or environmentally sensitive areas. Mobile incident-related releases can also be more difficult to mitigate because of the great area over which any given incident might occur and the potential distance of the incident site from response resources.

5.2.8.2. History

The National Response Center's (NRC) Internet-based query system of non-Privacy Act data shows that since 1990, 12 mobile incidents have been reported; causes include equipment failure, operator error, dumping and transportation accident. These incidents are listed in **Table 5-12**

Table 5-12. Recent Hazardous Material Mobile Incidents in Lyon County

Year	Location/Nearest City	Nearest City	Incident Cause	Material
1990	I-80 Milepost 58	Fernley	Transport accident	Oil, Fuel: No. 2
1994	Hwy 95, Weeks Crossing Wabuska Block	Silver Springs	Transport accident	Hydrochloric Acid, Methyl Alcohol
2000	5970 War Path	Stagecoach	Dumping	Raw Sewage
2001	Hwy 95 alternate mile marker 27	Yerington	Transport accident	Sulfuric Acid
2004	Honewell 2275 E Newlands Dr.	Fernley	Equipment failure	Hydraulic Oil
2005	500B Truck Inn Way	Fernley	Equipment failure	Liquefied Natural Gas
2006	35 State Rt 341	Mound House	Operator error	Oil, Fuel: No. 2-D
2007	485 Truck Inn Way	Fernley	Dumping	Unknown Material
2007	Hwy 50 East Bound, West of Stagecoach Dr.	Stagecoach	Transport accident	Oil, Fuel: No. 2-D
2009	1320 Hwy 95A	Fernley	Operator error	Oil, Fuel: No. 2-D
2010	Fox Peak Service Station, Hwy 50 & Nevada Pacific	Fernley	Transport accident	Oil: Diesel
2011	425 Logan Roden	Fernley	Other	Acidic Water

Source: National Response Center. 2012, http://www.nrc.uscg.mil/foia.html

Additionally, during the same reporting period, one railroad incidents was reported. A locomotive on the freight train was releasing diesel fuel, but due to an unknown reason.

5.2.8.3. Location, Extent, and Probability of Future Events

In Lyon County, a mobile hazardous material event is most likely to occur along major transportation routes, which includes Highways 50 and 95 and Interstate 80, and the railroad tracks. **Figure B-12** (**Appendix B**) illustrates the most susceptible transportation corridors, including a 1 mile buffer. Trucks and rail cars that use these transportation corridors commonly carry a variety of hazardous materials, including gasoline, other petroleum products, and other chemicals known to cause human health problems, including fertilizers, pesticides, and industrial chemicals. Cities and communities that are bisected by both major highways and railroad tracks include Fernley and Silver Springs. However, the entire County is vulnerable to a hazardous material event.

Comprehensive information on the probability and magnitude of a hazardous material event along transportation corridors is not available. Wide variations among the characteristics of hazardous material sources and among the materials themselves make such an evaluation difficult. As such, the extent of a hazardous material mobile incident is unknown.

The probability of future events, based on most recent occurrences (the past fifteen years, 2002-present) it is likely that a minor hazardous materials event due to a vehicular accident will occur every year (an 8 in 10 years chance of occurring – 8/10 = 80 percent). Hazardous material incidents due to railroads are not common; only one incident has been reported to the NRC (a 1 in 22 years chance of occurring - 1/22 = 4.5 percent). History of events illustrates that the probability of a mobile hazardous material event is greater than 80 percent per year.

The release of hazardous substances from stationary sources (Fixed Incidents) can be caused by human error, equipment failure, intentional dumping, acts of terrorism, or natural phenomena. Earthquakes pose a particular risk, because they can damage or destroy facilities containing hazardous substances. The threat posed by a hazardous-material event can be amplified by restricted access, reduced fire suppression and spill containment capability, and even complete cutoff of response personnel and equipment.

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. 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*.

Additionally, the State of Nevada requires that all chemicals in quantities as listed in the International Fire Code (2006 Edition, Chapter 1 and 27) must be reported and the owner must obtain a hazardous materials permit. This permit must be renewed annually and is obtained through the Department of Public Safety, State Fire Marshal's Division.

According to the NRC, there have been 21 reported fixed incidents in Lyon County since 1991. These events were caused by dumping, equipment failure, operator error, and other or unknown causes. These incidents are listed in **Table 5-13**.The largest reported release was 100 to 150

gallons, although many incident reports did not include the amount or volume of material released.

Table 5-13. Recent Hazardous Material Fixed Incidents in Lyon County

Year	Location/Nearest City	Nearest City	Incident Cause	Material
1991	102 Burch Dr.	Yerington	Other	Pregnant Leachate Solution
1992	1440 Spruce	Silver Springs	Dumping	Sulfuric Acid
1993	Abandoned Mine Shaft	Yerington	Dumping	1,1,1-Trichloroethane
1994	Yerington International Airport West Ramp	Yerington	Dumping	Pesticide
1995	2095 Newlands Dr. East	Fernley	Operator Error	Unknown
1997	102 Burch Dr.	Yerington	Operator Error	Sulfuric Acid; (approx. 4 grams per liter of water)
1997	Truckee Avenue	Fernley	Dumping	Unknown Material
1998	102 Burch Dr.	Yerington	Unknown	Raffinate
1998	Fort Churchill Power Station 1000 Sierra Way	Yerington	Unknown	Oil, Misc.: Transformer Non PCB Oil
1998	Gerlech Town	Fernley	Unknown	Oil, Misc.: Motor Gasoline: Automotive (unleaded)
1999	2095 Newlands Dr. East	Fernley	Operator Error	Hydrogen Cyanide
2000	Front St. and Locust St.	Fernley	Unknown	Unknown Material
2001	1490 East Bruce Ave	Silver Springs	Unknown	Unknown Material
2002	3140 Rawhide	Silver Springs	Other	Unknown Oil
2005	2095 Newlands Dr. East	Fernley	Equipment Failure	Nox
2005	10 Pacific Way	Mound House	Dumping	Unknown Material
2006	370 State Rt 399	Yerington	Dumping	Human Waste
2007	Spruce Ave, PO Box 350	Silver Springs	Other	Various Wood Processing Chemicals
2008	2095 Newlands Dr. E	Fernley	Unknown	Ammonium Persulfate Bleach
2008	2095 Newlands Dr. E	Fernley	Other	Unknown Organic Material Unknown Oxidizers
2009	Spruce Ave	Silver Springs	Unknown	Unknown Material
2013	BRUCE Industries 101 Evans Ave	Dayton	Operator	Wastewater from the silkscreen department is being evaporated in a non-ventilated room. Because this operation is not closely supervised, the wooden containers being used are catching on fire and burning the residual materials. This is causing respiratory

Table 5-13. Recent Hazardous Material Fixed Incidents in Lyon County

Year	Location/Nearest City	Nearest City	Incident Cause	Material
				problems among the employees. Environmental readings have been taken, but nobody is available with the expertise to understand the readings reports.
2014	220 Bobcat Drive	Dayton	Other	Motor Oil in backyard.
2014	101 Palmer Drive	Dayton	Dumping	Landscape materials into Flood Control system.
2016	2095 Newlands Dr. E	Fernley	Other	A release of Isopropyl Alcohol due to drum falling during transit. RP state that while moving the drum via forklift the drum became dislodged and fell over onto the ground. The impact is asphalt.
2016	Highgrade	Yerington	Other	Diesel has been spilled on the ground ta a metal shed building business.

Source: National Response Center. 2012, http://www.nrc.uscg.mil/foia.html

5.2.8.3 Location, Extent, and Probability of Future Events

Facilities using reportable quantities of EHS substances are required to file an annual EPA Tier II Material Inventory Report. Hazardous material permits are also obtained from the State's Department of Public Safety. Throughout the planning area EHS facilities and facilities on record as a State hazardous material permittee are identified throughout the County including the City of Yerington, City of Fernley, and Lyon County unincorporated. **Figure B-13** (**Appendix B**) shows the location of EHS and hazardous material permittee facilities; areas at risk of hazardous material events include any areas within a 1-miles radius of any designated facility.

Comprehensive information on the magnitude of a hazardous material event at fixed locations is not available. While a total of 4,790 facilities have been identified in Lyon County, wide variations among the characteristics of hazardous material sources and among the materials themselves make an evaluation of the magnitude of an event difficult. Additionally, the extent of a release is also based on factors such as equipment maintenance, operator training, the potential of natural phenomena to disrupt handling and storage of the materials and potential weather distribution patterns. As such, the extent of a hazardous material fixed incident is unknown.

Comprehensive information on probability of a hazardous material event at fixed locations is not available. Similar to extent, the probability of a release is based on factors such as equipment maintenance, operator training, and the potential of natural phenomena to disrupt handling and storage of the materials. Based on previous event history, it is likely an incident will occur within Lyon County from a fixed hazardous material event once a year (a 21/22=95 percent chance of occurring). History of events is greater than 95 percent likely per year.

5.2.9 Infestation

Planning Significance - Lyon County – Low
City of Fernley – Low
City of Yerington - Low

5.2.9.1 Nature

An "invasive species" is defined as a species that is:

1) Non-native (or alien) to the ecosystem under consideration and
2) Whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Invasive species can be plants, animals (including aquatic species) and other organisms (e.g. Microbes). Source: United States Dept. of Agriculture, National Agriculture Library (10/5/2007)

Infestations impact Nevada's economy through the destruction of crops and natural resources, which also impacts tourism. Some of the plant infestations are highly flammable and assist in the spread of wildfires. Human actions are the primary means of introduction and spread of invasive species.

5.2.9.2 History.

The following noxious weeds currently can be found in Lyon County; Yellow Star thistle – Centaurea solstilitalis and Diffuse Knapweed – Centaurea diffusa, Russian Knapweed – Acroptilon repens, and Perennial Pepperweed – Lepidium latifolium. However, this may change in the near future and therefore all noxious weeds are listed below. This information was found in the Enhanced Nevada State Hazard Mitigation Plan.

The Nevada Department of Agriculture monitors the introduction and spread of noxious weeds in the state. They have developed a categorization scheme for control of noxious weeds with Category “C” being the most widespread and subject to active eradication. Below is the Nevada Department of Agriculture’s Nevada Noxious Weed List as designated by application of NRS 555

NEVADA NOXIOUS WEED LIST

NRS 555.130 Designation of noxious weeds. The State Quarantine Officer may declare by regulation the weeds of the state that are noxious weeds, but a weed must not be designated as noxious which is already introduced and established in the State to such an extent as to make its control or eradication impracticable in the judgment of the State Quarantine Officer.

NAC 555.010 Designation and categorization of noxious weeds. (NRS 555.130) The plants listed below are designated noxious weeds and categorized as follows:

- **Category A weeds** are generally not found in or limited in distribution throughout the State. Such weeds are subject to active exclusion from the State and active eradication

wherever found and active eradication from the premises of a dealer of nursery stock.

- **Category B weeds** are generally established in scattered populations in some counties of the State. Such weeds are subject to active exclusion where possible and active eradication from the premises of a dealer of nursery stock.
- **Category C weeds** are generally established and widespread in many counties of the State and are subject to active eradication from the premises of a dealer of nursery stock...

Table 5-14: Noxious Weeds

Category A Weeds:	
African rue (*Peganum harmala*	) Iberian starthistle (*Centaurea iberica*)
Austrian fieldcress (*Rorippa austriaca*)	Black henbane (*Hyoscyamus niger*)
Malta starthistle (*Centaurea melitensis*)	Mayweed chamomile (*Anthemis cotula*)
Camelthorn (*Alhagi pseudalhagi*)	Common crupina (*Crupina vulgaris*
Mediterranean sage (*Salvia aethiopis*)	) Perennial sowthistle (*Sonchus arvensis*)
Common St. Johnswort	Crimson fountain grass
(*Hypericum perforatum*)	(*Pennisetum setaceum*)
Purple loosestrife (*Lythrum salicaria, L.*	*virgatum* & cultivars)
Dalmatian toadflax (*Linaria dalmatica*)	Dyer's woad (*Isatis tinctoria*)
Purple starthistle (*Centaurea calcitrapa*)	Rush skeletonweed (*Chondrilla juncea*)
Eurasian watermilfoil (*Myriophyllum spicatum*)	Giant reed (*Arundo donax*)
Spotted knapweed (*Centaurea maculosa*)	Squarrose knapweed (*Centaurea virgata*)
Giant salvinia (*Salvinia molesta*)	Goatsrue (*Galega officinalis*)
Sulfur cinquefoil (*Potentilla recta*)	Swainsonpea (*Sphaerophysa salsula*)
Houndstongue (*Cynoglossum officinale*)	Hydrilla (*Hydrilla verticillata*)
Syrian beancaper (*Zygophyllum fabago*)	Yellow starthistle (*Centaurea solstitialis*)
	Yellow toadflax (*Linaria vulgaris*)

Category B Weeds:	Category C Weeds:
African mustard (*Brassica tournefortii*)	Canada thistle (*Cirsium arvense*)
Diffuse knapweed (*Centaurea diffusa*)	Johnsongrass (*Sorghum halepense*)
Horsenettle (*Solanum carolinense*)	Hoary cress (*Cardaria draba*)
Leafy spurge (*Euphorbia esula*)	Perennial pepperweed (*Lepidium latifolium*)
Medusahead (*Taeniatherum caputmedusae*)	Poison-hemlock (*Conium maculatum*)
Musk thistle (*Carduus nutans*)	Salt cedar (tamarisk) (*Tamarix* spp.)
Russian knapweed (*Acroptilon repens*)	Puncturevine (*Tribulus terrestris*)
Scotch thistle (*Onopordum acanthium*)	Spotted water hemlock (*Cicuta maculata*)
Silverleaf nightshade (*Solanum elaeagnifolium*)	

Other invasive plants that are too widely distributed in Nevada to be included in the noxious weed list but present problems in Nevada are listed below:

- *Bromus tectorum L. or Cheatgrass* is an annual grass that forms tufts up to 2 feet tall. The leaves and sheathes are covered in short soft hairs. The flowers occur as drooping, open, terminal clusters that can have a greenish, red, or purple hue. These annual plants will

germinate in fall or spring (fall is more common) and senescence usually occurs in summer. Cheatgrass invades rangelands, pastures, prairies, and other open areas. Cheatgrass has the potential to completely alter the ecosystems it invades. It can completely replace native vegetation and change fire regimes. It occurs throughout the United States and Canada, but is most problematic in areas of the western United States with lower precipitation levels such as Nevada. Cheatgrass is native to Europe and parts of Africa and Asia. It was first introduced into the United States accidentally in the mid 1800s.

• *Bromus rubens L. or Red brome:* In the North American region red brome is reported to be invasive because it faces low herbaceous competition. Once established, it has the potential to compete with other grasses. The accumulation of litter and necromass has the potential to increase fire frequency in the desert. Red brome-fueled fires result in the loss of native perennial species in invaded areas, resulting in disturbed areas that are ideal for increased growth of red brome.

• *Lepidium latifolium or Tall White Top or Pepperweed*. The robust, spreading roots and numerous seeds of this perennial make control difficult to impossible. It is found in waste places, wet areas, roadsides, ditches and croplands, including alfalfa fields. It can be transported in waterways or hay bales.

Animal infestations - Insects

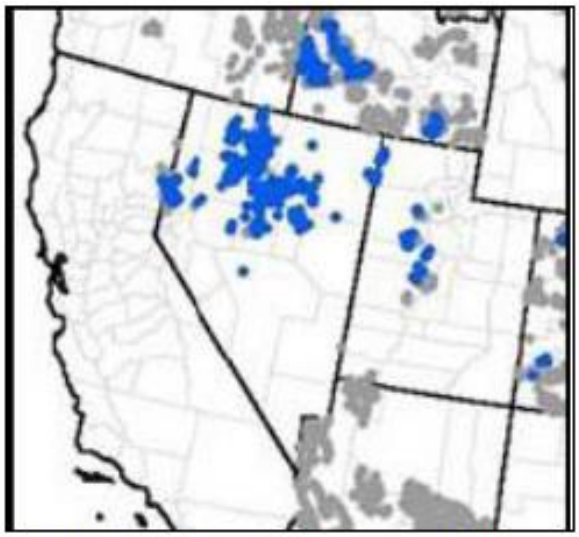
The following is a list of invasive insect species infestations currently affecting Nevada:

- *Africanized honeybees:* Imported and bred with European honeybees to increase honey production in South America. The Africanized honeybees are more aggressive than European honeybees with a negative impact on the honey production industry.
- *Scolytus schevyrewi or Bark Beetle* came from Asia. It was first collected in insect traps in Aurora Colorado. The beetle infests and breeds in elm trees stressed by drought.
- *Solenopsis Invicta or Fire Ants:* About 1930, the light fire ant was introduced from South America into the Mobile area, and has since spread to its current range. The ants nest in the soil of open areas, pastures and agronomic fields, but are found occasionally in wooded areas. Mounds are generally dome-shaped in contrast to those of other fire ant species, and the sting, characterized by an intense burning sensation, is more severe. A pustule (not seen in the sting of other species) is formed at the sting site in a day or so, which may become infected. Sensitive individuals can swell up as a result of stings and occasionally die. The ants have a serious impact on agriculture since the hardened mounds interfere with the mechanical cultivation of fields and the ants' painful stings interfere with livestock grazing and the harvesting of crops by farm workers.

Mormon crickets are flightless, ground dwelling insects native to the western United States. They eat native, herbaceous perennials (forbs), grasses, shrubs, and cultivated forage crops, reducing feed for grazing wildlife and livestock. In large numbers, their feeding can contribute to soil erosion, poor water quality, nutrient depleted soils, and potentially cause

damage to range and cropland ecosystems. Drought encourages Mormon cricket outbreaks, which may last several years (historically 5 to 21 years) and cause substantial economic losses to rangeland, cropland, and home gardens.

Figure 5-11. Regional Distribution of Mormon Crickets, August 2005



(Blue = high density, gray =low density)

Source: University of Nevada, Cooperative Extension – Identification and Management of Mormon Crickets fact sheet 06-16

Animal infestations – aquatic species

Aquatic species that have become a particular concern in Nevada in recent years are: zebra mussels, quagga mussels, Asian clams, and New Zealand mud snails.

Zebra mussels were first found at Lake Mead in 2004 and quagga mussels were found there in 2007. Since that time, the population has exploded, now numbering in the trillions. Both mussels are nuisance invasive species that reproducing quickly and in large numbers. They are biofoulers that obstruct pipes in municipal and industrial raw-water systems, requiring millions of dollars annually to maintain. They produce microscopic larvae that float freely in the water column, and thus can pass by screens installed to exclude them. Monitoring and control of these mussels cost millions of dollars annually. As filter feeders, zebra and quagga mussels remove suspended material from the habitat in which they live. This includes the planktonic algae that are the primary base of the food web. Thus, these mussels may completely alter the ecology of water bodies in which they invade. As yet, no quagga or zebra mussels have been found in Lake Tahoe or any other northern Nevada lakes and reservoirs but zebra mussels have been found in a northern California reservoir southeast of San Francisco, and a UNR researcher has determined that Lake Tahoe water can support these species. Proactive measures are being taken by a number of groups to prevent the spread of these species into Lake Tahoe and the Truckee watershed.

For the past two years, the Tahoe Resource Conservation District's invasive species program has included a boat inspection effort in the Tahoe Basin to prevent the introduction of quagga and zebra mussels into the area.

While discarded zebra mussel pupa cases were found at Lahontan, the last five water tests during a fifteen month period have been negative. Lahontan staff currently performs watercraft inspections before they allow boats to launch in the lake.

The Truckee Meadows Water Authority is funding a new program with more than $231,000 from the Truckee River Fund, money collected from utility bills to pay for projects and protect the Truckee River. In spring 2010, the program efforts will include monitoring lakes and reservoirs within the Truckee River system for the presence of adult or juvenile mussels. A program to inspect boats launching into at least one lake, such as Boca Reservoir, should also begin this spring and will later be expanded.

The Asian clam is a relatively new aquatic invasive species that is becoming established in Lake Tahoe. Asian clams can impact Lake Tahoe's environment by:

- Releasing nitrogen and phosphorus to the lake, resulting in algal blooms.
- Negatively impacting drinking water by clogging intake pipes.
- Littering beaches with their sharp shells, negatively impacting recreation.

There is an ongoing current project in 2010 by the Tahoe Resource Conservation District to physically remove Asian clams from south shore areas of Lake Tahoe and install large plastic bottom barrier sheets to cover and terminate Asian clam populations by reducing oxygen and food availability.

New Zealand Mud Snail *Potamopyrgus antipodarum*

The New Zealand mud snail is a nuisance aquatic species now reported in a few Nevada streams along the periphery of the state (see map in Figure 3-21). It is reported in all western states, except New Mexico and is listed as an invasive species in California. It reproduces rapidly, competes for food with native gastropods and other species, and is detrimental to trout populations because of its lack of nutritional value. It is not yet a huge problem but is being monitored in the state and may become more of a problem in the future.

5.2.9.3. Location, Extent, and Probability or Future Events

In 2009, the Nevada Natural Heritage Foundation developed limited maps for the State. These maps showed Diffuse Knapweed and Tall White Top/Perennial Pepperweed along the western portion of Highway 80, in the Truckee Canal and in Stillwater and Russian Knapweed and Yellow Starthistle near Fallon. The Nevada Division of Forestry provided a map of Cheat Grass (due to its high fire hazard) and this is provided in Appendix B, Figure B-The Interstate 80 corridor provides transportation of weed seed and the area around Fallon is agricultural land with water as well as a transportation corridor from U.S. 50. The severity of noxious weed

infestations is continuously monitored by the State Department of Agriculture's A, B, C categorization of noxious weeds described in the previous section. There are currently no known infestations of insects or aquatic species however, the infestation of insects could affect the agricultural crops around the Fallon area and aquatic species could affect the Lahontan Reservoir, Carson River and the canals. The probability for infestations causing damage is low in the County and very low in the City of Fallon.

The Nevada Hazard Mitigation Planning Subcommittee agreed that plant, insect, and aquatic organism infestations will continue to occur throughout the state as recreation and commerce continue to move people and property across state lines. Cooperative efforts are necessary among state, federal, agencies and other interested regional groups to implement programs to control and mitigate the effects of infestations on all aspects of the state's environment and economy.

5.2.10 Land Subsidence

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington - Medium

5.2.10.1. Nature

In the southwestern United States, agricultural and urban areas that depend on aquifer groundwater pumping are prone to land subsidence. Nonrecoverable land subsidence occurs when declining water levels lead to inelastic water compaction. A lesser amount of subsidence occurs with the recoverable compression of course-grained sands and gravel deposits. A common feature that accompanies subsidence is earth fissures, which are tension cracks in the sediment above the water table. Land subsidence can be caused by actions other than overdrafting of water. Mining, hydrocompaction, and underground fluid withdrawal (water, oil, or other fluid) can cause this hazard and result in land surface displacements and fissures.

Nevada is composed primarily of three characterizations of aquifers: alluvial aquifers carbonate aquifers and igneous and metamorphic-rock aquifers. Lyon County is composed of alluvial aquifers, which consists mostly of gravels, sands, silts and clays.

5.2.10.2 History

Historically, subsidence problems in Nevada have been centered around the Las Vegas Valley. More recently, the hazard of subsidence has been recognized in other parts of Nevada. No major incidents of subsidence have occurred in Lyon County, but local concern has been reported by the communities of Mason Valley and Silver City, and the City of Yerington.

As per the State Enhanced Hazard Mitigation Plan, "In the Nevada Hazard Mitigation Survey, Douglas, Nye, Storey, and Washoe Counties recognized that land subsidence is a risk. Evidence of groundwater-withdrawal-related land subsidence and local fissuring has been recognized near some of the large open-pit mining areas in Humboldt, Lander, Eureka, and Elko Counties. Sections of Interstate 80 west of Battle Mountain have been repaired because earth fissures developed in the freeway near one of the mines probably related to groundwater-withdrawal related issues. The primary problem in Storey County is one of collapse into excavations related to old mines on the Comstock Lode in Virginia City. This phenomenon is unrelated to groundwater withdrawal and is a human-caused hazard similar to sinkholes that develop in areas with natural caverns near the surface. Las Vegas Valley in Clark County has more dramatic problems which include vertical aquifer-system deformation, land subsidence, and earth fissuring that have caused millions of dollars of damage and might have altered boundaries of flood-prone areas. Land subsidence is considered by the Subcommittee to be a ―Low Risk‖ hazard. Unlike the rapid occurrences of fires, earthquakes, and floods, land subsidence generally occurs slowly, developing over periods of weeks, months, and years and affects localized areas. Mine-collapse in Storey County is also considered to be ―Low Risk‖ from the State's perspective, because it will likely only affect localized areas and because recent mining in the area has indicated that most of the stopes (large openings) along the Comstock

Lode have been filled by clay and weak rock, characteristic of the wall rock of the Comstock Lode, over the years since mining ceased. Nonetheless, the mine-collapse hazard is a serious consideration for officials, businesses, and residents in Virginia City. Due to Nevada‘s history of new development and pressures on water systems, the state will most likely see more subsidence problems. However, mitigation may be achievable through education programs; revision of building codes; artificial recharging of ground water and geotechnical investigation of the land prior to building.”

5.2.10.3 Location, Extent, and Probability or Future Events

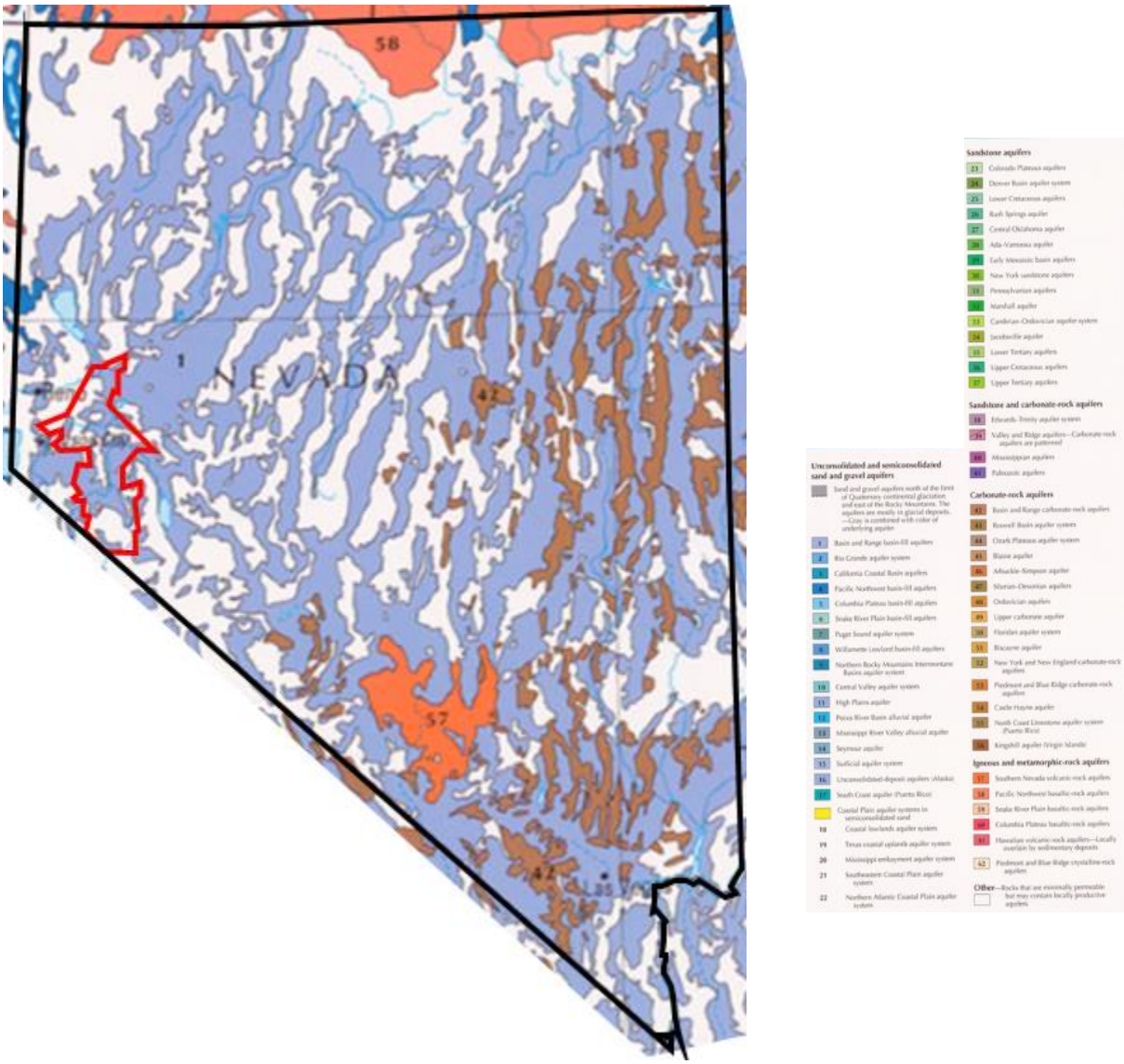
As illustrated in **Figure 5-12**, aquifers are found beneath all of Lyon County therefore the entire County is susceptible to subsidence. However, the areas of most concern are the communities of Mason Valley and Silver City, and the City of Yerington.

The effects of subsidence tend occur slowly, developing over weeks, months and years. Currently visual effects of subsidence (such as sink holes and ground collapse) are not present in Lyon County. Subsidence does however have the potential to lead to major issues; subsidence can cause vertical aquifer-system deformation and earth fissuring which can result in millions of dollars of damage, can lead to mine-collapsing and can also altered boundaries of flood-prone areas.

While the State of Nevada considers subsidence to be a “very low risk hazard,” due to Nevada’s history of new development and pressures on the water systems it is expected that the State will most likely see more subsidence problems. However, mitigation can work to reduce the extent of future efforts. Lyon County’s Comprehensive Master Plan has adopted strategies which will help mitigate the effects of subsidence, such as: encouraging conservation and efficient use of water, through utility rate structure, landscaping standards, education, and other programs; and promoting “limited impact”/environmentally safe resource extraction practices.

As Lyon County continues to grow, land subsidence will continue to occur as long as the net annual groundwater withdrawal continues to exceed the net annual recharge. Lyon County is aware of the negative effects that can occur due to development and pressures on water systems, and is working to reduce the impacts of the built environment. The concern for subsidence is expected to remain, however it is also expected to remain a very low risk hazard. Therefore, the probability of future subsidence occurrence in Lyon County is a 1 percent chance per year.

Figure 5-12. Lyon County Aquifers



Source: https://water.usgs.gov/ogw/aquifer/101514-wall-map.pdf

5.2.11 Landslide

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington - Medium

5.2.11.1 Nature

Landslide is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface or the dislodged mass itself. The term is used for varying phenomena, including mudflows, mudslides, debris flows, rock falls, rock slides, debris avalanches, debris slides, and slump-earth flows. Landslides may result from a wide range of combinations of natural rock, soil, or artificial fill. The susceptibility of hillside and mountainous areas to landslides depends on variations in geology, topography, vegetation, and weather. Landslides may also occur because of indiscriminate development of sloping ground or the creation of cut-and-fill slopes in areas of unstable or inadequately stable geologic conditions.

Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below:

- Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides.
- Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides.
- Wildfires can remove vegetation from hillsides, significantly increasing runoff and landslide potential.
- Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself.

Another type of landslide in Nevada occurs in areas cut by perennial streams. As floodwaters erode its channel banks, the river has undercut clay-rich sedimentary rocks along its south bank, thereby destabilizing the ground and causing the ground above it to slide.

5.2.11.2 History

No major landslides have been recorded in Lyon County.

5.2.11.3 Location*, Extent, and Probability or Future Events*

In Lyon County, areas that are more prone to landslides include the foothill and mountain areas where fractured and steep slopes are present, where less-consolidated or weathered soils overlie bedrock, or where inadequate ground cover accelerates erosion. Erosion and slumping of soils can also occur along bluffs along the Carson, Truckee and Walker rivers. Therefore, the entire County is susceptible to landslides.

For the State of Nevada in general, landslides are considered a “low risk hazard,” primarily because Nevada is drier (in terms of average annual precipitation) than other states, and because few people live in steep terrains or on rocks and soils that typically move in landslides. However,

as development encroaches on areas that are higher in elevation than the valley floors, such as alluvial fans, where most new development and building are occurring, it is likely that landslides and debris flows will become more significant hazards.

Lyon County does not have a history of landslide occurrence; no major events have been reported. Therefore, based upon past history, it is not expected that Lyon County will experience a significant landslide event. Probability is greater than 0 percent but less than or equal to 10 percent likely per year.

5.2.12 Severe Winter Storm and Extreme Snowfall

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington - Medium

5.2.12.1 Nature

Severe winter storms and extreme snowfall can bring heavy rain or snow, high winds, extreme cold, and ice storms. In Nevada, winter storms begin with cyclonic weather systems in the North Pacific Ocean or the Aleutian Islands that can cause massive low pressure storm systems to sweep across the western states. Winter storms plunge southward from artic regions and drop heavy amounts of snow and ice. The severity of winter storms is generally minor. However, a heavy accumulation of ice can create hazardous conditions. Additionally, a large winter storm event can also cause exceptionally high rainfall that persists for days, resulting in heavy flooding.

As strong winds and hailstorms have been covered separately in sections above, the focus of this section will be on heavy rain or snow and extreme cold/freezing.

5.2.12.2. History

Winter Storm is being characterized by heavy rain, heavy snowfall and extreme/freezing temperatures (as strong winds and hailstorms are captured as their own hazards). The NCDC database shows the following winter storm events for Lyon County (**Table 5-15**).

Table 5-15. Lyon County Winter Storm Events from 1950 to present

Location	Date	Event Type	Deaths	Injuries	Property Damage
Yerington	11/17/94	Heavy Snow	0	0	0
Fernley	04/15/95	Heavy Snow	1	1	0
Wellington	01/12/97	Heavy Snow	0	0	0
Dayton	04/05/99	Heavy Snow	0	0	0
Wellington	04/05/99	Heavy Snow	0	0	0
Fernley	04/05/99	Heavy Snow	0	0	0
Dayton and Mound House	11/08/00	Heavy Snow	0	0	0
Yerington	11/08/00	Heavy Snow	0	0	0
Dayton	11/09/00	Heavy Snow	0	0	0
Dayton	04/20/01	Winter Storm	0	0	0
County Unincorporated	01/28/02	Ice On Road	1	0	0
Fernley	03/07/02	Winter Storm	2	0	150K
Smith Valley	01/19/04	Heavy Snow	0	0	0
Fernley	03/01/04	Heavy Snow	0	0	0
Smith Valley and Mason	11/27/04	Heavy Snow	0	0	0
Stagecoach	11/27/04	Heavy Snow	0	0	0
County Unincorporated	01/25/05	Ice Storm	1	0	0
Smith	02/15/05	Heavy Snow	0	0	0
Dayton	02/23/08	Heavy Snow	0	0	0
Smith Valley	10/03/09	Winter Weather	0	0	5
Dayton	10/13/09	Heavy Rain	0	0	0
Fernley	10/13/09	Heavy Rain	0	0	0
Yerington	12/07/09	Heavy Snow	0	0	0
Dayton	12/06/09	Heavy Snow	0	0	0
Yerington	02/20/10	Winter Weather	0	0	0
Fernley and Silver Springs	03/20/11	Winter Weather	0	0	0
Mason Valley and Yerington	03/20/11	Winter Weather	0	0	0
3.4 miles ssw of Yerington	01/31/2016	Winter Storm	0	0	0
Fernley/Silver Springs	01/30-31/2016	Winter Storm	0	0	0

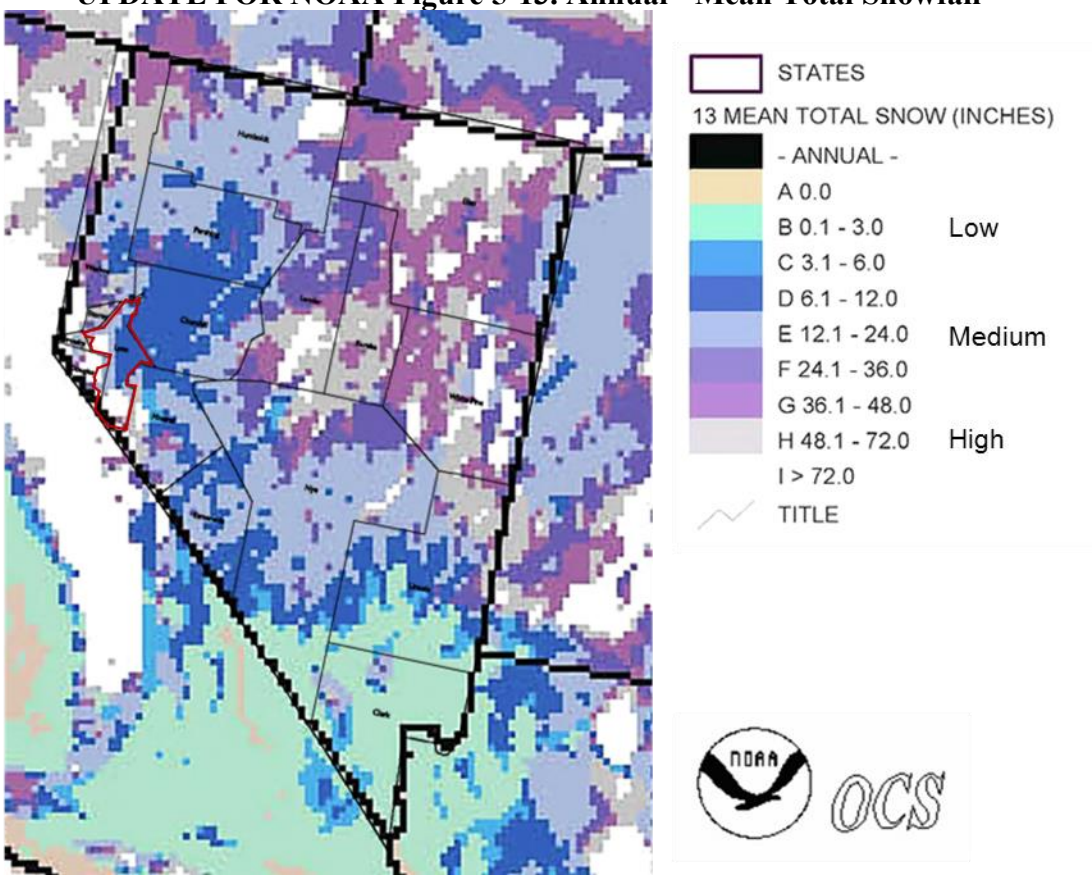
Source: NCDC Storm Event database. 2018, http://www.ncdc.noaa.gov/stormevents/

The majority of events are due to heavy snowfall. There are four events that resulted in death. In 1995 a man died of exposure to snow while searching for help after his car broke down (his companion suffered minor injuries). The three other events were the result of vehicle accidents caused by snowstorms and icy roads.

5.2.12.2 Location

As shown in **Figure 5-13** below, areas within Lyon County that are most susceptible to snowfall tend to be the higher elevations in the southern and western portion of the County. Areas along Pine Grove Hills Mountain Range (Bald Mountain and Mt. Etna) and Pine Nut Mountain Range (Lyon and Rawe Peak) can receive over six feet of snowfall per year. The eastern and more northern portions of the County, including the cities of Fernley, Silver Springs and Yerington get much less snow per year, but still receive up to a foot of snowfall per year.

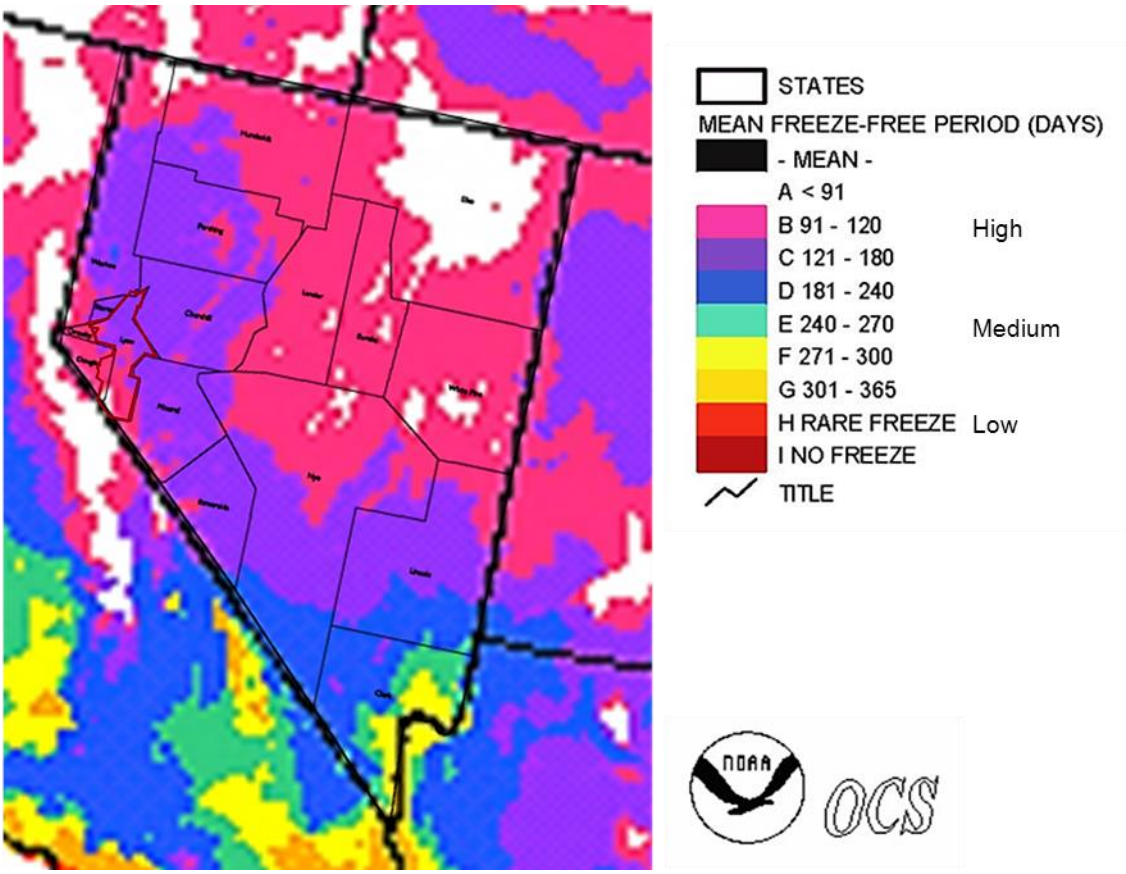
UPDATE FOR NOAA Figure 5-13. Annual - Mean Total Snowfall



Source: NOAA Climate Maps of the United States. 2018, http://hurricane.ncdc.noaa.gov/cgi-bin/climaps/climaps.pl?directive=quick_search&subrnum=

Figure 5-14 illustrates that freezing occurs in all of Lyon County. Specifically this figure shows the number of days per year that do not experience freeze. The northern and far eastern portions of the County, including the cities of Fernley, Silver Springs and Yerington, experience the fewest freeze periods per year, 185 to 244 freeze days per year. The central, southern and far western portions of the County, including the city of Dayton, experience an average of 245 to 274 freeze days per year.

UPDATE Figure 5-14. Mean - Length of Freeze Free Period



Source: NOAA Climate Maps of the United States. 2018, http://hurricane.ncdc.noaa.gov/cgi-bin/climaps/climaps.pl?directive=quick_search&subrnum=

5.2.12.3. *Location, Extent, and Probability or Future Events*

The National Oceanic and Atmospheric Administration (NOAA) developed Climate Maps of the United States. The snowfall map illustrates the annual mean total snowfall. For Lyon County, the areas most susceptible to snowfall can average over 72 inches of snowfall per year, while the area's least susceptible average 6.1 to 12 inches of snowfall per year. The entire County experiences snowfall.

The freeze map developed by NOAA illustrates the average number of non-freeze days per year. All of Lyon County experiences temperatures of 32 degrees F or below. The coldest portions of the County, on average, experience fewer than 120 days per year where the temperature reaches above 32 degrees F. However, even the warmest portions of the County experience only up to 180 days per year where the temperature reaches above 32 degrees F.

Based upon past history, Lyon County can expect at least one major winter storm a year (27 recorded events in the last 19 years). Lyon County experiences both snowfall and freezing on an annual basis. The mountainous areas of the County will continue to experience an average of over 72 inches of snowfall per year as well as freezing temperatures for over 245 days per year.

Therefore, it is highly likely that an event will occur within the calendar year. Events have a 1 in 1 year (a 1/1 = 100 percent) chance of occurring.

Per NOAA region for Northern Nevada the future impact potential of severe weather events in Lyon County and the cities of Fernley, and Yerington are based on NWS experience in the region and the recent statistics, the combined probability and potential impact of these hazards affecting Lyon County and the cities within the next five years are:

- High Risk: High winds from winter storms and thunderstorms, flooding from rivers and flash flooding from thunderstorms.
- Moderate Risk: Heavy snowfall, Dust storms, Extreme heat
- Low Risk: Tornados, Large Hail and Extreme cold.

5.2.13 Terrorism/WMD

Planning Significance - Lyon County – Medium
City of Fernley – Medium
City of Yerington - Medium

5.2.13.1 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 can be chemical, biological, radiological, nuclear, or explosive 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.

As defined by the FBI, **international terrorism** involves violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or any state, or that would be a criminal violation if committed within the jurisdiction of the United States or any state. These acts appear to be intended to intimidate or coerce a civilian population, influence the policy of a government by intimidation or coercion, or affect the conduct of a government by assassination or kidnapping. International terrorist acts occur outside the United States or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to coerce or intimidate, or the locale in which their perpetrators operate or seek asylum. According to the U.S. Department of State, the current list of designated foreign terrorist organizations contains over 50 groups. Most prominent among these groups are al-Qaida, Al-Shabaab, Boko Harem, HAMAS (Islamic Resistance Movement), ISIS, and Hezbollah (Party of God). These groups share a similar Islamic extremist ideology; however, their objectives and, more importantly, their capabilities are different.

As defined by the FBI, **domestic terrorism** is the unlawful use, or threatened use, of force or violence by a group or individual based and operating entirely within the United States or Puerto Rico without foreign direction committed against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof in furtherance of political or social objectives. Forms of domestic terrorism include: the illegal acts of those described as Homegrown Violent Extremists (HVEs), Extremists (religious, anti-government, political, etc.), Hate Groups, and Lone Offenders.

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.

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. 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), hostage taking, and cyber. The most popular method used in recent events in the United States has been terrorism by bombing.

Bioterrorism

A bioterrorism attack is the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants. Most biological agents are naturally occurring in various parts of the world. They can be weaponized to enhance their virulence, make them resistant to current vaccines and antibiotics, or increase their ability to be spread into the environment. Biological agents can be spread through the air, through water, or in food. Terrorists use biological agents because they can be extremely difficult to detect, they do not cause illness for several hours to several days, and even the threatened use of a bio-weapon can have a tremendous psychological impact on the population. According to the Centers for Disease Control and Prevention (CDC), bioterrorism agents can be separated into three categories, depending on how easily they can be spread and the severity of illness or death they cause. These three categories include Category A, Category B, and Category C Bioterrorism agents. Following is a description of each category of bioterrorism agents:

Category A Bioterrorism Agents

These high-priority agents include organisms or toxins that pose the highest risk to the public and national security. They may be easily spread or transmitted from person to person. They result in high death rates, have the potential for major public health threat, and may cause public panic and social disruption. Category A agents include:

- Anthrax (Bacillus anthracis)
- Botulism (Clostridium botulinum toxin)
- Plague (Yersinia pestis)
- Smallpox (variola major)
- Tularemia (Francisella tularensis)
- Viral hemorrhagic fevers (filoviruses [e.g., Ebola, Marburg] and arenaviruses [e.g., Lassa, Machupo])

Category B Bioterrorism Agents

These agents are the second highest priority and are moderately easy to spread. They result in moderate illness rates and low death rates, and they require specific enhancements of CDC's
laboratory capacity and enhanced disease monitoring. Category B agents include:

- Brucellosis (Brucella species)
- Epsilon toxin of Clostridium perfringens
- Food safety threats (e.g., Salmonella species, Escherichia coli O157:H7, Shigella)
- Glanders (Burkholderia mallei)

• Melioidosis (Burkholderia pseudomallei)
• Psittacosis (Chlamydia psittaci)
• Q fever (Coxiella burnetii)
• Ricin toxin from Ricinus communis (castor beans)
• Staphylococcal enterotoxin B
• Typhus fever (Rickettsia prowazekii)
• Viral encephalitis (alphaviruses [e.g., Venezuelan equine encephalitis, eastern equine encephalitis, western equine encephalitis])
• Water safety threats (e.g., Vibrio cholerae, Cryptosporidium parvum)

Category C Bioterrorism Agents
These third highest agents include emerging pathogens that could be engineered for mass spread in the future. They are easily available, produced and spread. They have potential for high morbidity, mortality rates, and major health impact.
While bioterrorism attacks using any category of agent could create great psychological stress as well as physical illness and death, Category A agents would have a greater impact on public health and national security.

Chemical Agents
There are many different chemical agents that might be used in a terrorist attack. Varying effects include blistering, choking, incapacitation, and vomiting. Following is a list of chemical agents categorized by effect.

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)
• Perflurorisobutylene (PHIB)
• Phosgene (CG)

• Red Phosphorous (RP)

• Sulfur Trioxide-Chlorosulfonic Acid (FS)

• Teflon and Perflurorisobutylene (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)

• CNC - (CN in Chloroform)

• CNS - (CN and Chloropicrin in Chloroform)

• CR

• CS

Vomiting

• Adamsite (DM)

• Diphenylchloroarsine (DA)

• Diphenylcyanoarsine (DC)

During this MJHMP update the committee reviewed information provided by the Lyon County Sheriff to discuss and add to this section, the hazard threat of Agro-terrorism. Lyon County and major land areas of Yerington and parts of the city of Fernley have many large agriculture and food producing industry businesses. Therefore the committee determined that this form of terrorism should be included in the plan update.

Agro-terrorism, as defined by RAND researcher Peter Chalk, states this type of terrorism focuses on "the deliberate introduction of a disease agent, either against livestock or into the food chain, to undermine the socioeconomic stability and/or to generate fear."

The vulnerabilities that potentially affect the agricultural community stem from:

- Concentrated and intensive contemporary farming practices. Highly crowded breeding and rearing conditions mean an outbreak of a contagious disease would be very difficult to contain, especially if it is airborne, and could require the destruction of all exposed livestock.
- Increased susceptibility of livestock to disease. This has occurred because of changes in husbandry practices - from sterilization programs to dehorning, branding, and hormone injections - and from the overuse and misuse of antibiotics.

- Insufficient farm/food-related security and surveillance. Farms seldom incorporate vigorous means to prevent unauthorized access; most animal auctions and barn sales are devoid of organized on-site surveillance; and food processing and packing plants tend to lack uniform security and safety preparedness measures, particularly the small- and· medium-scale facilities that have proliferated in recent years.
- An inefficient passive disease-reporting system. Responsibility for reporting unusual occurrences of animal disease lies with livestock producers, who may have disincentives for doing so because of the lack of a consistent program for agricultural indemnity.
- Inappropriate veterinarian and diagnostic training. The number of veterinarians able to recognize and treat foreign livestock diseases is declining, reflecting a relatively poorly paid profession that suffers from a lack of appropriate training in exotic animal epidemiology.
- A focus on aggregate rather than individual livestock statistics. The movement toward larger herds and breeding operations largely precludes the option of attending to animals individually, making it more likely that emerging diseases will be overlooked.

5.2.13.2 History

There is no history of terrorism in Lyon County, the Cities of Fernley or Yerington in the last five years.

5.2.13.3 *Location, Extent, and Probability or Future Events*

All areas of Lyon County and the cities of Fernley and Yerington are potentially susceptible to the impacts of terrorism, though the risk is comparatively higher in areas with larger concentrations of people. According to the FBI, sporting and large concert events, political gatherings, and other special events are attractive targets for domestic and foreign terrorists because they are highly visible and attract celebrities and political leaders.
Based on this, the geographic location of high capacity venues is at relatively higher risk of terrorist attack. Other potential targets of terrorist activities include public works facilities, utilities, major infrastructure, and transportation facilities such as airports, bus and train stations. Military bases, schools, medical facilities and other state and federal facilities are other identified potential targets.

Based on the Homeland Security Threat-Level System, it is anticipated that terrorism will remain a high to very high threat into the foreseeable future. Because terrorism events typically are focused on a single location or facility, estimated damage is less than one percent damage to facilities in Lyon County. The overall magnitude and potential severity of impacts of terrorism and weapons of mass destruction is considered **High/Very High** in Churchill County.
Considering a worst case scenario, terrorism events can require state level support to respond to the incident, can impact critical facilities and disrupt services for 1 to 3 days, and have citywide economic impacts. More typical terrorism events are handled at the county or city level, disrupt services for less than one day, and economic impacts are limited to the immediate community or part of the county and city involved.
Based on assessment of previous occurrences and frequency of contributing factors of terrorism,

probability of future occurrence is considered **Low**, with an estimated occurrence of .1 to.5 percent chance of occurrence in a given year.
Effective mitigation efforts should take into account location, frequency, severity and impact to the community. Overall planning significance is considered **Low.**

5.2.14 Wildland Fire

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington – High

5.2.14.1 Nature

A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly. Wildfires can be human-caused through acts such as arson, campfires, or the improper burning of debris, or can be caused by natural events such as lightning. Wildfires can be categorized into four types:

- **Wildland fires** occur mainly in areas under federal control, such as national forests and parks, and are fueled primarily by natural vegetation. Generally, development in these areas is nonexistent, except for roads, railroads, power lines, and similar features.
- **Interface or intermix fires** occur in areas where both vegetation and structures provide fuel. These are also referred to as Wildland/Urban Interface (WUI) fires.
- **Firestorms** occur during extreme weather (e.g., high temperatures, low humidity, and high winds) with such intensity that fire suppression is virtually impossible. These events typically burn until the conditions change or the fuel is exhausted.
- **Prescribed fires and prescribed natural fires** are intentionally set or natural fires that are allowed to burn for beneficial purposes. The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas.
- **Topography:** As slope increases, the rate of wildfire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildfire behavior. However, ridgetops may mark the end of wildfire spread because fire spreads more slowly or may even be unable to spread downhill.
- **Fuel:** Wildfires spread based on the type and quantity of available flammable material, referred to as the fuel load. The basic characteristics of fuel include size and shape, arrangement and moisture content.
- **Weather:** The most variable factor affecting wildfire behavior is weather. Important weather variables are temperature, humidity, wind, and lightning. Weather events ranging in scale from localized thunderstorms to large fronts can have major effects on wildfire occurrence and behavior. Extreme weather, such as high temperatures and low humidity, can lead to extreme wildfire activity. By contrast, cooling and higher humidity often signals reduced wildfire occurrence and easier containment. Wind has probably the largest impact on a wildfire's behavior, and is also the most unpredictable. Winds supply the fire with additional oxygen, further dry potential fuel, and push fire across the land at a quicker pace. Also, since the mid 1980s, earlier snowmelt and associated warming due to global climate change has been associated with longer and more severe wildfire seasons in the western United States.

The frequency and severity of wildfires is also dependent upon other hazards, such as lightning, drought, and infestations (e.g., Pine Bark Beetle). In Nevada, these hazards combine with the three other wildfire contributors noted above (topography, fuel, weather) to present an on-going and significant hazard across much of Nevada.

If not promptly controlled, wildfires may grow into an emergency or disaster. Even small fires can threaten lives, resources, and destroy improved properties. It is also important to note that in addition to affecting people, wildfires may severely affect livestock and pets. Such events may require the emergency watering/feeding, shelter, evacuation, and even burying of animals.

Wildfires can have serious effects on the local environment, beyond the removal of vegetation. 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 enhancing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards, as described above. Wildfires can also greatly affect the air quality of the surrounding area.

5.2.14.2 History

The National Interagency Coordination Center (NICC) is the focal point for coordinating the mobilization of resources for wildland fire and other incidents throughout the U.S. The NICC then divides the U.S. into 11 geographic areas; Lyon County is located in the Western Great Basin (WB) geographic area. The WB area is almost entirely made up of the State of Nevada; the geographic boundary for the WB includes the State of Nevada except for the northwest portion of the Sheldon-Hart Wildlife Refuge and Susanville BLM, the Humboldt- Toiyabe National Forest lands in Nevada and California, and the Lake Mead National Recreation Area in Nevada and Arizona. The WB has a ten year average of 792 fires per year and consumption of 395,941 acres per year.

In Lyon County's recent history, there have been a many significant wildfires. From 1980 through 2003, 2.5 percent of Lyon County burned in wildland fires, which is the equivalent of 32,968 acres. The largest fire recorded in the County was the Gooseberry Mine fire in 1985 that started in Storey County and burned approximately 13,472 acres in Lyon County (33,000 acres burned in total). More recently, in June 2006 a Federal Disaster was declared for the Linehan Fire Complex incident which burned 5,863 acres.

Table 5-16 provides examples of some of the major fires in Lyon County's recent history.

Table 5-16 Recent Fires in Lyon County Approx. 300 +/- Acres

Year	Incident Name	Location
2018	Upper Colony	Smith/Wellington
2018	Chaves	Stagecoach
2017	Lyons	Dayton
2017	Micro	Silver Springs
2014	Fernley - Dt	Fernley
2013	Bison	Smith/Wellington
2012	Como	Dayton
2012	Weeks	Wabuska
2012	Hwy 50 - Lahontan	Silver Springs
2011	Burbank	Smith/Wellington
2011	Fort Churchill	Silver Springs
2011	Stagecoach	Stagecoach
2011	Banjo	Fernley
2009	Miller	Fernley
2008	Como	Dayton
2007	Adrian 1	Stagecoach
2007	Adrian 2	Stagecoach
2006	Virginia	Fernley
2006	Linehan Complex	Mound House
2006	Sugarloaf	Silver City
2000	Ramsey	Fernley

Source: Western Great Basin Coordination Center, Past Season Statistics, http://gacc.nifc.gov/wgbc/predictive/intelligence/statistics.htm

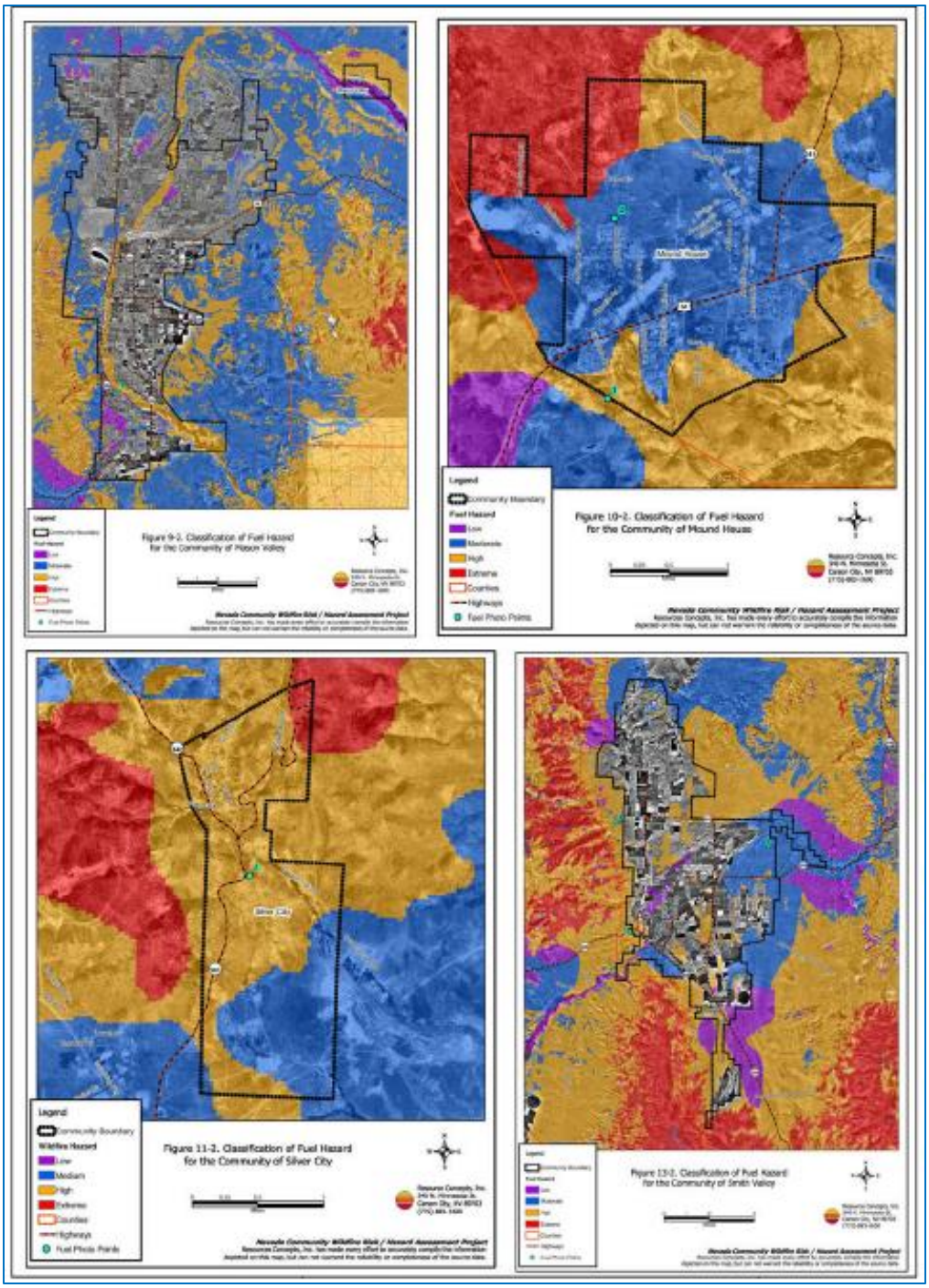
5.2.14.3 Location, Extent, and Probability of Future Events

The majority of Lyon County is considered to have a moderate fire hazard rating; while a few communities have a fire hazard rating of low, only one community in Lyon County has a high fire hazard rating, the community of Silver City. Both the cities of Fernley and Yerington have a fire hazard rating of low per the State NDEM. Based on the historic information presented in this update and the frequency rating that the Planning team assigned through the vulnerability exercise and established using the criteria in Table 5-2 the probability was ranked as 3, moderate.

In 2004 the Nevada Community Risk/Hazard Assessment Project Report was published, which researched communities vulnerable to the threat of wildfire (this report is discussed further is the Section "Extent" below). Four fuel hazard classification maps were developed for this report, including the high hazard community of Silver City and three of the moderate hazard communities: Mason Valley, Mound House and Smith Valley.

Figure 5-15 illustrates the location of extreme, high, moderate and low fuel hazard areas for the four designated communities.

Figure 5-15 Fuel Hazard Classification Maps: Mason Valley; Mound House, Silver City and Smith Valley.



Source: Nevada Community Wildfire Risk/Hazard Assessment Project - Lyon County, http://www.rci-nv.com/reports/lyon/toc.html

Lyon County has a history of a small number of fire ignitions every year, as illustrated in **Table 5-17**. However, it is important to recognize that the number of fire ignitions does not directly correlate to the extent of wildfires. Community specific information regarding wildfires can be found in the Nevada Community Wildfire Risk/Hazard Assessment Project reports. In 2003 the Healthy Forest Restoration Act was signed into law. The act creates provisions for expanding the activities outlined in the National Fire Plan. During the 2013 year the Nevada Fire Safe Council received National Fire Plan funding through the Department of Interior Bureau of Land Management to conduct a Community Risk/Hazard Assessment in at-risk communities across Nevada.

During 2004, field teams comprised of fire behavior specialists, foresters, rangeland fuels specialists, and field technicians visited communities to assess both the risk of ignition and the potential fire behavior hazard. With the use of procedures accepted by Nevada's wildland fire agencies, these specialists focused their analysis on the wildland urban interface areas where homes and wildlands meet. The reports generated by the Nevada Community Wildfire Risk/Hazard Assessment Project for Lyon County may be viewed here: http://www.rci-nv.com/project/statewide-wildfire-riskhazard-assessment/.

The assessment teams observed and recorded the factors that significantly influence the risk of wildfire ignition along the wildland-urban interface, and inventoried features that can influence hazardous conditions in the event of a wildfire. Five primary factors that affect potential fire hazard were assessed to arrive at the community hazard assessment score:

1. Community design
2. Construction materials
3. Defensible space
4. Availability of fire suppression resources
5. Physical conditions such as the vegetative fuel load and topography

The general results of the report are illustrated in **Table 5-17** below, which includes the ignition risk and the overall hazard rating for each community studied.

Table 5-17. Summary of Fire Occurrence in Lyon County and Estimated Acreage, 1980- 2003

Year	Number of Fire Ignitions	Total Fire Acreage
1980	5	1
1981	5	4,080
1982	3	5
1983	3	1,015
1984	10	846
1985	12	14,017
1986	12	2,733
1987	10	150
1988	3	0
1989	3	<1
1990	5	10
1991	9	1
1992	9	6
1993	2	1
1994	6	1
1995	7	181
1996	5	3,418
1997	4	2
1998	2	0
1999	2	1
2000	4	6,464
2001	10	3
2002	2	0
2003	2	28
TOTAL	**135**	**32,963**
AVERAGE PER YEAR	**5.625**	**1,373.458**

Source: Nevada Community Wildfire Risk/Hazard Assessment Project - Lyon County, http://www.rci-nv.com/reports/lyon/toc.html (initial information provided by the National Interagency Fire Center, Boise Idaho. Additional fire history information provided by Jim Reinhardt, personal communication)

Table 5-18 Lyon County Community Risk and Hazard Assessment Results

Community	Interface Condition	Interface Fuel Hazard Condition	Ignition Risk	Community Hazard Rating
Mason Valley	Classic Interface, Intermix, Rural, Occluded	Low to High	Low	Moderate
Mound House	Classic Interface, Intermix	Moderate to Extreme	High	Moderate
Smith Valley	Intermix	Low to High	High	Moderate
Wabuska	Rural	Low to Moderate	Moderate	Moderate
Weed Heights	Classic Interface	Low	Low	Moderate
Low Hazard Communities				
Fernley	Classic Interface	Low	Low	Low
Silver Springs	Intermix	Low to Moderate	Low	Low
Stagecoach	Intermix	Low	Low	Low
Yerington	Classic Interface	Low to High	Low	Low

Source: Nevada Community Wildfire Risk/Hazard Assessment Project - Lyon County, http://www.rci-nv.com/reports/lyon/toc.html

5.2.15 Windstorms

Planning Significance - Lyon County – High
City of Fernley – High
City of Yerington – High

5.2.15.1 Nature

Winds are horizontal flows of air that blow from areas of high pressure to areas of low pressure. Wind strength depends on the difference between the high- and low-pressure systems and the distance between them. Therefore, a steep pressure gradient results from a large pressure difference or short distance between places and causes strong winds.

Strong and/or severe winds often precede or follow frontal activity, including cold fronts, warm fronts, and drylines. Generally, in the southwestern U.S., frontal winds can remain at 20 to 30 mph (about 17.4 to 26.1 kts) for several hours and reach peak speeds of more than 60 mph (about 52.1 kts). Winds equal to or greater than 57 mph (about 49.5 kts) are referred to as severe winds.

In addition to strong and/or severe winds caused by large regional frontal systems, local thermal winds are caused by the differential heating and cooling of the regional topography. In a valley/mountain system, as the rising ground air warms it continues upslope as wind and is replaced by inflow from outside the valley. The intensity of the resulting wind depends on a number of factors, including the shape of the valley, amount of sunlight, and presence of a prevailing wind.

5.2.15.2 History

Lyon County has a long history of strong wind events. The first high wind event, recorded by the NCDC, was recorded in 1993, since then 89 high wind events have been reported in Lyon County. The first thunderstorm wind event for Lyon County was reported in 1979, since then 22 thunderstorm wind events have been reported. The following table, **Table 5-19**, illustrates some of the most extreme high wind and thunderstorm wind events in Lyon County's history (events of magnitude 70 kts. or greater and/or events that resulted in reported death, injury or damage are included).

Table 5-19. Examples of Lyon County High Wind/ Thunderstorm Wind Events

Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
High Wind Events					
03/09/1995	N/A	2	0	0	0
03/20/1995	N/A	0	0	1.5M	20K
12/01/1995	75 kts.	0	0	0	0
12/14/1995	70 kts.	0	0	0	0
01/18/1996	84 kts.	0	0	0	0
12/05/1996	50 kts.	0	0	3K	0
12/10/1996	50 kts.	0	2	10K	0
02/06/1999	70 kts.	0	0	0	0
02/07/1999	58 kts.	0	0	15K	0
02/07/1999	52 kts.	0	0	2K	0
02/09/1999	73 kts.	0	0	0	0
02/09/1999	74 kts.	0	0	5K	0
02/18/1999	0 kts.	0	1	30K	0
01/11/2000	50 kts.	0	0	5K	0
11/29/2000	73 kts.	0	0	3K	0
01/21/2002	61 kts.	0	0	25K	0
12/14/2002	81 kts.	0	0	5.9M	0
12/28/2002	75 kts.	0	0	10K	0
02/17/2004	97 kts.	0	0	0	0
12/01/2005	84 kts.	0	0	0	0
12/01/2005	56 kts.	0	0	10K	0
12/21/2005	70 kts.	0	0	10K	0
12/26/2006	61 kts.	0	2	30K	0
12/26/2006	70 kts.	0	0	0K	0
12/27/2006	73 kts.	0	0	0K	0
02/22/2007	58 kts.	0	0	30K	0
02/25/2007	75 kts.	0	0	0K	0
11/20/2009	63 kts.	0	0	30K	0
02/15/2011	73 kts.	0	0	0K	0
04/06/2011	84 kts.	0	0	0K	0
05/25/2011	70 kts.	0	0	0K	0
02/02/2015	75 kts.	0	0	0K	0
01/29/2016	78 kts	0	0	0K	0
12/15/2016	56 kts.	0	0	0K	0

Table 5-19. Examples of Lyon County High Wind/ Thunderstorm Wind Events

Date	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
02/16/2017	73 kts.	0	0	0K	0
04/06/2017	65 kts.	0	0	0K	0
11/15/2017	66 kts.	0	0	0K	0
12/19/2017	58 kts.	0	0	0K	0
12/20/2017	55 kts.	0	0	0K	0
02/18/2018	63 kts.	0	0	0K	0
02/18/2018	51 kts.	0	0	0K	0
04/10/2018	50 kts.	0	0	0K	0
04/10/2018	64 kts.	0	0	0K	0
04/15/2018	50 kts.	0	0	0K	0
	TOTALS:	**2**	**5**	**7.618M**	**20K**
Thunderstorm Wind Events					
06/20/1988	80 kts.	0	0	0	0
07/29/1997	65 kts.	0	0	2K	0
07/12/2002	0 kts.	0	0	50K	0
07/13/2002	0 kts.	0	0	5K	0
07/13/2002	0 kts.	0	0	1K	0
06/07/2003	52 kts.	0	0	5K	0
07/21/2008	70 kts.	0	0	0K	0
09/08/2011	61 kts.	0	0	8K	0
06/02/2014	52 kts.	0	0	0K	0
07/20/2014	52 kts.	0	0	0K	0
06/13/2015	50 kts.	0	0	0K	0
07/24/2017	87 kts.	0	0	0K	0
	TOTALS:	**0**	**0**	**71K**	**0**

Source: NCDC Storm Event database. 2018, http://www.ncdc.noaa.gov/stormevents/

Of these 56-recorded events, four events causing damages ranging between $1,000 and $2,000 were attributed directly to a high wind event. On November 14, 2006, down-slope winds off the Ruby Mountains associated with a strong cold front produced wind gusts to 83 mph completely destroying a home and moving a pickup truck 20 feet. Recorded damages were $100,000. However, there were no recorded injuries or deaths associated with this event.

5.2.15.3. Location, Extent Probability of Future Events

All of Lyon County is susceptible to strong wind events, including the cities of Fernley and Yerington, Lyon County unincorporated, and the unincorporated communities.

Table 5-19 above illustrates 44 high wind events and 12 thunderstorm wind events. This data was taken from the NCDC Storm Event database and the events included in the table include those that had a magnitude of 70 kts. or greater and/or events that resulted in death, injury or property or crop damage. Since the NCDC began collecting data, only one high wind incident event resulted in death (two deaths) and only three incidents results in injuries (five injuries). Additionally, about 7.6 million dollars of property damage and 20 thousand dollars of crop damage has resulted from high wind events. Thunderstorm wind events have not caused any deaths, injuries or crop damage, but have caused 71 thousand dollars of property damage.

While Lyon County has a long history of strong wind events, roughly 35 percent are of a magnitude of 70 kts. or greater and/or lead to death, injury, or property or crop damage. Similarly, about 36 percent of thunderstorm wind events have caused property damage or been 70 kts. or greater in magnitude.

Based upon past history, it is expected that Lyon County will continue to experience extreme strong wind events. In the last 20 years Lyon County has experienced 31 extreme high wind events and seven extreme thunderstorm wind events. However, years that experience extreme events tend to experience multiple events, while other years' experience none. Five out of the last 20 years did not experience a single extreme wind event.

Therefore, the probability that Lyon County will experience an extreme strong wind event each year is a 75 percent chance (15 years out of 20 years, a 15/20 = 75 percent).

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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, repetitive loss properties and summary of impacts.

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 tables that support the asset inventory, exposure analysis and summary of impacts requirements are located in **Appendix F – Appendix H**.

Due to a combination of a lack of adequate information, the lack of a standard methodology for a quantitative vulnerability analysis, and limited GIS capabilities by the County, complete vulnerability results have not been prepared for the following hazards: Dam Failure, Drought, Earthquake, Hail, Landslide, Land Subsidence, Tornado, Volcano, and Windstorm. Thus, a complete vulnerability analysis has been prepared for the following hazards:

- Flooding
- Hazardous Materials (including transportation incident and fixed incident)

Where adequate information about a hazard was not available to develop a complete vulnerability analysis, but existing quantitative studies were accessible, a partial vulnerability analysis was prepared. The partial vulnerability analysis was able to address the vulnerability of the critical facilities and infrastructure, but not the vulnerability of the population and building stock. A partial vulnerability analysis has been provided for the following hazards:

- Earthquake
- Wildfire
- Winter Storm (defined by freezing and snowfall)

A partial vulnerability analysis was not prepared for Dam Failure, Drought, Hail, Landslide, Land Subsidence, Tornado or Volcano.

6.1.1 Population and Building Stock

Population data for the County and City was obtained from the NV State Demographer estimate of 2014 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 the County Assessor's office and were verified by photo and by parcel data. To achieve a value, the net assessed value was not used due to the value being a depreciated value and not reflective of replacement cost, therefore the building count was multiplied by an average replacement value of $141,000, which represents a 1,200 sq. ft. home at $116/sq. ft. building cost.

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

The most recent HAZUS-MH 2017 run did not change the data from 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. Additionally, the County's Assessor Office supplied residential and non-residential costs as much higher than the HAZUS-MH software and it was determined by the Committee Chair to use the Assessor's values as this represents the County's actual property tax base. The buildings' values were calculated by adding 20% to the net assessed value of buildings to get the market value. This was done by Erin Singley from Lyon County Assessor's office. Un-reinforced masonry (URM) building information was obtained from Wayne Carlson of the Nevada Insurance Pool and Advanced Data Systems, Inc. who are compiling a statewide inventory.

Due to minimal significant growth in the past 5 years, the data and values from the 2013 plan were used and values updated where applicable. No new critical facility have been constructed in the last 5 years. 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 and City 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 versions of the MJHMP.

Table 6-1: Estimated Population and Building Inventory

Population	Residential Buildings		Nonresidential Buildings	
NV Demographer Projected 2016 Population	Total Building County	Total Value of Buildings (in millions)	Total Building County	Total Value of Buildings (in millions)
Lyon County				
53,179	23,751	8,810	2,377	2,870
City of Fernley				
19,588	8,166	3,424	303	1,239
City of Yerington				
3,142	1,631	283	260	335

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, the Cities and the CLCFPD service areas and fulfilling important public safety, emergency response, and disaster recovery functions. They are identified in Table 6-2.
Similar to critical facilities, critical infrastructure is defined as infrastructure that is essential to preserve the quality of life and safety in the County. Existing County and City roads were not critical to evacuation or response. Critical infrastructure are located in **Appendix F – Appendix H**

6.2 METHODOLOGY

A conservative exposure-level analysis was conducted to assess the risks associated with the identified hazards. This analysis is a simplified assessment of the potential effects of the hazards on values at risk without consideration of the probability or level of damage.

Population was derived from 2010 Census information, then a combination of spatial overlay and proportional analysis was used to determine the number of people located where hazards are likely to occur.

Using Census block level residential building information a combination of spatial overlay and proportional analysis was used to determine the number of residential buildings located where hazards are likely to occur.

Using data provided by Lyon and Douglas Counties and the Cities of Fernley and Yerington, and the CLCFPD, geocoded locations of physical assets were compared to locations where hazards are likely to occur. If any portion of an asset fell within a hazard area, it was counted as impacted. Estimated replacement values were provided by each local jurisdiction, if available. The partial vulnerability analysis was completed by applying the hazard areas identified in Sections 5 to the list of critical facilities and infrastructure.

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). 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 the use of approximations and simplifications that are necessary for a comprehensive analysis.

It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, buildings, and assets to the identified hazards. It was beyond the scope of the 2013 HMP update 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). Such impacts may be addressed with future updates of the HMP.

6.3.1 Changes in Development

Due to the recent economic upturn, generally development in the County for the last five years has been minimal, until this past year. Lyon County has seen an increase in the construction of industrial parks, such as the TRIC in the City of Fernley and the recent increase of the mining industry in the Yerington and Smith Valley areas. In addition there has been a revitalization of past housing developments that were not developed during the 2010 – 2016 downturn in the economy. Since the last update, these new developments are starting back up with an estimated 2,900 number for residential lots on the planning database.

6.3.2 Future Development

As discussed at the end of Section 3 – Community Description, there is a significant amount of land in the County that has the potential to be developed for residential and commercial growth. Several planned unit developments are in the planning stages in and throughout the County where there are existing sewage treatment and water treatment facilities both of which may be expanded in the future. With over 2,900 residential lots in the planning stages, development will proceed slowly and carefully to mitigate impacts to existing residents.
Population growth for the overall state is up along with a mid-unemployment rate for the state, which affect all counties. The population increase and economic issues for the State of Nevada are having enormous impacts on residential and non-residential growth. According to the Nevada State Demographer's Office, current population forecasts anticipate a 1.2% annual growth rate through 2020. Therefore, the numbers and values of the figures in the Table 6-2 below are viewed as accurate. During the plan maintenance activities this should be reviewed and during the next plan update proposed growth can be revisited.

CLCFPD has no expectation of expanding or replacing any facilities, at least within the 5 year timeframe. Sometime, hopefully soon after 5 years, they will be looking at a new "Station 31", moving out of their rented office space and into an Admin/Training/Station.

6.4 EXPOSURE ANALYSIS

The recommendations for identifying structures and estimating potential losses, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 RECOMMENDATIONS: RISK ASSESSMENT

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.

Vulnerable population and existing structures, including residential buildings and critical facilities and infrastructure, at risk to each identified hazard are located in each local-participant-specific appendix (**Appendix F** through **Appendix H**). For Lyon County and the participating cities, the exposure analysis was prepared for population, residential buildings, and critical facilities and infrastructure.

DMA 2000 RECOMMENDATIONS: RISK ASSESSMENT

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 estimated potential dollar losses for residential buildings and critical facilities and infrastructure at risk to each identified hazard are shown in each local-participant-specific appendix (**Appendix F** through **Appendix H**). As noted previously, estimated values were provided by the local jurisdiction, if available. The methodology used to prepare the estimate is described in **Section 5.2**.

Repetitive Loss Properties

The requirements for addressing Repetitive Loss properties, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: RISK ASSESSMENT

Assessing Vulnerability: Addressing Repetitive Loss Properties

Requirement §201.6(c)(2)(ii): [The risk assessment] must address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

Element

- 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.

Per FEMA's SQANet, there are no Repetitive Loss properties in Lyon County. Therefore, Repetitive Loss properties are not included in the vulnerability analysis.

Summary Of Impacts

The requirements for an overview of the vulnerability analysis, as stipulated in DMA 2000 and its implementing regulations, are detailed in Table 6-2 below.

Table 6-2: Potential Hazard Vulnerability Assessment – Population and Buildings

HAZARD	*POPULATION NUMBER*	*BUILDINGS*			
		RESIDENTIAL		*NONRESIDENTIAL*	
		NUMBER	*VALUE*	*NUMBER*	*As'd VALUE*
Total for Lyon County	**53,179**	**23,751**	**$2,517,177,737**	**2,377**	**$287,065,575**
Drought	**53,179**	23,751	$2,517,177,737	2,377	$287,065,575
Earthquake – Magnitude 6.0 (30-35% chance in 50 years)	**53,179**	23,751	$2,517,177,737	2,377	$287,065,575
Epidemic	**53,179**	23,751	$2,517,177,737	2,377	$287,065,575
Extreme Heat	**53,179**	23,751	$2,517,177,737	2,377	$287,065,575
Floods	**13,199**	3863	$163,261,997	2,105	$72,068,494
Hazardous Materials Events	**30,199**	11,468	$474,254,217	1,436	$236,183,492
Infestation	**0**	0	0	0	0
Landslide	**unknown**	unknown	unknown	unknown	unknown
Land Subsidence & Ground Failure	**unknown**	unknown	unknown	unknown	unknown
Severe Weather	**53,179**	23,751	$2,517,177,737	2,377	287,065,575
Tornado	**unknown**	unknown	unknown	unknown	unknown
Volcano/Ash	**53,179**	23,751	$2,517,177,737	2,377	287,065,575
Wildland Fire	**unknown**	unknown	unknown	unknown	unknown
Windstorm	**53,179**	23,751	$2,517,177,737	2,377	287,065,575

Data acquired from Lyon County Assessor's Office and Data source Nevada State Demographer and Lyon Co through Douglas County GIS

HAZARD	POPULATION NUMBER	BUILDINGS			
		RESIDENTIAL		NONRESIDENTIAL	
		NUMBER	VALUE	NUMBER	VALUE
Total for City of Fernley	**19,588**	**7,975**	**$837,375,000**	**303**	**$123,953,526**
Drought	**19,588**	7,975	$837,375,000	303	$123,953,526
Earthquake – Magnitude 6.0 (30-35% chance in 50 years)	**19,588**	7,975	$837,375,000	303	$123,953,526
Epidemic	**19,588**	7,975	$837,375,000	303	$123,953,526
Extreme Heat	**19,588**	7,975	$837,375,000	303	$123,953,526
Floods	**19,588**	106	$5,620,487	27	$9,467,840
Hazardous Materials Events	**2,986**	5973	$215,856,103	267	$126,432,409
Infestation	**0**	0	0	0	0
Landslide	**unknown**	unknown	unknown	unknown	unknown
Land Subsidence & Ground Failure	**unknown**	unknown	unknown	unknown	unknown
Severe Weather	**19,588**	7,975	$837,375,000	303	$123,953,526
Tornado	**unknown**	unknown	unknown	unknown	unknown
Volcano/Ash	**unknown**	unknown	unknown	unknown	unknown
Wildland Fire	**unknown**	unknown	unknown	unknown	unknown
Windstorm	**19,588**	7,975	$837,375,000	303	$123,953,526

Data acquired from Lyon County Assessor's Office and Data source Nevada State Demographer and Lyon Co through Douglas County GIS

HAZARD	POPULATION NUMBER	BUILDINGS			
		RESIDENTIAL		NONRESIDENTIAL	
		NUMBER	VALUE	NUMBER	VALUE
Total for City of Yerington	**3,142**	**1,507**	**$177,826,000**	**260**	**$33,553,661**
Drought	**3,142**	1,507	$177,826,000	260	$33,553,661
Earthquake – Magnitude 6.0 (30-35% chance in 50 years)	**3,142**	1,507	$177,826,000	260	$33,553,661
Epidemic	**3,142**	1,507	$177,826,000	260	$33,553,661
Extreme Heat	**3,142**	1,507	$177,826,000	260	$33,553,661
Floods	**515**	1077	$31,508,215	253	$31,727,252
Hazardous Materials Events	**493**	1030	$27,232,919	60	$7,401,460
Infestation	**0**	0	0	0	0
Landslide	**unknown**	unknown	unknown	unknown	unknown
Land Subsidence & Ground Failure	**unknown**	unknown	unknown	unknown	unknown
Severe Weather	**3,142**	1,507	$177,826,000	260	$33,553,661
Tornado	**unknown**	unknown	unknown	unknown	unknown
Volcano/Ash	**unknown**	unknown	unknown	unknown	unknown
Wildland Fire	**unknown**	unknown	unknown	unknown	unknown
Windstorm	**3,142**	1,507	$177,826,000	260	$33,553,661
Volcano/Ash	**unknown**	unknown	unknown	unknown	unknown
Wildland Fire	**unknown**	unknown	unknown	unknown	unknown

Data acquired from Lyon County Assessor's Office and Data source Nevada State Demographer and Lyon Co through Douglas County GIS

HAZARD	POPULATION NUMBER	BUILDINGS			
		RESIDENTIAL		NONRESIDENTIAL	
		NUMBER	VALUE	NUMBER	VALUE
Total for CLCFPD	**25,000**	**14,584**	**$15,456,269**	**583**	**$7,040,774**
Drought	**25,000**	14,584	$15,456,269	583	$7,040,774
Earthquake – Magnitude 6.0 (30-35% chance in 50 years)	**25,000**	14,584	$15,456,269	583	$7,040,774
Epidemic	**25,000**	14,584	$15,456,269	583	$7,040,774
Extreme Heat	**25,000**	14,584	$15,456,269	583	$7,040,774
Floods	**13,199**	1077	$4,551725	253	$8,661,910
Hazardous Materials Events	**25,000**	1030	$4,259513	60	$986,838
Infestation	**0**	0	0	0	0
Landslide	**unknown**	unknown	unknown	unknown	unknown
Land Subsidence & Ground Failure	**unknown**	unknown	unknown	unknown	unknown
Severe Weather	**25,000**	14,584	$15,456,269	583	$7,040,774
Tornado	**unknown**	unknown	unknown	unknown	unknown
Volcano/Ash	**unknown**	unknown	unknown	unknown	unknown
Wildland Fire	**unknown**	unknown	unknown	unknown	unknown
Windstorm	**25,000**	14,584	$15,456,269	583	$7,040,774
Volcano/Ash	**unknown**	unknown	unknown	unknown	unknown
Wildland Fire	**unknown**	unknown	unknown	unknown	unknown

Data acquired from Lyon County Assessor's Office and Data source Nevada State Demographer and Lyon Co through Douglas County GIS

A summary of impacts (i.e., percentage at risk) for the population, residential buildings, and critical facilities and infrastructure for each identified hazard for Lyon County is provided below. Summaries for each specific jurisdiction, Lyon County unincorporated and the incorporated cities are provided in the accompanying jurisdiction-specific appendices (Appendices F through H).

Overall, based on this 2018 MJHMP's vulnerability analysis, a summary of impacts includes the following:

- Earthquake shaking is likely throughout the entire County. The far northeastern portions of the County, mainly those along the Churchill County border, will experience shaking within the "strong" range, but the rest of the County falls within the "severe" shaking range. Therefore 100% of the population is susceptible to earthquake shaking, specifically 100% of the Fernley and Yerington City residents are susceptible to "severe" shaking.
- Flooding occurs throughout Lyon County and is primarily concentrated along the Carson River, the community of Dayton, and northeast of Yerington. About 23 percent of the total County population and roughly 14 percent of the County's residential parcels are vulnerable to flooding. For the City of Fernley, roughly 1.3 percent of the population and 1.6 percent of residential parcels are vulnerable to flooding. For the City of Yerington all residents are vulnerable to flooding as well as roughly 66 percent of residential parcels.
- The threat of a hazardous materials incident is found throughout Lyon County, but is focused in the City and community centers. Roughly 56 percent of the County's population is vulnerable to a hazardous materials incident and 15 percent of the County's residential parcels.
- The majority of Lyon County is considered to have a moderate fire hazard rating. While a few communities have a fire hazard rating of low, only one community in Lyon County has a high fire hazard rating, the community of Silver City. Both the cities of Fernley and Yerington have a fire hazard rating of low.
- Winter Storm affects the entire County and was mainly characterized by snowfall and freezing. The northeastern portion of the County experiences the fewest number of freeze days per year, however, the entire County experiences a "high" level of freezing, more than 185 freeze days per year. In general the northeastern half of the County, including the Cities of Fernley and Yerington, receive a "medium" level of snow each year and the southwestern half of the County receives a "high" level of snow each year.

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

7.1 Legal and Regulatory Capabilities

The County, Cities and CLCFPD currently support hazard mitigation through their regulations, plans, and public outreach programs. The County's Building Code outlines hazard mitigation-related ordinances.

Additionally, the County Master Plan identifies goals, objectives, and actions for natural hazards, including floods, drought, and earthquakes. In addition to policies and regulations, the County carries out hazard mitigation activities by participating in the National Flood Insurance Program (NFIP) see section 7.4.1.

The following table, **Table 7-1**, summarizes the County's and Cities' hazard mitigation legal and regulatory capabilities.

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
Plans	Emergency Operations Plan	Updated 2010. Provides emergency response.
	Carson River Geographic Response Plan	Establishes the emergency response organization for hazardous materials incidents occurring within the Carson River watershed.
	Carson River Watershed Discovery Report	Provides flood hazard identification and mitigation measures within the Carson River Watershed.
	Carson River Watershed Floodplain Management Plan	This plan provides strategies for floodplain management that can be applied regionally as well as locally.
Programs	National Flood Insurance Program	Lyon County adopts and enforces a floodplain management ordinance to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners.

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
	Fire Prevention	Fire Prevention includes plan reviews of new construction and tenant improvements, business and occupancy inspections and fire code compliance reviews. While not as exciting as kicking in the door and spraying water firefighting, it provides a level of reassurance. When parents living in our communities send their children off to school they can be assured their facility is constructed to the exact requirements of the International Fire Code, the teachers have been drilled on emergency evacuation, the fire alarms work, the sprinkler system works, the fire hydrants function and fire apparatus and personnel can get there quickly.
	Defensible Space	A properly designed defensible space can provide our firefighters with a safe place from which to defend your home from an approaching wildland fire. At the same time, homes with adequate defensible space are more likely to survive a wildland fire, even without firefighter assistance. Remove dead or flammable vegetation. Reduce vegetation by pruning or mowing. Providing space between plants and trees removes the continuous fuel bed that might otherwise exist throughout your yard.
	Fuels Management	The goal of this program is to assist homeowners in clearing yards and neighborhoods of debris to significantly reduce any threats to homes in high fire hazard areas. This program offers as a community service to assist our residents in making their homes safer from the threat of wildfire and creating defensible space.
Ordinances and Policies	Building Code Title 19, 24, & 25 (CBC 2013 & its appurtenances)	Master Plan, Land Use Plan Element. Provides regulations to reduce hazard impact.
	Zoning Ordinances	
	Lyon County Development Standards	Subdivision ordinance or regulations, wildfire ordinances, hazard set back requirements, well and on-site wastewater standards.

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
	Roadway, Driveway, and Lane Standards	Provides development standards to mitigate floods in the roadways and access for emergency personal
	Utility District Development Standards	Water and wastewater standards.
Codes	International Fire Code 2018 edition	Regulates and governs the safeguarding of life and property for Fire Hazard.

7.2 Administrative and Technical Capabilities

The administrative and technical capability assessment identifies the staff and personnel resources available within the County & Cities and the CLCFPD to engage in mitigation planning and carry out mitigation projects. The administrative and technical capabilities of the County, Cities and Fire District are listed in Table 7-2.

Table 7-2. Administrative and Technical Resources for Hazard Mitigation

Staff/Personnel Resources	Department / Agency
Planner(s) or engineer(s) with knowledge of land development and land management practices	Planning & Public Works
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building & Public Works
Planner(s) Fire District personnel or engineer(s) with an understanding of manmade or natural hazards	Building, Planning, CLCFPD, Public Health Emergency Preparedness
Staff with education or expertise to assess the community's vulnerability to hazards	Building, CLCFPD, Public Works
Floodplain manager	Community Development
Personnel skilled in GIS and/or HAZUS-MH	GIS Program, Community Development
Emergency Services	Sheriff's Department
Finance (purchasing) – Fiscal Management	Finance Department
Public Information Officers, Planner(s), Fire District Chief	Administration, Planning, CLCFPD

7.3 Financial Capabilities

The fiscal capability assessment lists the specific financial and budgetary tools that are available to the County, Cities and CLCFPD for hazard mitigation activities. These capabilities, which are listed below include both local and Federal entitlements.

Table 7-3. Financial Resources for Hazard Mitigation

Financial Resources	Effect on Hazard Mitigation
Local	
Authority to levy taxes for specific purposes	Yes. Upon approval of the Board of Commissioners, staying within the stipulations set forth in Nevada Code.
Capital Improvement Plans and Fire Impact Fees	Assigns impact development fees to finance fire control capital improvement programs.

Table 7-3. Financial Resources for Hazard Mitigation

Financial Resources	Effect on Hazard Mitigation
Community Development Block Grants	Yes. Subject to grant from Fed/State.
Capital Improvement Project funding	Yes. General Fund.
Fees for water, sewer, gas or electric service	Yes, for utility districts and private entities.
Incur debt through general obligation bonds	Yes. Upon voter approval, staying within the stipulations set forth in Nevada Code.
Incur debt through special tax and revenue bonds	Yes. Upon voter approval, staying within the stipulations set forth in Nevada Code.
Incur debt through private activity bonds	Yes. Upon voter approval, staying within the stipulations set forth in Nevada Code.
Withhold spending in hazard-prone areas	Yes.
HMGP, FMA, PDM Grants	Yes. Subject to grant from Fed/State.

7.4 CURRENT MITIGATION CAPABILITIES & ANALYSIS

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

Table 7-4. Lyon County Local Mitigation Capability Assessment

Agency Name (Mission/ Function)	Programs, Plans Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone	Effect on Loss Reduction			Comments
			Support	**Facilitate**	**Hinder**	
Building	Code Enforcement, Permitting, Flood Plain Mgmt.	Jeff Page, County Mgr.; (775) 463-5631 Chuck Reno Farr West Engr. Floodplain Mgr.;. (775) 853-7264 Danny Sommers, Farr West Engr. Building Official (775) 853-7264	√			Engineering and Flood Management
Planning	Floodplain Management Economic Development	Tammy Kinsley, sr. Planner; Rob Pyzel, Sr. Planner (775) 463-6592	√			Planning Support and Flood Management
Roads	Roads and Improvements in County ROW	Dustin Homan, Mgr. (775)246-6220	√			Construction/ Culverts/Storm Drainage
Utilities & Capital Projects	Water, Sewer, Capital projects, building maintenance, parks	David Bruketta, Utilities Director (775) 246-6220 Rob Dunbar; Facilities Director (775) 463-6551	√			Engineering, detailed knowledge of infrastructure and Storm Drainage
Emergency Management	Emergency Management Mitigation Plan	Jeff Page, Emergency and County Mgr.; (775) 463-5631	√			Familiar with Mitigation Grants, knowledge of Vulnerability
Fire Districts and Volunteers	Fuels mitigation, public education,	Central Lyon Co Fire; (775) 246-6209 Mason Valley Fire; (775) 463-	√			Detailed knowledge of vulnerability

		6535 North County Fire. (775) 575-3310 Smith Valley Fire (775) 465-2577				
School District	Identify and implement mitigation actions for school property	Tim Logan, District Mgr. (775) 291-7444	√			Familiar w/school district infrastructure
Health/Human Services	Public Health Officer	Edrie LaVoie, Human Services Director (775) 577-5009	√			Familiar w/ epidemic and CDC grants, health capability
Sheriff's Office	Public Safety	Al McNeill, Sheriff 775-463-6600	√			Familiar w/terrorist mitigation
Walker River Irrigation District	Ditches/Rivers/Canals	Bert Bryan; Jessica Smith 775-463-3523	√			Control Flood Ditches/Rivers and Channels
Truckee Canal Irrigation District	Canals	Rusty Jardine 775-423-2141	√			Control Flood Channels

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 does have strong legal, administrative and financial capabilities in relation to smaller rural counties within Nevada. The County, is able to enforce the International Building Code & International Fire Code, Building Code Title 11 and 12 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. The Cities of Fernley and Yerington current mitigation programs, projects, and plans, are shown in Tables 7-5 and 7-6 below.

Table 7-5. City of Fernley Local Mitigation Capability Assessment

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone	Effect on Loss Reduction			Comments
			Support	**Facilitate**	**Hinder**	
Building and Planning Divisions	Code Enforcement, Permitting, Flood Plain Mgmt.	Building Division (775) 784-9814 Planning Division (775)784-9819	√			Planning Support and Flood Management
Public Works	Water, Sewer, Capital projects, building maintenance, parks	Dave Whalen Public Works Director (775) 784-9910	√			Engineering, detailed knowledge of infrastructure and Storm Drainage
Fire Department	Fuels mitigation, public education	North County Fire. (775) 575-3310	√			Detailed knowledge of vulnerability
Police	Public Safety	Lyon County Sheriff's (775) 575-3350	√			Familiar w/terrorist mitigation
Truckee Canal Irrigation District	Canals	Rusty Jardine 775-423-2141	√			Control Flood Channels

Table 7-6. City of Yerington Local Mitigation Capability Assessment

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone	Effect on Loss Reduction			Comments
			Support	**Facilitate**	**Hinder**	
Public Works and Building Departments	Code Enforcement, Building Permitting,	Jay Flakus, Public Works Director (775) 463-2729	√			Planning Support
Utilities and Streets Depts.	Water, Sewer, Capital projects, building maintenance, parks and airport	Jay Flakus, Public Works Director (775) 463-2729	√			Engineering, detailed knowledge of infrastructure and Storm Drainage
Fire Department	Fuels mitigation, public Education & Public Safety	Scott Draper Fire Chief (775) 463-2261	√			Detailed knowledge of vulnerability
Police Department	Public Safety	Dave Wagner Chief of Police (775) 463-2332	√			Familiar w/terrorist mitigation

The City of Yerington, being small in population, has individuals wearing multiple hats however it does have a strong legal, administrative and financial capability in relation to smaller rural cities within Nevada. The City, 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, and public works. These programs are run by trained City 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.

Table 7-7. Central Lyon County Fire Protection District Local Mitigation Capability Assessment

Agency Name (Mission/Function)	Programs, Plans, Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone	Effect on Loss Reduction			Comments
			Support	**Facilitate**	**Hinder**	
Central Lyon County Fire Protection District	Fuels mitigation, public Service and Public Outreach and Education & Public Safety. All Hazard Emergency Response	Rich Harvey Fire Chief (775) 246-6209	√			Detailed knowledge of vulnerability

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

DMA 2000 Requirements: Mitigation Strategy – National Flood Insurance Program
Source: FEMA, March 2008.

The County, City and the CLCFPD have identified special flood-hazard areas. They entered the NFIP in 1985 and 1999 respectively. The County and City do not actively participate in the Community Rating System (CRS). 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, City, and CLCFPD outlined mitigation actions listed under goals for flood detailed below in Table 8-3, Mitigation Goals and Potential Actions. There are no repetitive loss properties and no severe repetitive loss properties (as defined by the NFIP) within the County or City and service area of CLCFPD. Current building codes within the County and Cities restricts future building within a floodway.

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The following provides an overview of the four-step process for preparing a mitigation strategy: developing mitigation goals, 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.

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 9 goals to reduce or avoid long-term vulnerabilities to the identified hazards (Table 8-1). All hazards identified by the County, City and FPST have a specific goal except for Infestation and Volcano. Both hazards are rated as low hazards for the County, City and FPST, therefore, Goals One and Two will address those hazards.

Table 8-1: Mitigation Goals

Goal Number	Goal Description
1	Promote increased and ongoing 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 dam/ or canal failure:
4*	Reduce the possibility of damage and losses due to drought
5*	Reduce the possibility of damage and losses due to earthquakes
6*	Reduce the possibility of damage and losses due to extreme heat
7*	Reduce the possibility of damage and losses due to flooding
8	Reduce the possibility of damage and losses due to Hail and thunderstorms
9*	Reduce the possibility of damage and losses due to hazardous materials events
10	Reduce the possibility of damage and losses due to landslide
11	Reduce the possibility of damage and losses due to Land Subsidence
12*	Reduce the possibility of damage and losses due to severe weather

13	Reduce the possibility of damage and losses due to wildland fires
14	Reduce the possibility of damage and losses due to windstorms
15	Reduce the possibility of damage and losses due to epidemic
16	Reduce the possibility of damage and losses due to Terrorism/ WMD

* = Represents a hazard that was included in the vulnerability analysis

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. Individual members of the Planning Committee were tasked to provide mitigation actions. The 2013 MJHMP provided 40 potential mitigation actions, with this update 15 additional actions were developed by the Committee to address the three new Hazards to the plan with this update and to add mitigation actions to some of the existing hazards, already in the plan document. As such, Table 8-2 lists the goals and potential actions selected for this MJHMP.

Table 8-2 Mitigation Goals and Potential Actions

Goals	County/Cities	Action	New or Existing Action.	Description
Goal 1: ***Promote increased and ongoing involvement in hazard-mitigation planning and projects***	Lyon County, City of Fernley, City of Yerington, and CLCFPD	1.A	Existing	Integrate the Lyon County MJHMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)
	Lyon County, City of Fernley, City of Yerington and CLCFPD	1.B	Existing	Add mitigation actions to each jurisdiction's website.
Goal 2: ***Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters***	Lyon County, City of Fernley, City of Yerington.	2.A	Existing	Establish density incentives for future construction (to encourage less development in more hazardous areas).
Goal 3: ***Reduce the possibility of damage and losses due to am/ or canal failure:***	Lyon County, City of Fernley, City of Yerington	3.A	Existing	Develop a public outreach program that informs property owners located in a dam/or canal inundation area about voluntary flood insurance.
	Lyon County	3.B	New	Utilize the Sheep Camp Dam Emergency Plan - 2018
	Lyon County, City of Fernley, City of Yerington	3.C	New	Annually monitor dams and canals.
Goal 4: ***Reduce the possibility of damage and losses due to drought***	Lyon County, City of Fernley, City of Yerington	4.A	Existing	Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.
	Lyon County, City of Fernley, City of Yerington	4.B	Existing	Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.

	Lyon County, City of Fernley, City of Yerington	4.C	Existing	Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping
	Lyon County, City of Fernley, City of Yerington	4.D	Existing	Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.
	Lyon County, City of Fernley, City of Yerington	4.E	Existing	Implement a thirsty/invasive weed public awareness and educational campaign.
	Lyon County, City of Fernley, City of Yerington	4.F	New	With all Water system purveyors prepare a drought mitigation plan and review and update annually.
Goal 5: ***Reduce the possibility of damage and losses due to earthquakes***	Lyon County, City of Fernley, City of Yerington	5.A	Existing	Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.
	Lyon County, City of Fernley, City of Yerington	5.B	Existing	Seismically retrofit or replace unreinforced masonry buildings, located in high ground shaking areas, and/or as necessary for first responders to use during and/or immediate after a disaster or emergency (as identified by the University of Nevada Reno inventory).
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	5.C	Existing	Provide education to the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and hands-on displays ("Living with Earthquakes in Nevada") as good public outreach material.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	5.D	Existing	Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).
	Lyon County, City of Fernley, City of Yerington	5.E	Existing	Develop current Earthquake fault maps to ensure future growth is most compatible with the hazard area.
	Lyon County, City of Fernley, City of Yerington	5.F	New	In coordination with the State, implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities and infrastructure, and retrofit buildings, if necessary.
Goal 6: ***Reduce the possibility of***	Lyon County, City of Fernley,	6.A	Existing	Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to

damage and losses due to extreme heat	City of Yerington, and CLCFPD			reduce energy consumption during periods of extreme heat.
Goal 7: ***Reduce the possibility of damage and losses due to flooding***	Lyon County, City of Fernley, City of Yerington	7.A	Existing	Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.
	Lyon County, City of Fernley, City of Yerington	7.B	Existing	Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.
	Lyon County, City of Fernley, City of Yerington	7.C	Existing	Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	7.D	Existing	Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps as being in the Special Flood Hazard Areas.)
	Lyon County, City of Fernley, City of Yerington	7.E	Existing	Work with surrounding counties to develop a watershed coordination organization for Walker River.
	Lyon County, City of Fernley, City of Yerington	7.F	Existing	Fix low points along river banks at critical areas
	Lyon County, City of Fernley, City of Yerington	7.G	Existing	Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance)
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	7.H	Existing	Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.
	Lyon County, City of Fernley, City of Yerington	7.I	Existing	Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.
	Lyon County, City of Fernley, City of Yerington	7.J	New	Continue the ongoing ability to remove sediment and debris from rivers.
	Lyon County, City of Yerington	7.K	New	Keep the current floodplain open as natural storage, the "Living River Concept" as identified in the Carson River Regional Watershed

				Floodplain Management Plan – 2018 and Adopted by the Lyon County Board of County Commissioners.
Goal 8: ***Reduce the possibility of damage and losses due to Hail and thunderstorms***	Lyon County, City of Fernley, City of Yerington, and CLCFPD	8.A	Existing	Implement Warning Systems that monitor Hail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.
Goal 9: ***Reduce the possibility of damage and losses due to hazardous materials***	Lyon County, City of Fernley, City of Yerington, and CLCFPD	9.A	Existing	Work with NDOT to require all transport of hazardous materials to follow approved routes.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	9.B	Existing	Use the County's, Cities and CLCFPD Web sites to post information regarding the safe handling and disposal of household chemicals.
Goal 10: ***Reduce the possibility of damage and losses due to landslide***	Lyon County, City of Fernley, City of Yerington	10.A	Existing	Establish County code which requires the stabilization of landslide-prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, drained earth buttresses, and subdrains.
Goal 11: ***Reduce the possibility of damage and losses due to Land subsidence***	Lyon County, City of Fernley, City of Yerington	11.A	Existing	Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.
Goal 12: ***Reduce the possibility of damage and losses due to severe weather***	Lyon County, City of Fernley, City of Yerington; and CLCFPD	12.A	Existing	Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).
Goal 13:	Lyon County, City of Fernley,	13.A	Existing	Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open

Reduce the possibility of damage and losses due to wildfire	City of Yerington, and CLCFPD			spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	13.B	Existing	Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	13.C	Existing	Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	13.D	Existing	Establish appropriate standards for defensible space around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	13.E	Existing	Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	13.F	New	Continue to have public education outreach for wildfire awareness month in May of each year.
Goal 14: ***Reduce the possibility of damage and losses due to windstorm***	Lyon County, City of Fernley, City of Yerington, and CLCFPD	14.A	Existing	Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	14.B	Existing	Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.
	Lyon County, City of Fernley, City of Yerington	14.C	Existing	Secure/bolt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.
	Lyon County, City of Fernley,	14.D	Existing	In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.

	City of Yerington			
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	14.E	Existing	Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.
Goal 15: Reduce the possibility of threat to life and losses due to epidemic	Lyon County, City of Fernley, City of Yerington	15.A	New	Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats.
	Lyon County, City of Fernley, City of Yerington	15.B	New	Develop public outreach regarding current community plan for medicine and plans for vaccines, utilizing the Quad-County Public Health Preparedness information.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	15.C	New	Develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sheriff, Fire Districts and Tri-County and local hospitals.
Goal 16: Reduce the possibility of damage and losses due to Terrorism/WMD	Lyon County, City of Fernley, City of Yerington, and CLCFPD	16.A	New	Continue planning and training staff
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	16.B	New	Continue to communicate regionally with other/all agencies.
	Lyon County, City of Fernley, City of Yerington, and CLCFPD	16.C	New	Plan to address mitigation if other communities experience an event and citizens are traveling to and through Lyon County. Coordination with NDOT and hospitals in the area.
	Lyon County	16.D	New	Continue SRO with Lyon County School District
	Lyon County	16.E	New	Continue with NTAC Agreement

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
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 in July of 2018. The Planning Committee prioritized each of the actions and evaluated actions as being completed, continuing/ongoing since the 2013 MJHMP update, or new actions to this 2018 update. 15 new actions were added to this update as a result of this evaluation. Specifically, Goal 3, two actions were added since the 2013 MJHMP. Since the last update the County has developed the Sheep Camp Dam Emergency Plan and this was adopted by the Board of Commissioners in April 2018. Therefore action item 3.B was added since the 2013 plan document. Also added was Action 3.C. for Lyon County, and both Cities to annually monitor dams and canals. This new action was added because of the 2008 levee breach in the City of Fernley. Action 4.F. was added to the Drought hazard, to annually review the drought mitigation plan with all purveyors and the county and cities. 5. F. was added to the Earthquake Action to coordinate with the state, in regards to evaluating URM structures and the structural integrity of these existing structures in the county and cities. Actions 7.J. and 7.K. were added to the Flood Hazard to continue the ongoing debris sediment activities, that was not a part of the 2013 MJHMP and to adhere to the "Living River Concept" as identified in the Carson River Regional Watershed Floodplain Management Plan – 2018 and Adopted by the Lyon County Board of County Commissioners. Something that the Fire Districts do throughout the County and Cities is public outreach and awareness for the month of May being Wildfire awareness month. Since the Fire Districts currently do this activity it was added to this update, since it was not included in the last 2013 plan document. During this 2018 plan update two hazards were added to this document. They are Epidemic and Terrorism/WMD. With these two new hazards, mitigation actions for each were added to the plan. 15. A., 15. B and 15.C were added for Epidemic to improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats in the county and cities. Develop public outreach regarding current community plan for medicine and plans for vaccines, utilizing the Quad-County Public Health Preparedness information. Also to develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sheriff and Tri-County and local hospitals. For the Terrorism / WMD hazard, five new mitigation actions were added, 16.A. 16.B., 16.C., 16.D., and16.E. The Sheriff's office currently plans and trains staff, it was decided to add the action to continue planning and training staff; to continue to communicate regionally with other/all agencies; To

plan to address mitigation if other communities experience an event and citizens are traveling to and through Lyon County and the coordination with NDOT and hospitals in the area; Continue SRO with Lyon County School District and continue with NTAC Agreement.

Although no specific actions have been completed since the 2013 MJHMP, the County and Cities continue to coordinate and conduct public outreach to provide information, at local community events throughout the year, such as the Oodles of Noodles event in Dayton during June, at Dayton Valley Days during September, at the Lyon County Fly In at the Silver Springs Airport in October, the Smith Valley family fun days at the end of September and beginning of October. Also during the Nevada Flood Awareness Week during the month of November, public outreach is conducted in the City of Yerington and local schools in coordination with CWSD and the River Wranglers group to provide information on flood events. Central Lyon Fire, North Lyon Fire and Smith Valley Fire Protection Districts also coordinate public outreach events regarding wildfire, defensible space and what to do in case of an emergency.

In addition to completing the task of evaluating current and new mitigation actions, the Planning Committee completed the STAPLE+E evaluation criteria using rankings of one for lowest and five 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 8-3 for the evaluation criteria.

Table 8-3: STAPLE+E Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider…."	Consideration
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: Finding 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
Economic	If the action can be funded with current or future internal and external sources, if the cost seem reasonable for the size of the	Benefit/Cost of action; Contributes to other economic

	project, and if enough information is available to complete a FEMA Benefit cost Analysis	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 Committee, mitigation actions were selected for the County and Cities that best fulfill the goals of the MJHMP and were appropriate and feasible to implement during the 5-year lifespan of this version of the MJHMP. In reviewing the actions the 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..

Further in our assessment utilizing the STAPLE+E, the actions and their evaluation outcomes are shown in Table 8-4. A combined result of the STAPLE+E outcome, from those who attended meeting five and participated in the table-top exercise, is provided in Appendix D, page D-76.

8.4 IMPLEMENTING A MITIGATION ACTION PLAN

A Mitigation Action Plan Matrix was prepared for the County and the Cities detailing the priority of the mitigation actions, how the overall benefit-cost were taken into consideration, and how each mitigation action will be implemented and administered. The County and Cities of Fernley and Yerington priority ratings were the same for each action and therefore the table is labeled Table 8-4. Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan.

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
1A	Existing	Integrate the Lyon County MJHMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)	County and/or City Planning Department and Office of Emergency Management (OEM)	Ongoing/ Staff hours	Protection of lives due to pre-planning.	High
1.B	Existing	Add mitigation actions to each jurisdiction's website.	County and/or City Planning Department and Office of Emergency Management (OEM)	12 Months/ Staff hours	Protection of lives due to pre-planning.	Medium

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
2A	Existing	Establish density incentives for future construction (to encourage more development in more hazard friendly areas).	County and/or City Planning Department and Office of Emergency Management (OEM)	1-5 years/ Staff hours	Protection of lives and property, infrastructure and critical facilities due to pre-planning.	High
3.A	Existing	Develop a public outreach program that informs property owners located in a dam/or canal inundation area about voluntary flood insurance.	County and/or City Planning Department and Office of Emergency Management (OEM)/ WRID & TCID	1-5 years/ Staff hours/PDM Grant	Protection of lives and property, infrastructure and critical facilities due to pre-planning.	High
3.B	Existing	Utilize the Sheep Camp Dam Emergency Plan -2018	County Public Works and County OEM	Ongoing/ Staff hours	Protection of lives and property, infrastructure and critical facilities due to pre-planning.	High
3.C	Existing	Annually monitor dams and canals.	County & City Public Works and County OEM/ WRID & TCID	Ongoing/ Staff hours/ PDM Grant	Protection of lives and property, infrastructure and critical facilities due to pre-planning.	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan

Action Number.	Existing or New Infrastructure	Action Item	Department or Agency	Implementation Timeline/ Cost Estimate	Economic Justification	Priority Level
4.A	Existing	Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.	County & City Water Utilities and/or Local GID and OEM	1-5 years/ Staff hours/ PDM Grant county cost-share component	Protection of lives and property due to pre-planning.	Medium
4.B	Existing	Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.	County and City Public Works/ Local Water Purveyor GID's and OEM	Ongoing/ Staff hours	Protection of lives and property due to pre-planning	High
4.C	Existing	Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping	County and City Public Works/ Local Water Purveyor GID's and OEM	1-5 years/ Staff hours/ HMGP with county cost-share component	Protection of lives and property due to pre-planning	Medium
4.D	Existing	Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.	County and City Public Works/ Local Water Purveyor GID's and OEM	Ongoing/ Staff hours/ Clean Water Act Grant Funding	Protection of lives and property due to pre-planning	Medium
4.E	Existing	Implement a thirsty/invasive weed public awareness and educational campaign.	OEM	1-5 years/ Staff hours	Protection of lives and property due to pre-planning	Medium

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
4.F	Existing	With all Water system purveyors prepare a drought mitigation plan and review and update annually.	County and City Public Works/ Local Water Purveyor GID's and OEM	1-5 years/ Staff hours/HMGP with county cost-share component	Protection of homes, businesses, infrastructure and critical facilities.	High
5.A	Existing	Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.	Building Department	3-5 years/ Staff hours	Protection of homes, businesses, infrastructure and critical facilities.	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
5B	Existing	Seismically retrofit or replace unreinforced masonry buildings, located in an high ground shaking areas, and/or are necessary for first responders to use during and/or immediate after a disaster or emergency (as identified by the University of Nevada Reno inventory).	Building Department	3-5 years/ Staff hours/ NEHRP Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
5C	Existing	Educate the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and attractive hands-on displays ("Living with Earthquakes in Nevada" is good public outreach material).	County and/or City OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
5.D	Existing	Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).	County and/or City OEM County and/or City OEM, and CLCFPD	1-2 years/ Staff hours/ NEHRP Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
5.E	Existing	Develop current Earthquake fault maps to ensure future growth is most compatible with the hazard area.	County and/or City OEM	Ongoing/ Staff hours/NEHRP Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan

Action Number.	Existing or New Infrastructure	Action Item	Department or Agency	Implementation Timeline/ Cost Estimate	Economic Justification	Priority Level
5.F	Existing	In coordination with the State, implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities and infrastructure, and retrofit buildings, if necessary.	County and City Bldg. Dept. and Planning Dept./ NDEM	1-2 years/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
6.A	Existing	Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.	County and/or City OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
7A	Existing	Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.	Building Department, Planning Department and OEM	3-5 years/ Staff hours/ HMGP with County Cost-share component	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
7.B	Existing/New	Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.	County and City Public Works and OEM	3-5 years/ Staff hours and $8.6 million up to $36.86 million./In corporation with NDOT possible federal funding with cost-share component.	Protection of lives, homes, businesses, infrastructure and critical facilities.	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
7C	Existing	Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.	Planning Department/ NVDWR and OEM	Ongoing/ Staff hours/	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
7D	Existing	Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps)	Planning Department/ NVDWR and OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
7E	Existing	Work with surrounding counties to develop a watershed coordination organization for Walker River.*	Public Works Department and Planning Department	3-5 years/ Staff hours/ HMGP with County Cost-share component	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
7.F	Existing	Fix low points along river banks at critical areas.	County & City Public Works and County/ WRID & TCID	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
7G	Existing	Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance).*	Public Works Department	3-5 years/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
7H	Existing	Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.	OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
7.I	Existing	Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.	County and City Building Dept.	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
7.J	Existing	Continue the ongoing ability to remove sediment and debris from rivers.	County & City Public Works and County OEM/ WRID & TCID	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
7.K	Existing	Keep the current floodplain open as natural storage, the "Living River Concept" as identified in the Carson River Regional Watershed Floodplain Management Plan – 2018 and Adopted by the Lyon County Board of County Commissioners.	County and City Public Works, Planning and Building Depts.	Ongoing/ Staff hours// HMGP with County Cost-share component	Protection of lives, homes, businesses, infrastructure and critical facilities.	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
8.A	Existing	Implement Warning Systems that monitor Hail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.	OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
9.A	Existing	Work with NDOT to require all transport of hazardous materials to follow approved routes.	OEM & NDOT, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
9.B	Existing	Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.	OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
10.A	Existing	Establish County code which requires the stabilization of landslide-prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, drained earth buttresses, and subdrains.	County and City Planning and Public Works	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
11.A	Existing	Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.	County and City Planning and Public Works/ USACOE	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
12.A	Existing	Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).	County and City, NOAA and OEM, and CLCFPD	Ongoing/ Staff hours/ PDM Grant	Protection of lives, homes, businesses, infrastructure and critical facilities.	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
13A	Existing	Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).	Public Works Department and OEM, and CLCFPD	1-3 years/ Staff hours/ SAFER Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
13.B	Existing	Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.	County, Volunteer & City Fire Districts/ NV. Div. of Forestry/ OEM, and CLCFPD	1-3 years/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
13.C	Existing	Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.	County, Volunteer & City Fire Districts/ NV. Div. of Forestry/ OEM, and CLCFPD	1-3 years/ Staff hours/ SAFER Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
13.D	Existing	Establish appropriate standards for defensible space around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.	County, Volunteer & City Fire Districts/ NV. Div. of Forestry/ OEM, and CLCFPD	Ongoing/ Staff hours/ SAFER Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
13.E	Existing	Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.	County, Volunteer & City Fire Districts/ NV. Div. of Forestry/ OEM, and CLCFPD	Ongoing/ Staff hours/SAFER Grant Program	Protection of lives, homes, businesses, infrastructure and critical facilities.	Medium
13.F	Existing	Continue to have public education outreach for wildfire awareness month in May of each year.	County, Volunteer & City Fire Districts/ NV. Div. of Forestry/ OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
14.A	Existing	Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.	County and City Public Works/ Roads/ OEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
14.B	Existing	Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.	County, Volunteer & City Fire Districts/ NV. Div. of Forestry/ OEM, and CLCFPD	1 year/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
14.C	Existing	Secure/bolt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.	County and City Building/ OEM,	1-3 years/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	High
14.D	Existing	In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.	County and City Building/ OEM	1-3 years/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
14.E	Existing	Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.	County and City Building/ OEM, and CLCFPD	1-3 years/ Staff hours	Protection of lives, homes, businesses, infrastructure and critical facilities.	Low
15.A	Existing	Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats.	Quad County Health and Human Services/ OEM	1 year/ Staff hours	Protection of lives, due to re-planning	Medium

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
15.B	Existing	Develop public outreach regarding current community plan for medicine and plans for vaccines, utilizing the Quad-County Public Health Preparedness information.	Quad County Health and Human Services/ OEM	1-3 years/ Staff hours	Protection of lives, due to re-planning	Medium
15.C	Existing	Develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sheriff and Tri-County and local hospitals.	Quad County Health and Human Services/ OEM/ Sheriff's, and CLCFPD	1-3 years/ Staff hours	Protection of lives, due to re-planning	Low
16.A	Existing	Continue planning and training staff	Quad County Health and Human Services/ OEM/ Sheriff's, and CLCFPD	Ongoing/ Staff hours	Protection of lives, due to re-planning	High
16.B	Existing	Continue to communicate regionally with other/all agencies.	Quad County Health and Human Services/ OEM/ Sheriff's/NDEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, due to re-planning	High

Table 8-4 Lyon County, City of Fernley and the City of Yerington Mitigation Action Plan						
Action Number.	**Existing or New Infrastructure**	**Action Item**	**Department or Agency**	**Implementation Timeline/ Cost Estimate**	**Economic Justification**	**Priority Level**
16.C	Existing	Plan to address mitigation if other communities experience an event and citizens are traveling to and through Lyon County. Coordination with NDOT and hospitals in the area.	OEM/ Sheriff's/ NDOT/ Quad-County Preparedness/ NDEM, and CLCFPD	Ongoing/ Staff hours	Protection of lives, due to re-planning	Medium
16.D	Existing	Continue SRO with Lyon County School District	LCSD and OEM/ Sheriff's	Ongoing/ Staff hours	Protection of lives, due to re-planning	High
16.E	Existing	Continue with NTAC Agreement	OEM/ Sheriff's	Ongoing/ Staff hours	Protection of lives, due to re-planning	High

This section describes a formal plan maintenance process to ensure that the MJHMP remains an active and applicable document. It includes an explanation of how the County, City and the Planning Committee intend to organize its efforts to ensure that improvements and revisions to the MJHMP occur in a well-managed, efficient, and coordinated manner.
The following three process steps are addressed in detail below:

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

9.1 MONITORING, EVALUATING, AND UPDATING THE MJHMP

The requirements for monitoring, evaluating, and updating the MJHMP, 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.

This update to the MJHMP was prepared as a collaborative effort among Lyon County OEM, the ECC Committee, and the Lyon County Planning Division. To maintain momentum and build on previous hazard mitigation planning efforts and successes, Lyon County OEM will make use of the MJ HMP Committee to monitor, evaluate, and update the MJHMP. Lyon County OEM will continue to coordinate all local efforts to monitor, evaluate, and update this document.

- Every 12 months from plan adoption, Lyon County OEM will email each member of the MJHMP Committee an Annual Review Questionnaire to complete. As shown in Appendix F, Plan Maintenance Documents, the Annual Review Questionnaire will include an evaluation of the following: planning process, hazard analysis, vulnerability analysis, capability assessment, and mitigation strategy.
- Lyon County OEM will collect all completed questionnaires and determine if the MJHMP needs to be updated to address new or more threatening hazards, new technical reports or findings, and new or better-defined mitigation projects. Lyon County OEM will summarize these findings and email them out to the MJHMP Committee. If Lyon County OEM believes that the MJHMP needs to be updated based on the findings, then a request will be made to the committee members to attend a formal MJHMP update meeting.

Additionally, mitigation actions will be monitored and updated through the use of the Mitigation Project Progress Report. During each annual review, each department or agency currently administering a mitigation project will submit a progress report to Lyon County OEM to review and evaluate. For projects that are being funded by a FEMA mitigation grant, FEMA quarterly reports may be used as the preferred reporting tool. As shown in **Appendix F**, Plan Maintenance Documents, the progress report will discuss the current status of the mitigation project, including any changes made to the project, identify implementation problems, and describe appropriate strategies to overcome them. After considering the findings of the submitted progress reports, Lyon County OEM may request that the implementing department or agency meet to discuss project conditions.

In addition to the Annual Review Questionnaire, Mitigation Project Progress Report or FEMA quarterly report, and any annual meetings, the committee will meet to update the MJHMP every 5 years. To ensure that this update occurs, within the first six months of the fourth year following plan adoption, the MJHMP committee will undertake the following activities:

- Research funding available to assist in MJHMP update (and apply for funds that may take up to one year to obtain)
- Thoroughly analyze and update the risk of natural and human-made hazards in Lyon County
- Complete a new Annual Review Questionnaire and review previous questionnaires
- Provide a detailed review and revision of the mitigation strategy
- Prepare a new implementation strategy
- Prepare a new draft MJHMP and submit it to the local governing bodies for adoption
- Submit an updated MJHMP to Nevada DEM 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 §201.6(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?

Source: FEMA 2008.

After the adoption of the MJHMP, the Committee will continue to ensure that the MJHMP, in particular the Mitigation Action Plan, is incorporated into existing planning mechanisms. The processes for incorporating the MJHMP into various planning documents will occur as (1) other plans are updated and (2) new plans are developed.

Therefore, the MJHMP participants will undertake the some or all of the following activities:

- The County, cities and CLCFPD will use information from the hazard analysis and mitigation strategy sections in MJHMP to update and or develop the safety element in their respective general plans.
- The County, cities and CLCFPD will use information from the hazard analysis and vulnerability analysis sections in the MJHMP to update and or develop their respective emergency operation or emergency response plans.
- The County, cities and CLCFPD will use information from the vulnerability analysis section in the MJHMP to develop emergency preparedness public information and related outreach efforts.
- The County, cities and CLCFPD will refer to the mitigation strategy section in the MJHMP when updating and or developing their respective capital improvement plans.

References to this 2018 update to the MJHMP have been incorporated into the 2018 update to the Carson River Regional Watershed Floodplain Management Plan, in Appendix E, County Progress Report of mitigation actions for SA#22 CRS 410. The Carson River WRMP was adopted by the CWSD Board in October 2018. Also in the Sheep Camp Dam Emergency Plan, prepared by Manhard Consulting, January 25, 2018 draft document, the mitigation actions for the hazard of Dam and Canal Failures was included in the emergency plan. This emergency plan is currently being reviewed by the State for approval.

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, will there be public notices, an ongoing mitigation plan committee, or annual review meetings with stakeholders?)

Source: FEMA 2008.

Lyon County OEM and the MJHMP Committee are dedicated to involving the public directly in the continual reshaping and updating of the MJHMP. Electronic and hard copies of the MJHMP will be provided to Lyon County and each city. In addition, a downloadable copy of the MJHMP and any proposed changes or updates will be posted on the Lyon County Website. The Lyon County Website will also contain an e-mail address and phone number to which people can direct their comments or concerns.

As noted above, the MJHMP Committee will be retained to oversee implementation, examine the annual review questionnaires and project progress reports, modify the implementation strategy and process as needed, and update the MJHMP as required. Periodic stakeholders meetings will be held to assure continued outreach to a broader audience. Public notices and releases will be used to inform the public and to invite their comments and attendance at meetings.

The MJHMP Committee will also identify opportunities to raise community awareness about the MJHMP and the hazards that affect the County. This effort could include attendance and provision of materials at county and city-sponsored events, Red Cross programs, and public mailings. Any public comments received regarding the MJHMP will be collected by the point of contact, included in the annual report, and considered during future MJHMP updates.

The following websites and/or documents were accessed between December 2017 and June 2018 to update the MJHMP.

Associated Bay Area Governments (ABAG). 2003. *Modified Mercalli Intensity Scale*. http://www.abag.ca.gov/bayarea/eqmaps/doc/mmi.html.

Association of State Dam Safety Officials. n.d. *Dam Failures, Dam Incidents (Near Failures) Table*. https://damsafety.org/dam-failures

Carson Water Sub-conservancy District 2008. Carson River Watershed Regional Floodplain Management Plan. http://www.cwsd.org/wpcontent/uploads/2014/07/FinalDraftfloodplainplan708.pdf

dePolo, C., G. Johnson, J. Price and J Mauldin 2009-09. *Quaternary Faults in Nevada.* *https://gisweb.unr.edu/QuaternaryFaults/*

Irene M. Seelye, Gary L. Johnson, Craig M. dePolo, James E. Faulds, and Jonathan G. Price Loss-Estimation Modeling of Earthquake Scenarios for Each Co. in Nevada Using HAZUS-MH. *http://pubs.nbmg.unr.edu/Updated-estimated-losses-p/of2014-05.htm*

FEMA. 2009. *Flood Insurance Study Churchill 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. https://www.fema.gov/fema-452-risk-assessment-how-guide-mitigate-potential-terrorist-attacks-against-buildings

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Appendix A
Adoption Resolution

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Lyon County Adoption Resolution

RESOLUTION NO. 18-15

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF LYON COUNTY, NEVADA ADOPTING THE 2018 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN CONDITIONALLY APPROVED BY FEMA

WHEREAS, Lyon County has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, severe weather, 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; and

WHEREAS, the Lyon County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) has been developed and updated after more than one year of research and work by the County's Office of Emergency Management is association and cooperation with the County Planning Division for the reduction of hazard risk to the community; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for Lyon County; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact Lyon County with the effect of protecting people and property form loss associated with these hazards; and

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 Board of County Commissioners of Lyon County, that:

1. The Plan is hereby adopted as an official plan of Lyon 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 Board of County Commissioners by October 31st of each year.

PASSED, APPROVED, AND ADOPTED this 6th day of December 2018, by the Board of County Commissioner of Lyon County, Nevada

Chairman

ATTEST:

Nikki Bryan

County Clerk

CITY OF FERNLEY
RESOLUTION #18-015
A RESOLUTION OF THE CITY OF FERNLEY TO APPROVE AND ADOPT THE MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

WHEREAS, the City of Fernley has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, severe weather, 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; and,

WHEREAS, the Lyon County Multi-Jurisdictional Hazard Mitigation Plan 2018 update with the City of Fernley (the Plan) has been developed and updated after more than one year of research and work by the City's Office of Emergency Management in association and cooperation with the Local Planning Committee for the reduction of hazard risk to the community; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for City; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact the City with the effect of protecting people and property form loss associated with these hazards; and

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

NOW, THEREFORE, BE IT RESOLVED, that:

By the City Council of Fernley, Nevada, that:

1. The Plan is hereby adopted as an official plan of the City of Fernley.

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 City Council by October 31st of each year.

PASSED, APPROVED, AND ADOPTED this 19th day of December 2018, by the following vote of the City Council:

AYES: 5 NAYS: 0 ABSTENTIONS: 0 ABSENT: 0

FERNLEY CITY COUNCIL

By: _____
ROY EDGINGTON, Mayor

ATTEST:

_____
KIM SWANSON, City Clerk

City of Yerington Adoption Resolution

Resolution 2018-04

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

WHEREAS, the Lyon County Multi-Jurisdictional Hazard Mitigation Plan 2018 update with the City of Yerington (the Plan) has been developed and updated after more than one year of research and work by the City's Office of Emergency Management in association and cooperation with the Local Planning Committee for the reduction of hazard risk to the community; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for the City of Yerington; and

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

WHEREAS, a duly noticed public meeting was conducted on the 10th day of December, 2018, to present the Plan for comment and review as required by law.

NOW, THEREFORE, BE IT RESOLVED by the City Council of Yerington, Nevada, that:

1. The Plan, a copy of which is available for inspection at City Hall, is hereby adopted as an official plan of the City of Yerington.

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 City Council by October 31st of each year.

ADOPTED by the Yerington City Council this 10th day of December 2018.

Ayes:

Nays:

Absent:

By: _____
George Dini, Mayor

ATTEST:

Sheema R Shaw
Interim City Clerk

Central Lyon County Fire Protection District Adoption Resolution

A RESOLUTION OF THE CENTRAL LYON COUNTY FIRE PROTECTION DISTRICT
BOARD OF DIRECTORS
TO ADOPT
THE 2018 LYON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN
CONDITIONALLY APPROVED BY FEMA

WHEREAS, Lyon County has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, severe weather, 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; and

WHEREAS, the Lyon County Multi-Jurisdictional Hazard Mitigation Plan (the Plan) has been developed and updated after more than one year of research and work by the County's Office of Emergency Management is association and cooperation with the Central Lyon County Fire Protection District (CLCFPD) for the reduction of hazard risk to the community; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for Lyon County and CLCFPD; and

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

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 Central Lyon County Fire Protection District Board of Directors, that:

1. The Plan is hereby adopted as an official plan of the Central Lyon County Fire Protection District.
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended additions 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 by the Fire Chief.

PASSED, APPROVED, AND ADOPTED THIS 13 day of June 2019, by the Central Lyon County Fire Protection District Board of Directors

Fire Board President

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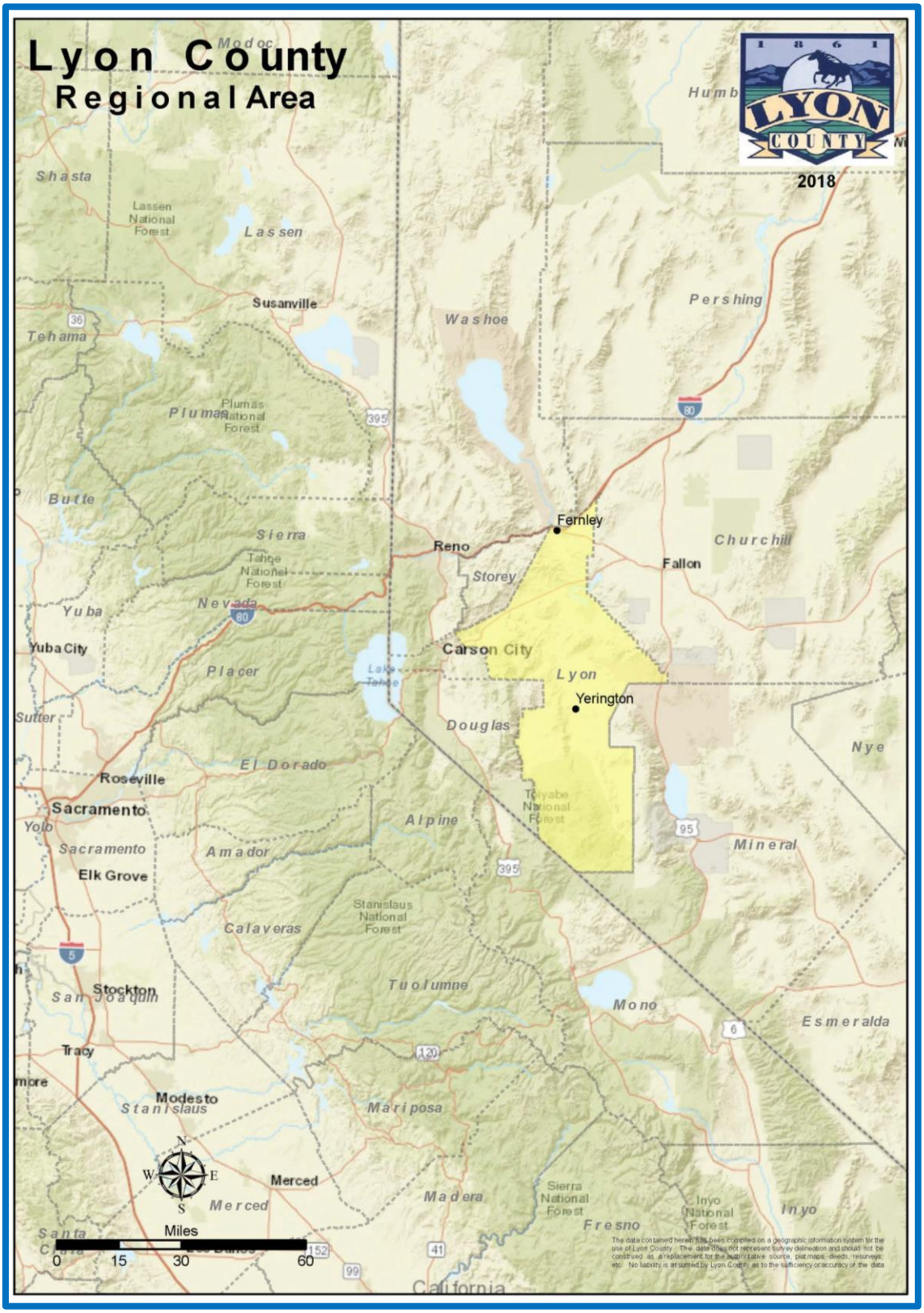
Appendix B
Figures


Lyon County
Regional Area
1861
LYON
COUNTY
2018
Modoc
Humb
Shasta
Lassen National Forest
Lassen
Susanville
Tehama
Washoe
Pershing
Plumas
Plumas National Forest
Butte
Sierra
Tahoe National Forest
Reno
Fernley
Churchill
Fallon
Storey
Nevada
Yuba
Yuba City
Carson City
Placer
Lake Tahoe
Lyon
Yerington
Sutter
Douglas
Nye
El Dorado
Roseville
Sacramento
Yolo
Alpine
Tahoe National Forest
Mineral
Sacramento
Amador
Elk Grove
Stanislaus National Forest
Calaveras
Stockton
San Joaquin
Tuolumne
Mono
Esmeralda
Tracy
Modesto
Stanislaus
Mariposa
N
W
E
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Merced
Merced
Madera
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Fresno
Inyo National Forest
Inyo
Miles
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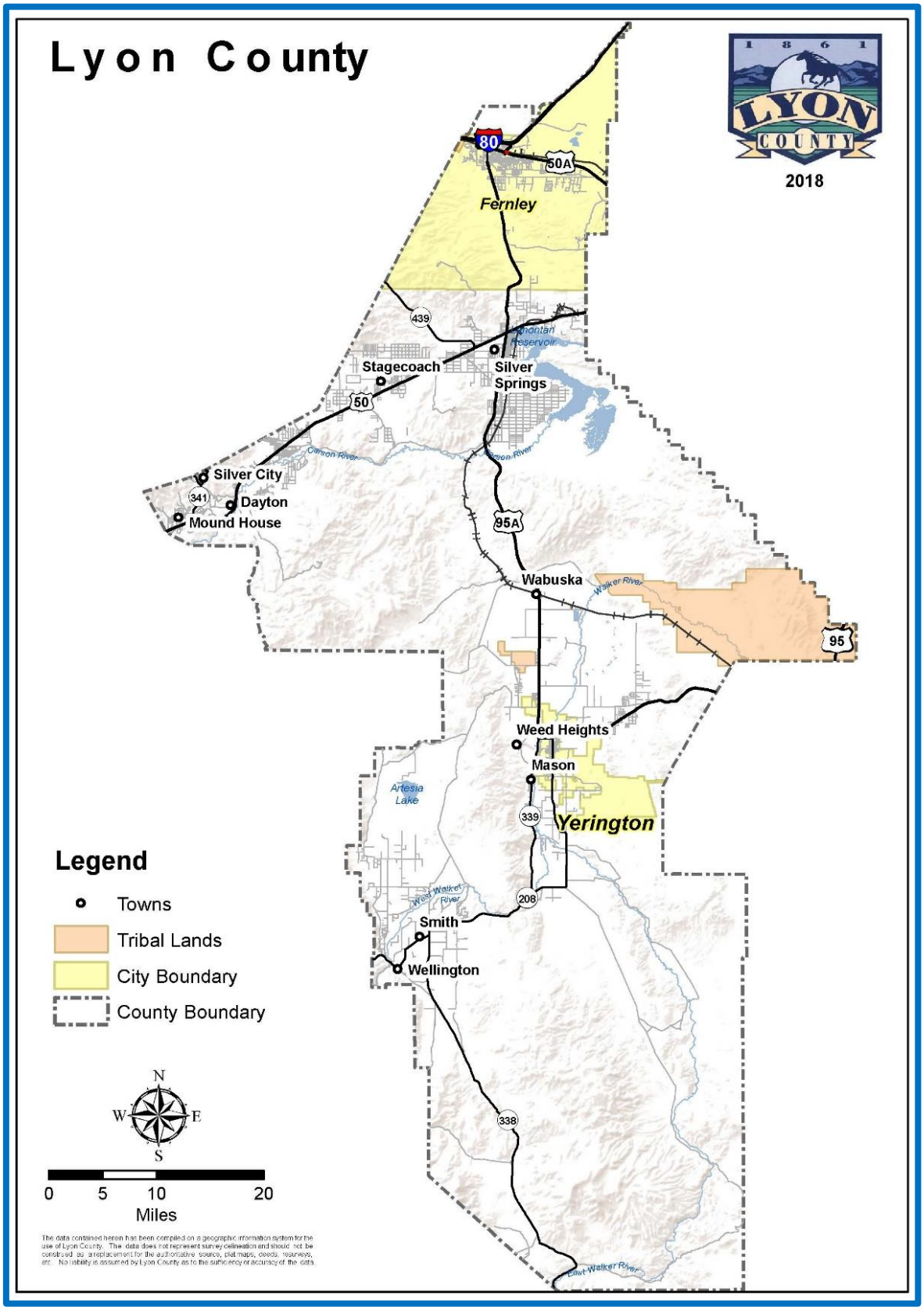
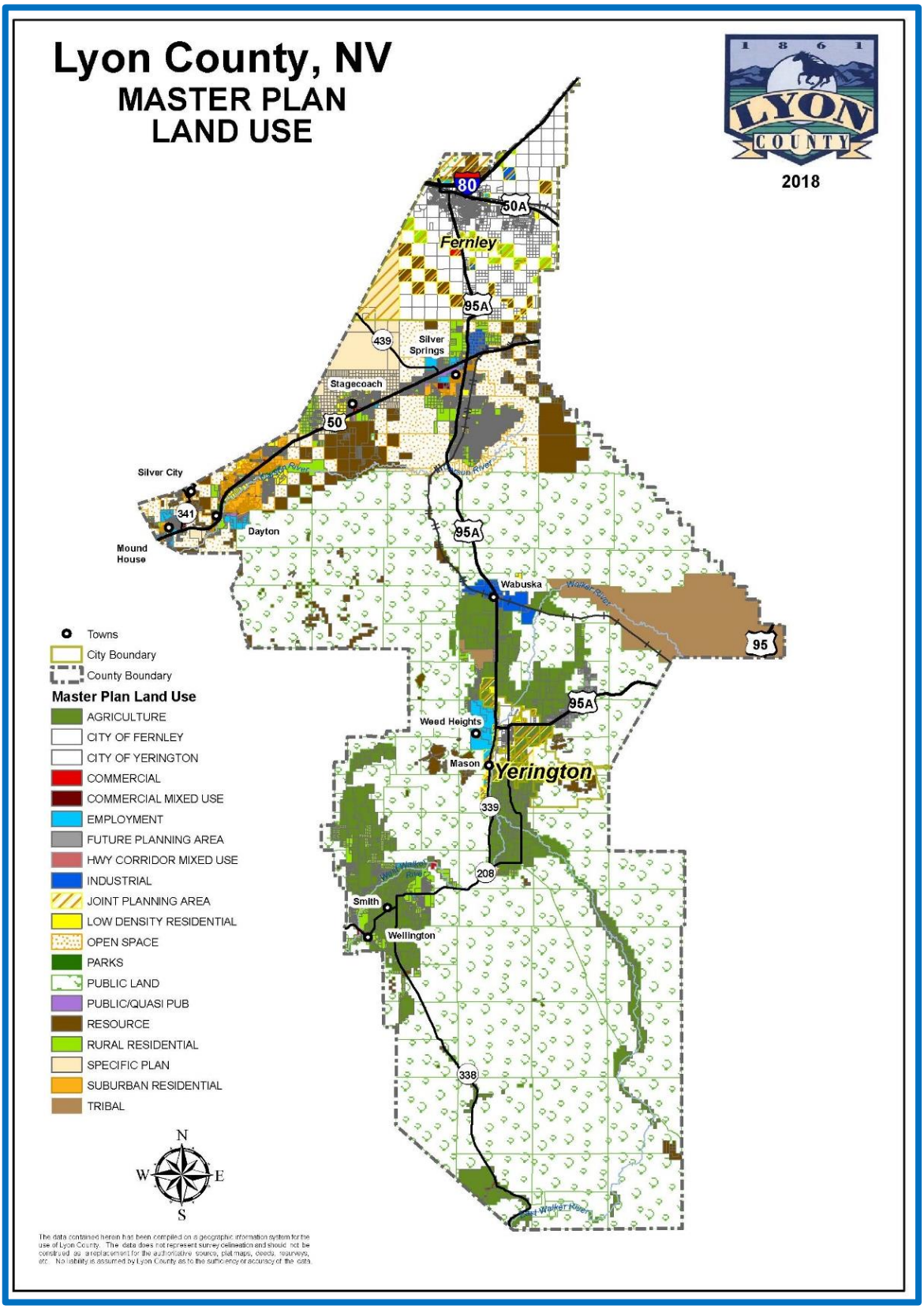
60
California


Lyon County
1861
LYON
COUNTY
2018
80
50A
Fernley
439
Lahontan Reservoir
Stagecoach
Silver Springs
50
Carson River
Carson River
Silver City
341
Dayton
Mound House
95A
Wabuska
Walker River
95
Weed Heights
Mason
Artesia Lake
339
Yerington
West Walker River
208
Smith
Wellington
338
East Walker River
Legend
Towns
Tribal Lands
City Boundary
County Boundary
N
W
E
S
0
5
10
20
Miles
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.


Lyon County, NV
MASTER PLAN
LAND USE
1861
LYON
COUNTY
2018
80
50A
Fernley
95A
439
Silver Springs
Stagecoach
50
Silver City
341
Dayton
Mound House
Wabuska
95
Weed Heights
Mason
Yerington
339
208
Smith
Wellington
338
Towns
City Boundary
County Boundary
Master Plan Land Use
AGRICULTURE
CITY OF FERNLEY
CITY OF YERINGTON
COMMERCIAL
COMMERCIAL MIXED USE
EMPLOYMENT
FUTURE PLANNING AREA
HWY CORRIDOR MIXED USE
INDUSTRIAL
JOINT PLANNING AREA
LOW DENSITY RESIDENTIAL
OPEN SPACE
PARKS
PUBLIC LAND
PUBLIC/QUASI PUB
RESOURCE
RURAL RESIDENTIAL
SPECIFIC PLAN
SUBURBAN RESIDENTIAL
TRIBAL
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S
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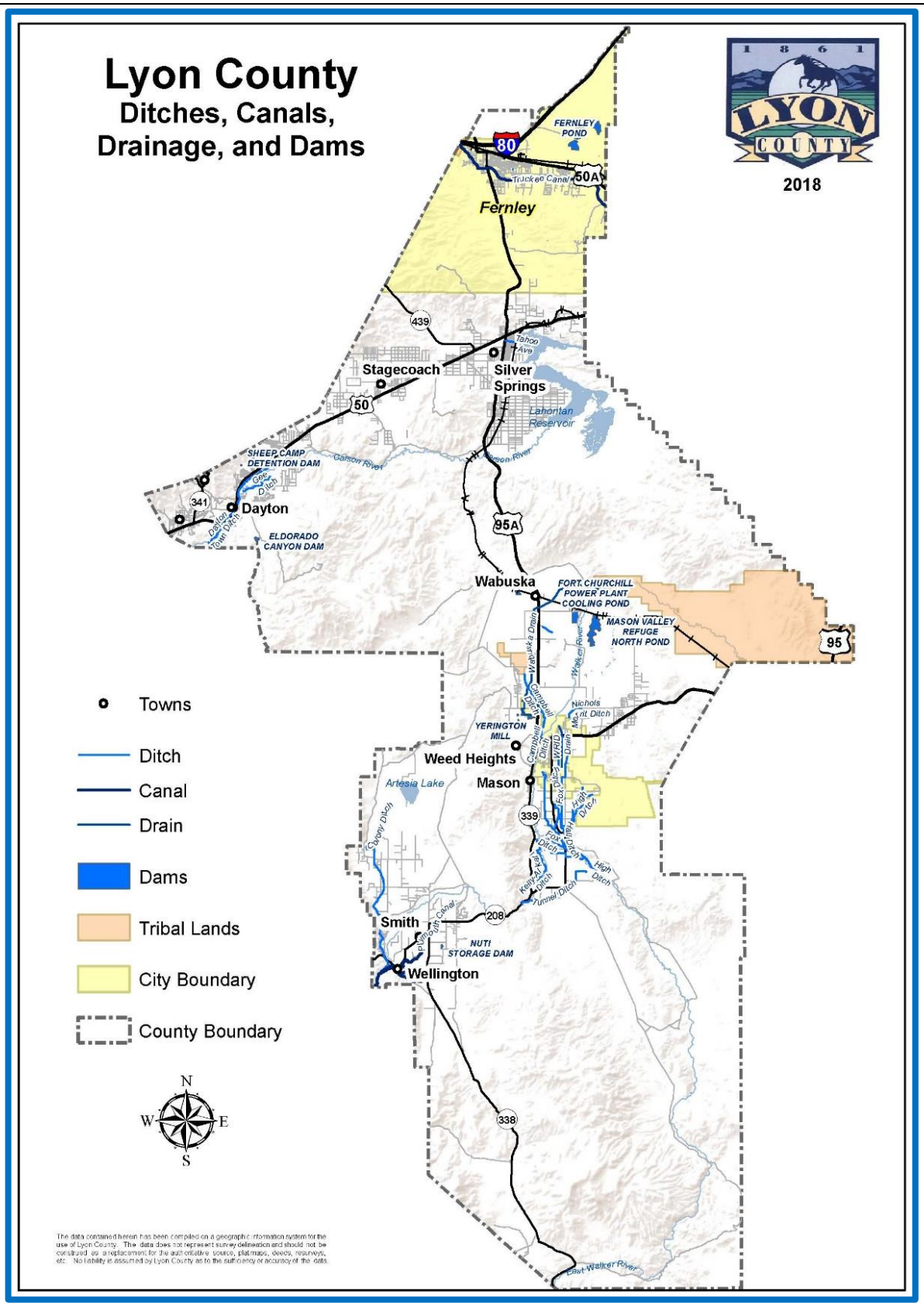
Lyon County
Ditches, Canals, Drainage, and Dams
1861
LYON COUNTY
2018
FERNLEY POND
80
50A
Truckee Canal
Fernley
439
Tahoe Ave
Stagecoach
Silver Springs
50
Lahontan Reservoir
SHEEP CAMP DETENTION DAM
Carson River
Mason River
341
Dayton
Dayton Town Ditch
ELDORADO CANYON DAM
95A
Wabuska
FORT CHURCHILL POWER PLANT COOLING POND
MASON VALLEY REFUGE NORTH POND
95
Walker River
Nichols Mt Ditch
YERINGTON MILL
Weed Heights
Mason
Artesia Lake
339
Dodge Ditch
Smith
208
NUTI STORAGE DAM
Wellington
338
East Walker River
Towns
Ditch
Canal
Drain
Dams
Tribal Lands
City Boundary
County Boundary
N
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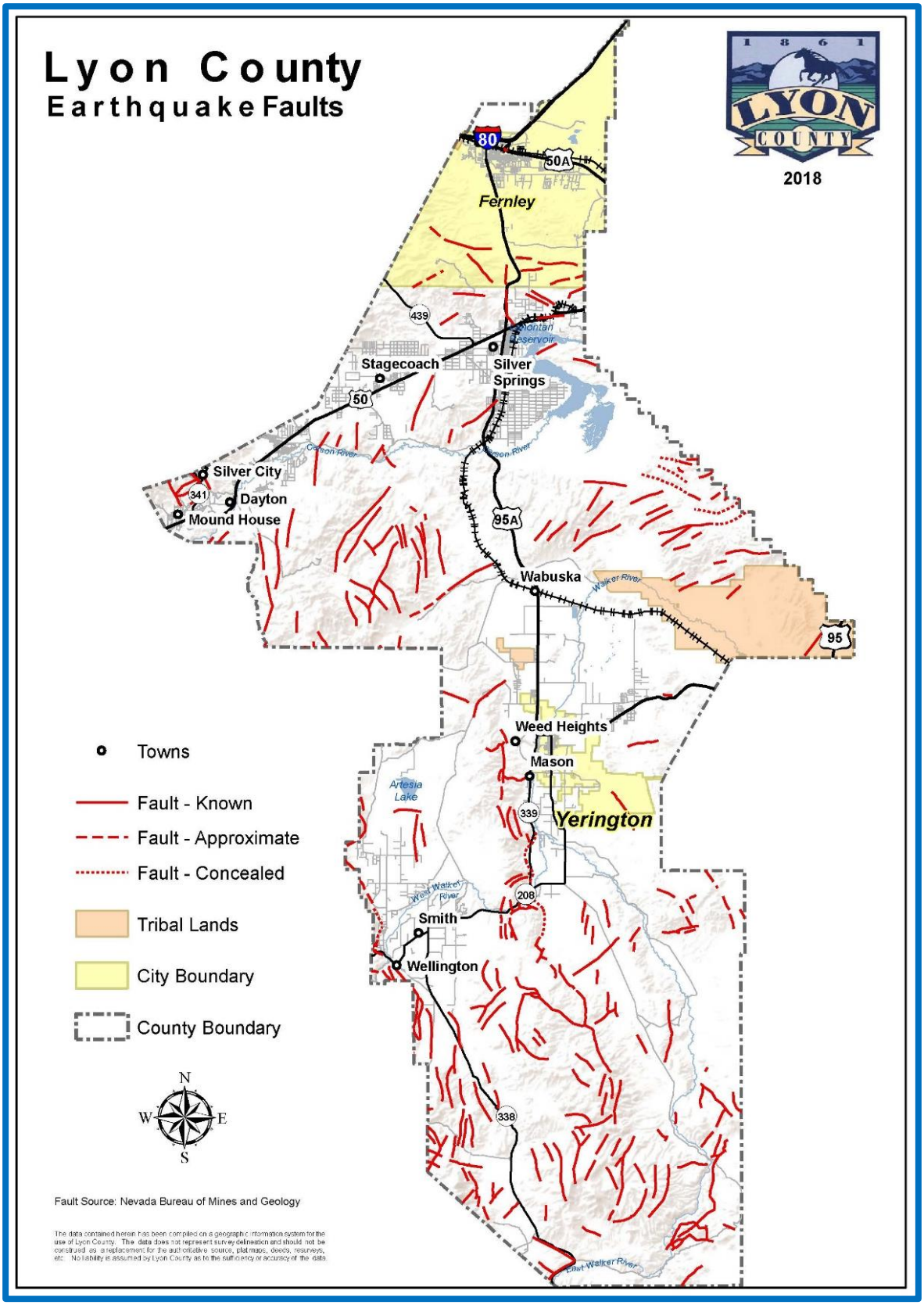
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, platmaps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.


Lyon County
Earthquake Faults
1861
LYON COUNTY
2018
80
50A
Fernley
439
Stagecoach
Silver Springs
50
Carson River
Silver City
341
Dayton
Mound House
95A
Wabuska
Walker River
95
Weed Heights
Mason
Artesia Lake
339
Yerington
West Walker River
208
Smith
Wellington
338
East Walker River
Towns
Fault - Known
Fault - Approximate
Fault - Concealed
Tribal Lands
City Boundary
County Boundary
N
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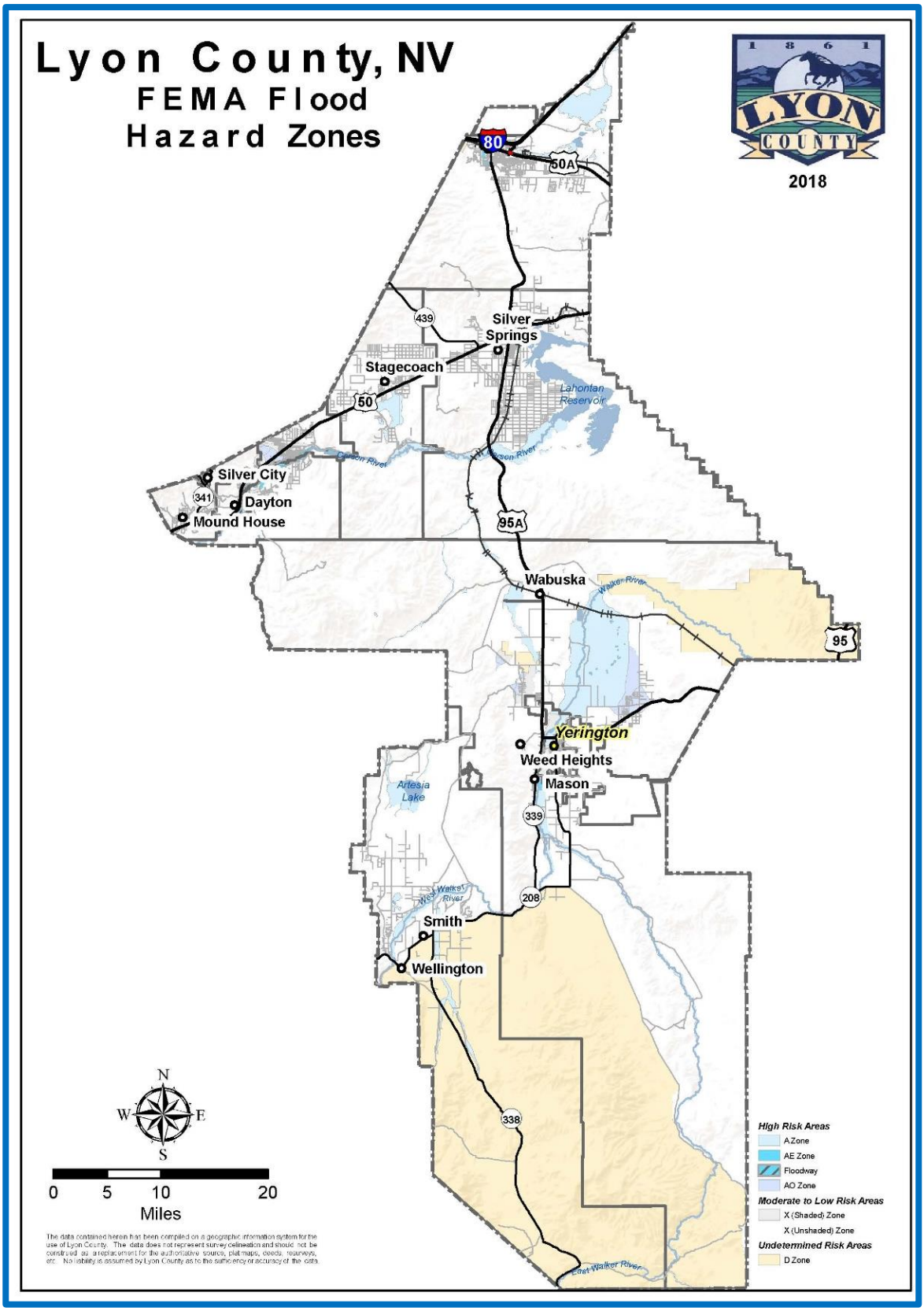
S
Fault Source: Nevada Bureau of Mines and Geology
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.


Lyon County, NV
FEMA Flood
Hazard Zones
1861
LYON
COUNTY
2018
80
50A
439
Silver
Springs
Stagecoach
50
Lahontan
Reservoir
Carson River
Carson River
Silver City
341
Dayton
Mound House
95A
Wabuska
Walker River
95
Yerington
Weed Heights
Mason
Artesia
Lake
339
West Walker
River
208
Smith
Wellington
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East Walker River
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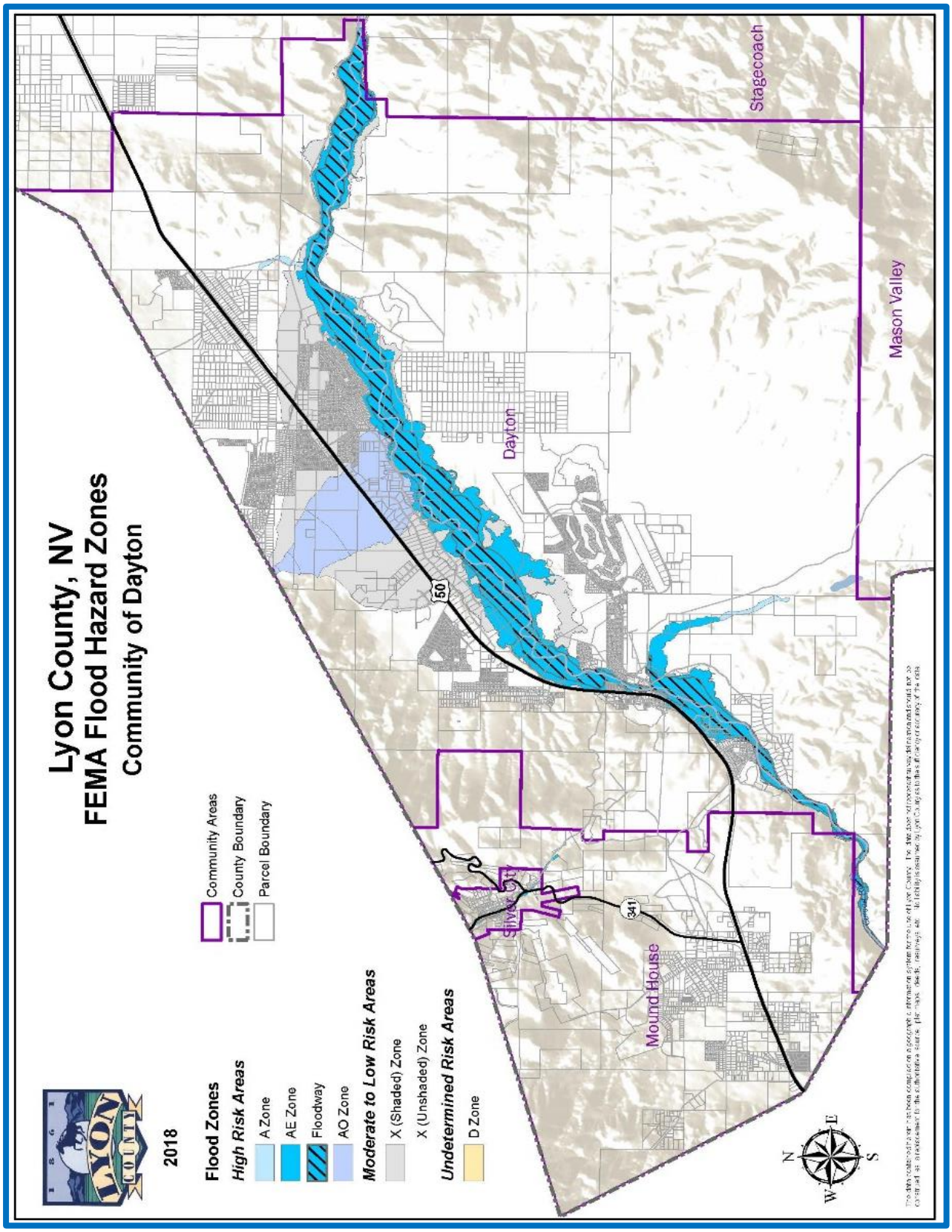
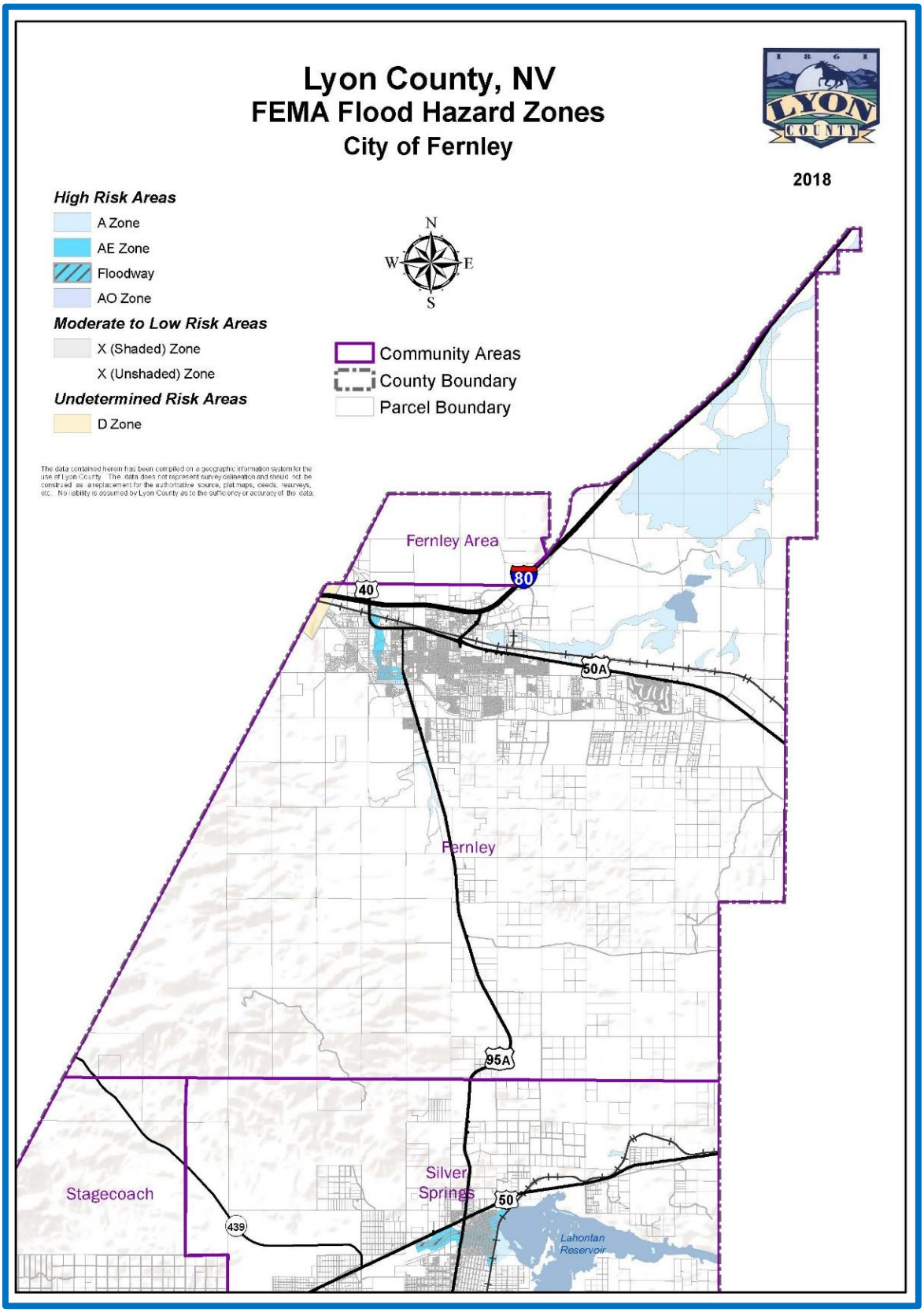
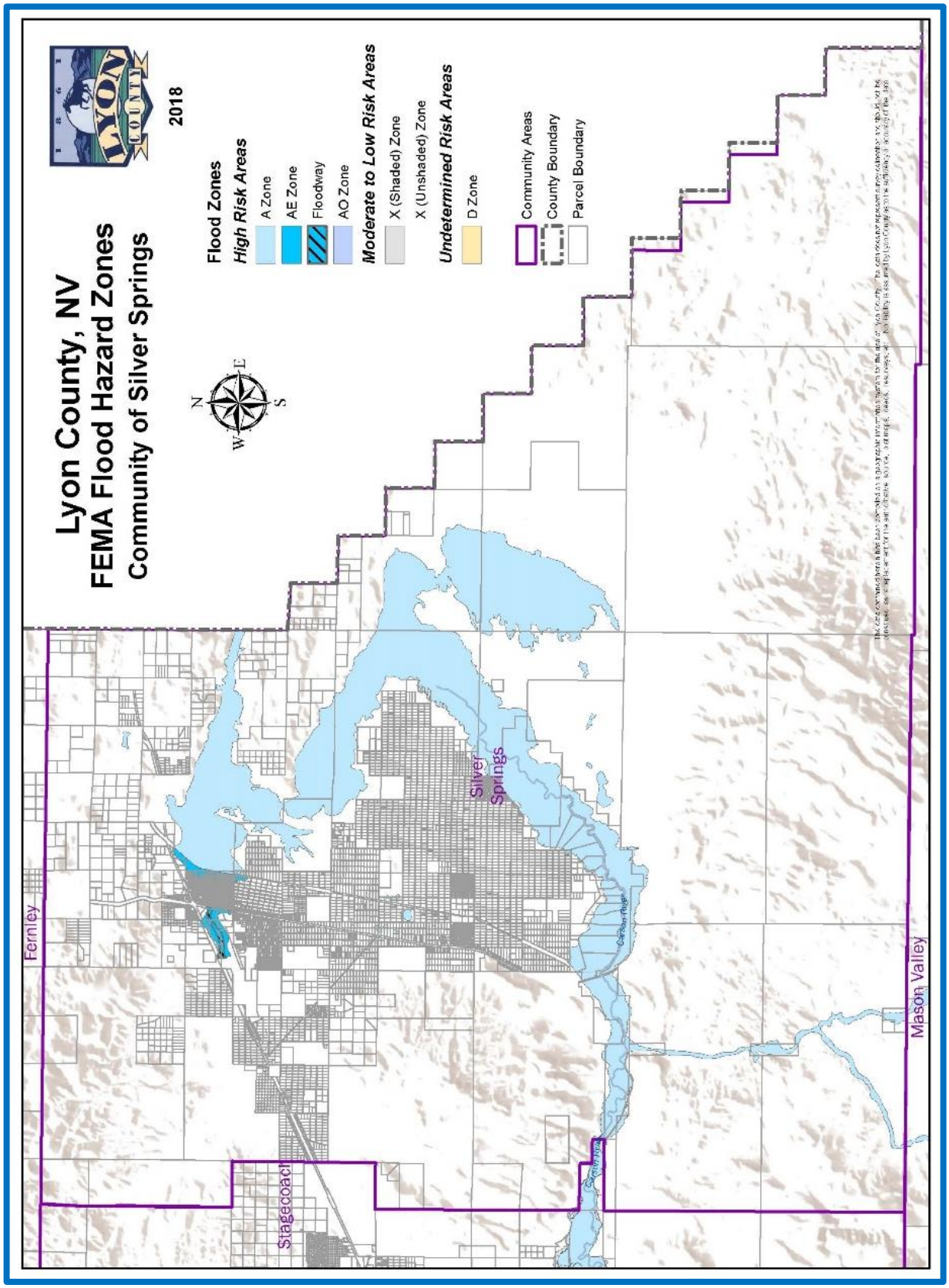
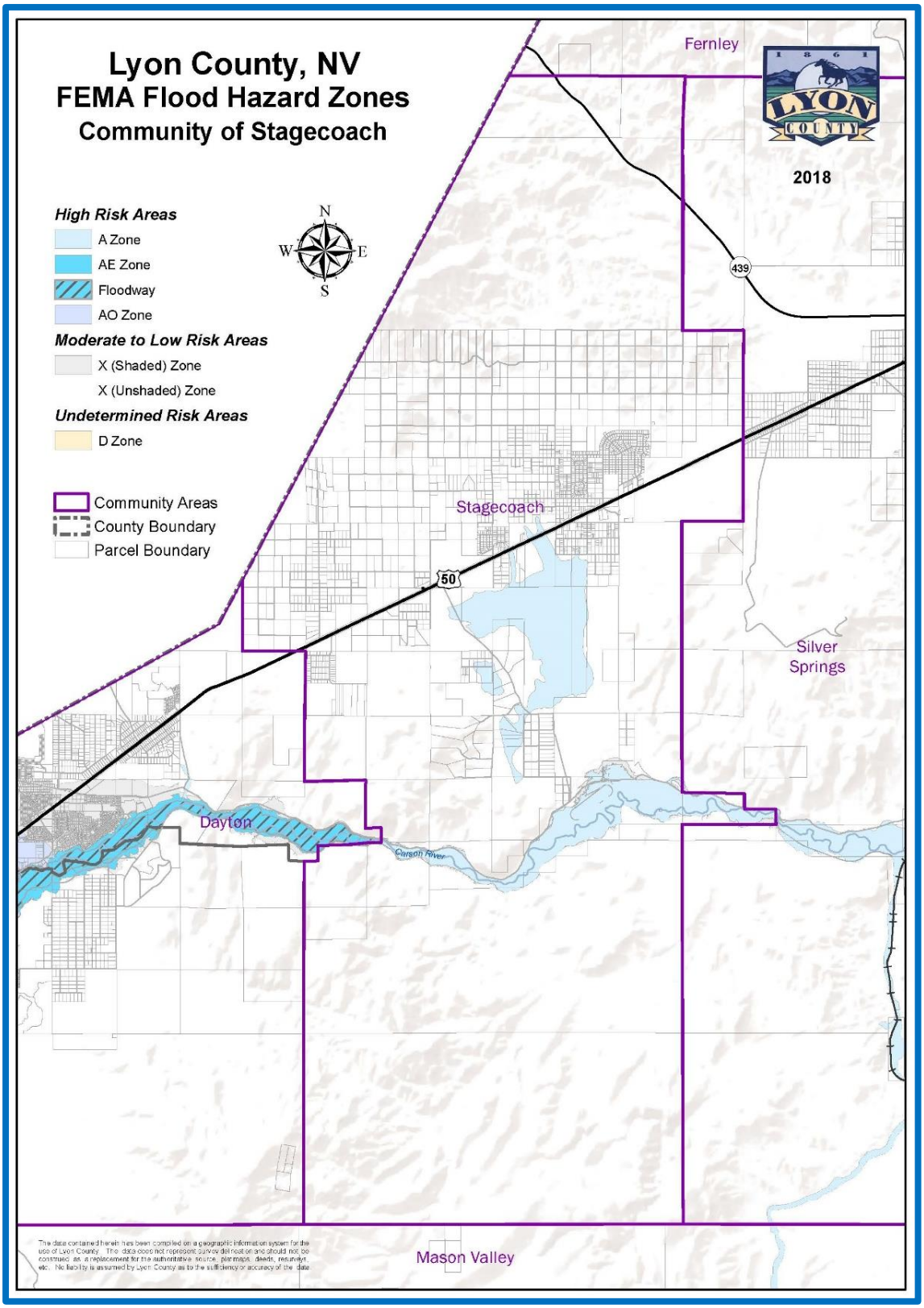
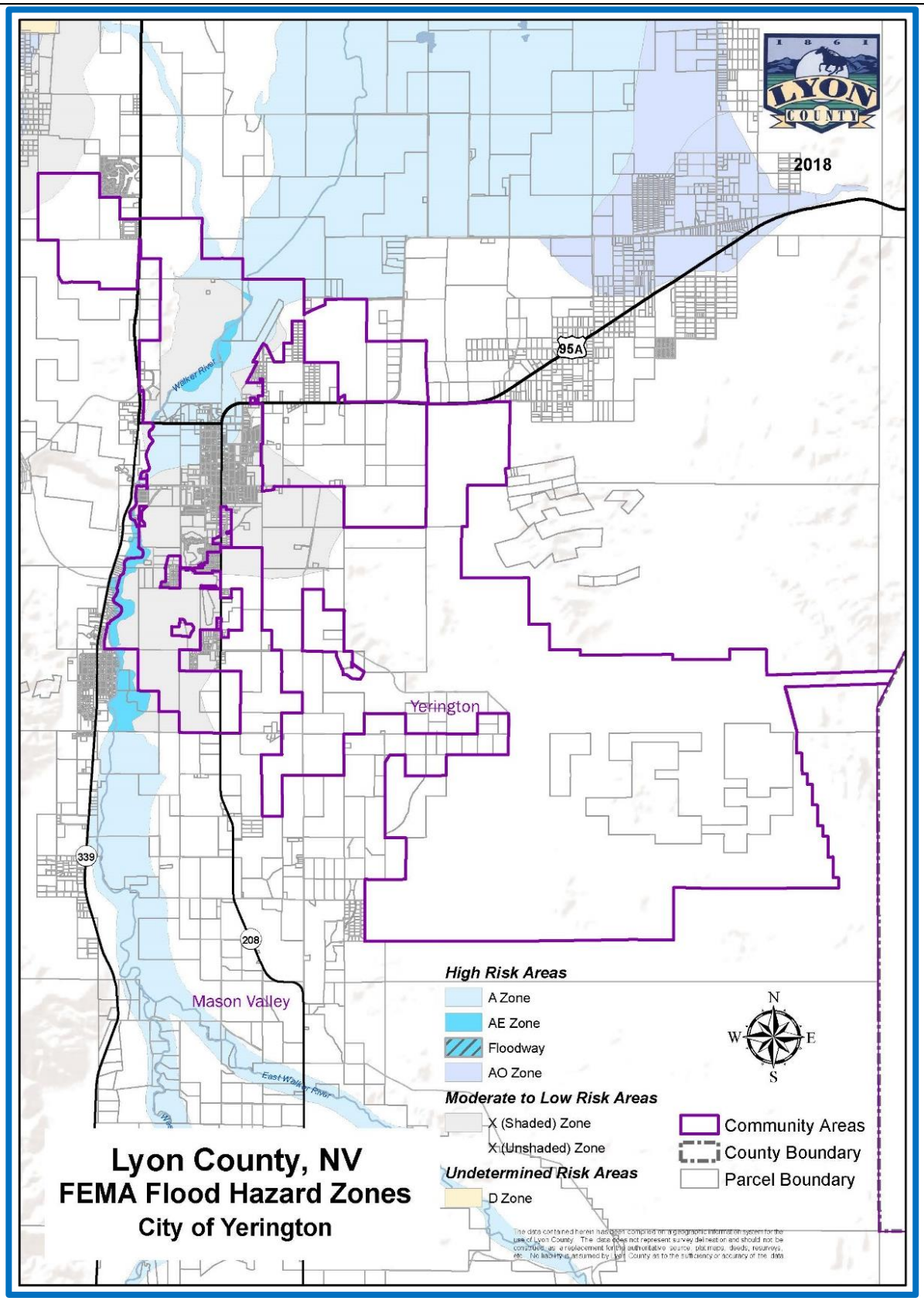
20
Miles
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, easements, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.
High Risk Areas
A Zone
AE Zone
Floodway
AO Zone
Moderate to Low Risk Areas
X (Shaded) Zone
X (Unshaded) Zone
Undetermined Risk Areas
D Zone

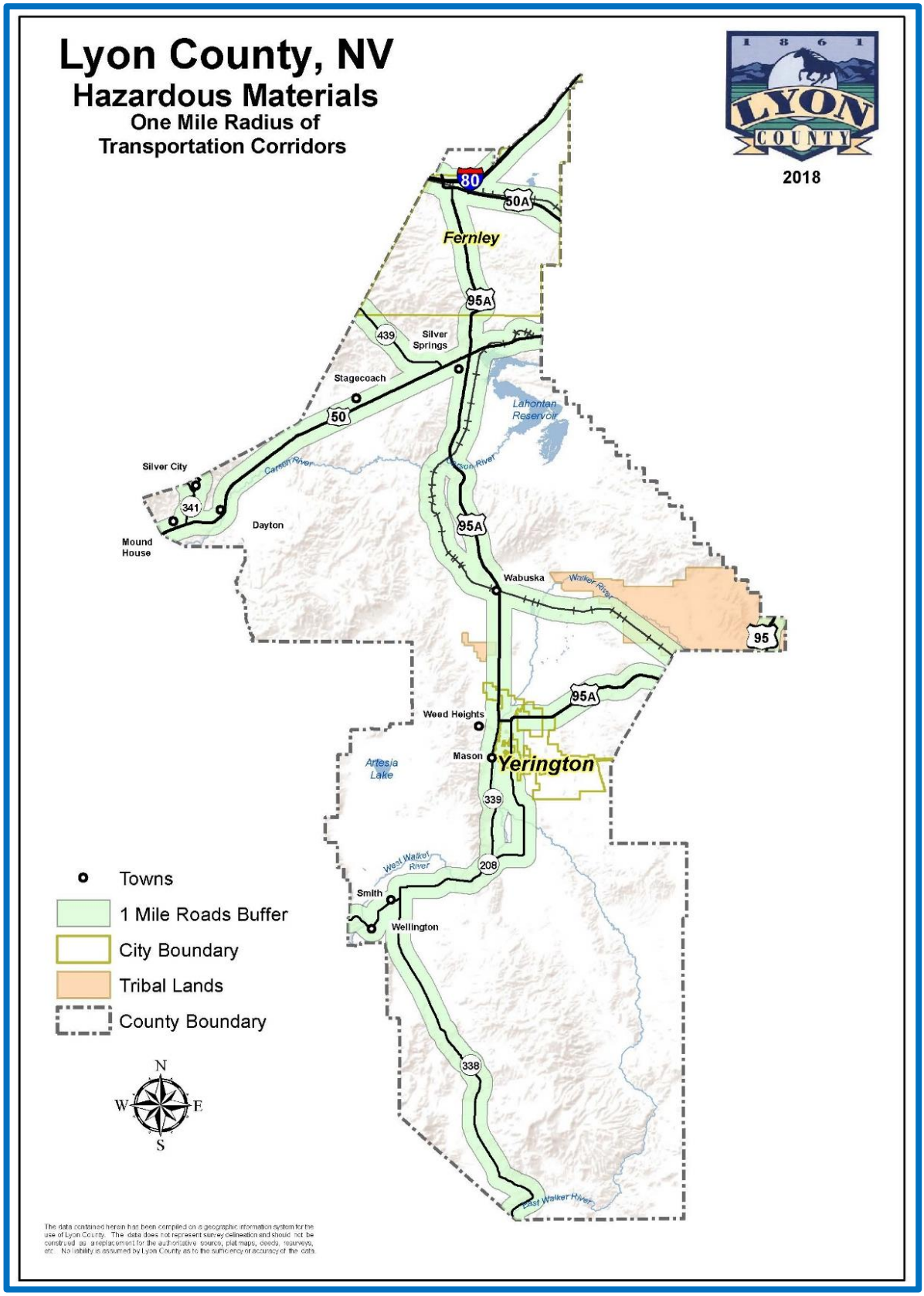

Lyon County, NV
FEMA Flood Hazard Zones
Community of Dayton
Community Areas
County Boundary
Parcel Boundary
Flood Zones
High Risk Areas
A Zone
AE Zone
Floodway
AO Zone
Moderate to Low Risk Areas
X (Shaded) Zone
X (Unshaded) Zone
Undetermined Risk Areas
D Zone
2018
LYON COUNTY
Dayton
Stagecoach
Mason Valley
Mound House
Silver City
50
341
N
E
S
W

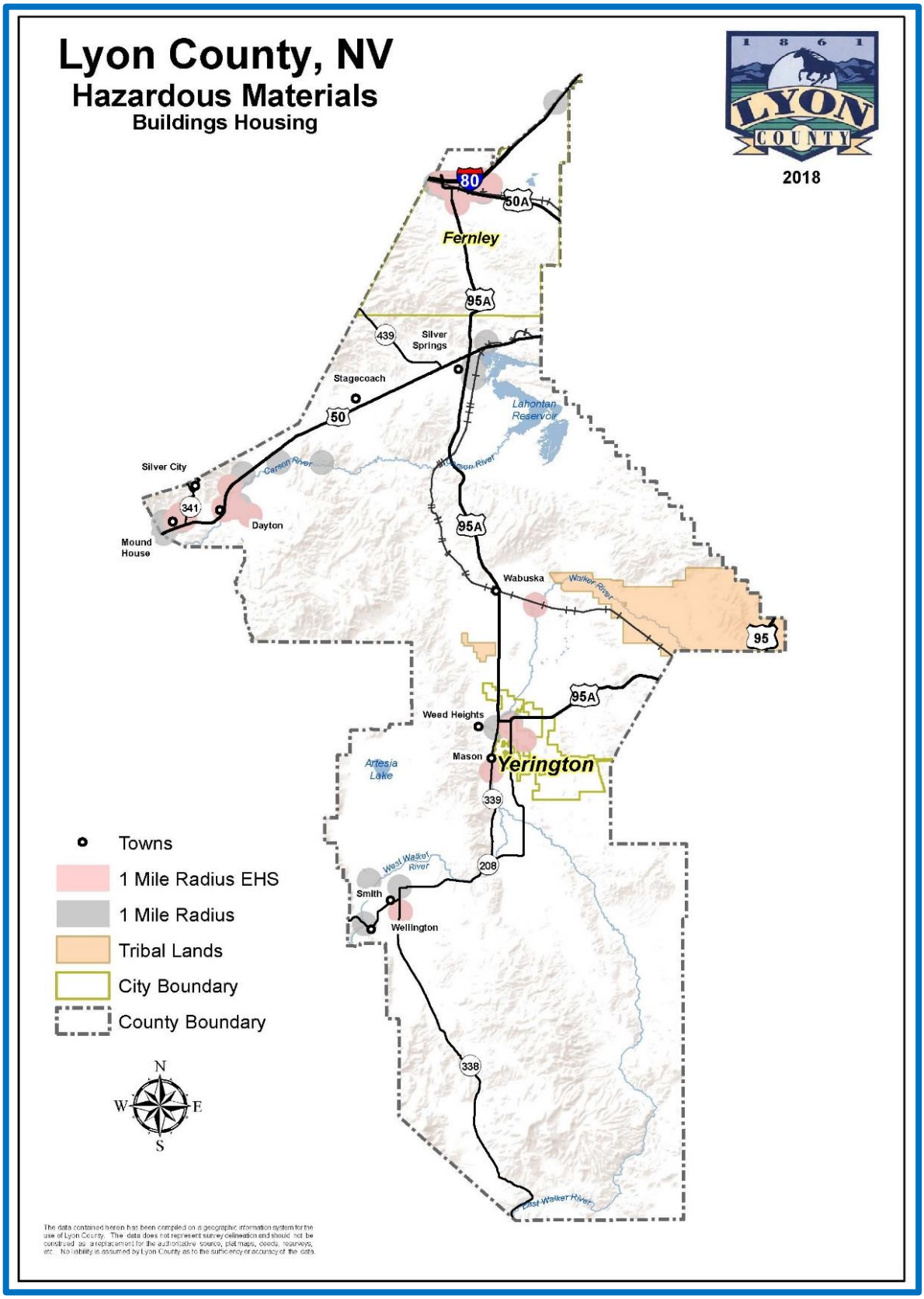

Lyon County, NV
FEMA Flood Hazard Zones
City of Fernley
2018
High Risk Areas
A Zone
AE Zone
Floodway
AO Zone
Moderate to Low Risk Areas
X (Shaded) Zone
X (Unshaded) Zone
Undetermined Risk Areas
D Zone
N
W
E
S
Community Areas
County Boundary
Parcel Boundary
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, surveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.
Fernley Area
80
40
50A
Fernley
95A
Stagecoach
Silver Springs
50
439
Lahontan Reservoir

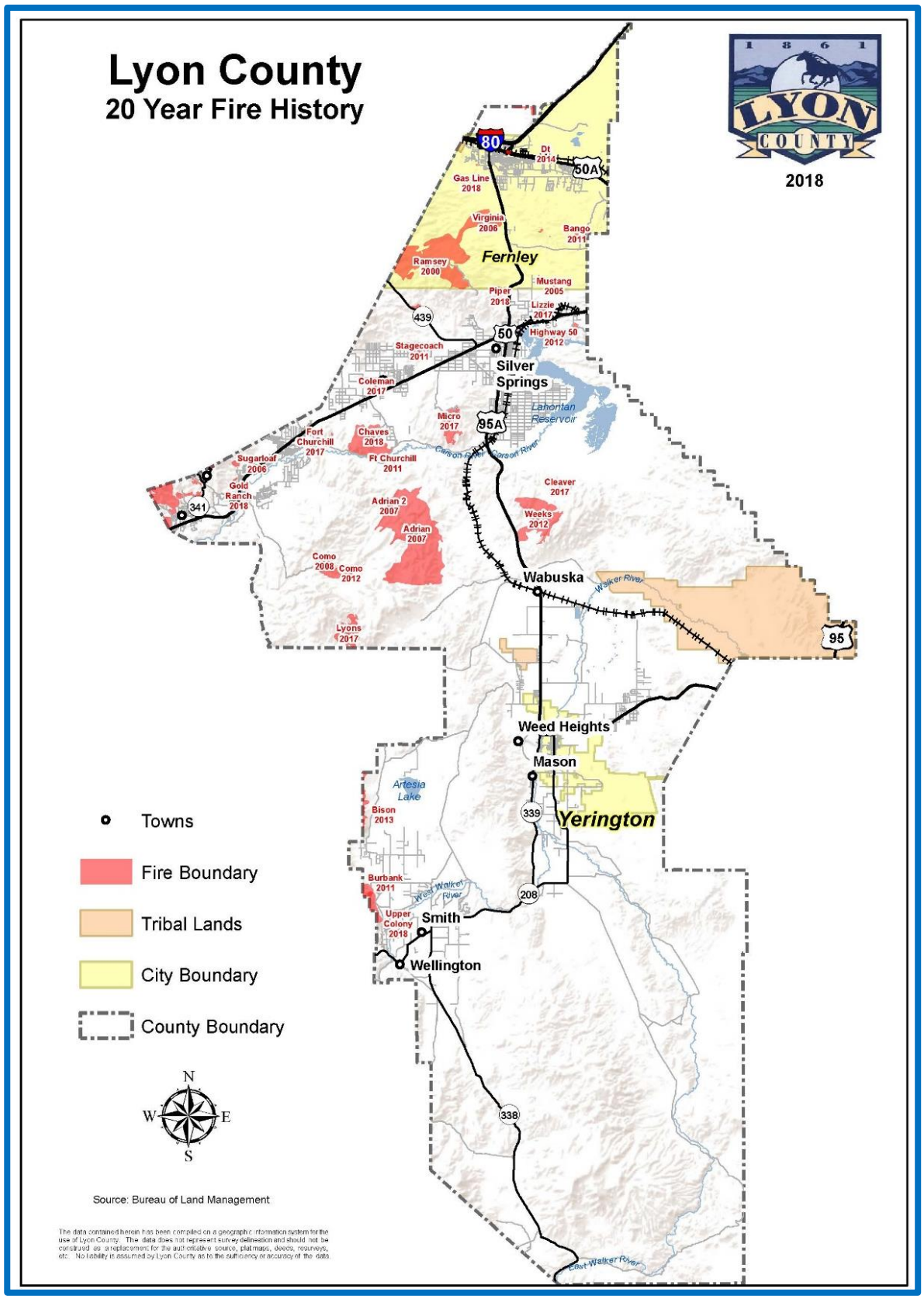

Lyon County, NV
FEMA Flood Hazard Zones
Community of Silver Springs
2018
Flood Zones
High Risk Areas
A Zone
AE Zone
Floodway
AO Zone
Moderate to Low Risk Areas
X (Shaded) Zone
X (Unshaded) Zone
Undetermined Risk Areas
D Zone
Community Areas
County Boundary
Parcel Boundary
N
E
S
W
Fernley
Stagecoach
Silver Springs
Mason Valley


Lyon County, NV
FEMA Flood Hazard Zones
Community of Stagecoach
2018
High Risk Areas
A Zone
AE Zone
Floodway
AO Zone
Moderate to Low Risk Areas
X (Shaded) Zone
X (Unshaded) Zone
Undetermined Risk Areas
D Zone
Community Areas
County Boundary
Parcel Boundary
N
W
E
S
Fernley
Stagecoach
Silver Springs
Dayton
Carson River
Mason Valley
50
439


2018
95A
Walker River
Yerington
339
208
Mason Valley
East Walker River
High Risk Areas
A Zone
AE Zone
Floodway
AO Zone
Moderate to Low Risk Areas
X (Shaded) Zone
X (Unshaded) Zone
Undetermined Risk Areas
D Zone
Community Areas
County Boundary
Parcel Boundary
N
W
E
S
Lyon County, NV
FEMA Flood Hazard Zones
City of Yerington


Lyon County, NV
Hazardous Materials
One Mile Radius of
Transportation Corridors
1861
LYON
COUNTY
2018
80
50A
Fernley
95A
439
Silver
Springs
Stagecoach
50
Lahontan
Reservoir
Silver City
Carson River
Carson River
341
Dayton
Mound
House
95A
Wabuska
Walker River
95
95A
Weed Heights
Mason
Yerington
Artesia
Lake
339
West Walker
River
208
Smith
Wellington
338
East Walker River
Towns
1 Mile Roads Buffer
City Boundary
Tribal Lands
County Boundary
N
W
E
S
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.


Lyon County, NV
Hazardous Materials
Buildings Housing
2018
Fernley
Silver Springs
Stagecoach
Lahontan Reservoir
Carson River
Silver City
Dayton
Mound House
Wabuska
Walker River
Weed Heights
Mason
Yerington
Artesia Lake
West Walker River
Smith
Wellington
West Walker River
80
50A
95A
439
50
341
95
339
208
338
Towns
1 Mile Radius EHS
1 Mile Radius
Tribal Lands
City Boundary
County Boundary
N
W
E
S
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.


Lyon County
20 Year Fire History
1861
LYON
COUNTY
2018
80
50A
Dt 2014
Gas Line 2018
Virginia 2006
Bango 2011
Ramsey 2000
Fernley
Mustang 2005
Piper 2018
Lizzie 2017
Highway 50 2012
439
50
Stagecoach 2011
Silver Springs
Coleman 2017
Lahontan Reservoir
Micro 2017
95A
Fort Churchill 2017
Chaves 2018
Ft Churchill 2011
Carson River
Sugarloaf 2006
Gold Ranch 2018
341
Cleaver 2017
Adrian 2 2007
Weeks 2012
Adrian 2007
Como 2008
Como 2012
Wabuska
Walker River
Lyons 2017
95
Weed Heights
Mason
Artesia Lake
Bison 2013
339
Yerington
Burbank 2011
West Walker River
208
Upper Colony 2018
Smith
Wellington
338
East Walker River
Towns
Fire Boundary
Tribal Lands
City Boundary
County Boundary
N
W
E
S
Source: Bureau of Land Management
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, platmaps, deeds, resurveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.

Appendix C
Public Information & Outreach

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LYON COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT
BUILDING • DEVELOPMENT ENGINEERING • PLANNING

27 S. MAIN STREET
YERINGTON, NEVADA 89447
(775) 463-6592
FAX: (775) 463-5305

34 LAKES BOULEVARD
DAYTON, NEVADA 89403
(775) 246-6135
FAX: (775) 246-6147

January 25, 2018

Dear Neighboring Community,

We invite you to participate in the Lyon County Multi-Jurisdictional Hazard Mitigation Plan update.

Over the next few months, Lyon County, the Cities of Fernley, Yerington, and the Yerington Paiute Tribe will be conducting a planning effort to update their Multi-Jurisdictional Hazard Mitigation Plan. This update to the plan will be developed to facilitate compliance with federal requirements and to provide a tool for local government, industry, and private venues to help reduce the impact of natural and human-caused hazard threats. Further, the plan will help our community develop infrastructure to lessen potential damage.

One of the major components of the plan development is having a good cross-section of Community input and participation by neighboring communities, and that is the reason for this invitation. I hope that you will agree to be included on our planning team. The level of commitment will involve a meeting once a month, plus a review of the components of the plan as they are written. I anticipate a meeting every month for the next five months. Generally the work can be done via e-mail after our introductory meeting.

Our next ECC meeting will be held on March 7, 2018 from 1:00 pm to 2:00 pm in the Lyon County Board Chambers. Lyon County Administrative Complex, 27 S. Main Street, Yerington, NV.

I am hoping that you can participate as a representative of your profession. If you are willing to join our group, please RSVP to Tammy Kinsley, Sr. Planner, Lyon County Community Development at e-mail address tkinsley@lyon-county.org.

Cordially,

Jeff Page
County Manager
Lyon County

Page | 1 of 1

News Release
Lyon County
1/25/2018
www.lyon-county.org

FOR IMMEDIATE RELEASE

Hazard Mitigation Plan
Yerington, NV – January 25, 2018

In recent years, nature has been restless in Nevada – there has been a swarm of earthquakes rattling portions of Northern Nevada, and every year there are major wildland fires throughout the state. Most recently in Lyon County we have experienced Floods in July of 2017 and Severe Weather hazards in January and February, 2017 produced major Flood events in our region. All of these emergency events demonstrate that Lyon County can experience hazardous disasters. The risks from such hazards will continue to increase as the county's population continues to grow.

Lyon County and the Cities of Fernley and Yerington have launched a planning effort to update the 2013 *Multi Jurisdiction Hazard Mitigation Plan*. This plan will assess and prioritize the risks posed by natural and manmade hazards and identify ways to reduce those risks. This plan is required by the Federal Disaster Mitigation Act of 2000 and is a prerequisite to acquiring federal funding for mitigation or recovery from disasters. This update will include an Annex to the plan by the Yerington Paiute Tribe community.

As we work through the update process, a questionnaire will be distributed to the public asking for input on local disaster mitigation and recovery needs. The county, cities and tribe plan on submitting a draft plan to local governing boards in the summer of 2018 for their approval. The final plan will then be sent to FEMA for review and final approval.

Public comments and participation are welcomed and encouraged. For additional information, to Volunteer or attend public meetings, or to make comments, please contact Jeff Page, Lyon County Manager at (775) 463-6531 or jpage@lyon-county.org

-End-


Lyon County Office of Emergency Management
Lyon County Multi-Jurisdictional Hazard Mitigation Plan
July 2013
2018 Update to the 2013 Multi-Jurisdictional Hazard Mitigation Plan
Please give us your feed back on the Mitigation Questionnaire!
Lyon County, the cities of Fernley and Yerington, and the Yerington Paiute Tribe of Nevada are currently in the process of updating the Multi-jurisdictional Hazard Mitigation Plan.
This questionnaire is designed to help Lyon County, the cities of Fernley and Yerington and the Yerington Paiute Tribe of Nevada, identify the community's concerns about natural and human-caused hazards.
Scan the QR-code below with your phone or go to the link on your computer to provide information and participate in this update!
Thank you!
https://bit.ly/2wcRgQr

Mitigation Questionnaire

Lyon County, the cities of Fernley and Yerington a are currently in the process of updating the Multi-jurisdictional Hazard Mitigation Plan.

This questionnaire is designed to help Lyon County, the cities of Fernley and Yerington and the Yerington Paiute Tribe of Nevada, identify the community's concerns about natural and human-caused hazards. The questionnaire should be completed by an adult, preferably the property owner or the head of the household. All individual responses are strictly confidential and are for research purposes only. This questionnaire consists of 9 questions and will take approximately 5 minutes to complete.

GENERAL HOUSEHOLD INFORMATION

The following demographic information will aid the planning committee in determining the hazard mitigation needs of our communities. For example, indicating whether you own a house or are a tenant will determine the needs for both renters and homeowners. The answers provided in this action will be treated as confidential and will be used solely for the preparation of this plan update and will not be provided to any other group or interest.

1. **Please indicate your zip code:**

89403	*89408*	*89428*	*89429*	*89430*	*89444*	*89447*	*89706*
Dayton	*Fernley*	*Silver City*	*Silver Springs & Stagecoach*	*Smith*	*Wellington*	*Mason Valley & Yerington*	*Mound House*

2. **Please check all that apply:**

	Lyon County	City of Fernley	City of Yerington
Do you own a home in ?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
If you do not own a home do you rent a residence?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Do you own a business?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No
Do you own or operate a vehicle in the County?	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No

NATURAL OR HUMAN-CAUSED HAZARD INFORMATION

The following demographic information will aid the planning committee in determining the needs and desires for educating and preparing our communities for natural and human-caused disasters. The answers proved in this action will be reviewed as confidential and will be used solely for the preparation of this plan update and will not be provided to any other group or interest.

3. Prior to receiving this questionnaire, were you aware of your Community's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) ? ☐ Yes ☐ No

NATURAL OR HUMAN-CAUSED HAZARD INFORMATION

4. Prior to receiving this questionnaire, were you aware that the Federal Emergency Management Agency (FEMA) requires your Communities to update the MJHMP every five years in order for your Communities to be eligible for federal pre- and post- disaster hazard mitigation funds? ☐ Yes ☐ No

5. In the past 10 years, which of the following natural and human-caused hazard events have you or someone in your household experienced (been effected by or witnessed) within Lyon County, the cities of Fernley and Yerington, and the Yerington Paiute Tribe Colony and/or Reservation?

Natural and Human-caused Hazards	Have Experienced (been effected by or witnessed) (Indicate all that apply)			Please indicate your level of concern for the Hazard's Impact on the Communities.		
	Yes	No	N/A	Low	Moderate	High
Avalanche	☐	☐	☐	☐	☐	☐
Dam/Canal Failure	☐	☐	☐	☐	☐	☐
Drought	☐	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐	☐
Epidemic	☐	☐	☐	☐	☐	☐
Expansive Soil	☐	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐	☐
Floods	☐	☐	☐	☐	☐	☐
Hail & Thunderstorm	☐	☐	☐	☐	☐	☐
Hazardous Materials event	☐	☐	☐	☐	☐	☐
Infestation	☐	☐	☐	☐	☐	☐
Land Subsidence & Ground Failure	☐	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐	☐
Terrorism/WMD	☐	☐	☐	☐	☐	☐
Tornado	☐	☐	☐	☐	☐	☐
Tsunami/Seiche	☐	☐	☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐	☐

PREPAREDNESS ACTIVITIES IN YOUR HOUSEHOLD

Households can do many things to prepare for natural and human-caused disasters or emergencies. What you have on hand or are trained to do when a disaster strikes can make a big difference in your comfort and safety in the hours and days following a natural and/or human-caused disaster or emergency. Basic services, such as electricity, gas, water supply, and telephone services may be cutoff, or you may have to evacuate at a moments notice.

6. The following questions focus on your household's ***preparedness*** for a disaster event.

In your household, have you or someone in your household:	*Have Experienced*	*Plan To Do*	*Not Done*	*Unable To Do*
Attended meetings or received written information on natural and human -caused disasters or emergency preparedness?	☐	☐	☐	☐
Talked with members of your household about what to do in case of natural and human-caused disasters 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" (stored extra food, water, batteries, or other Emergency supplies)?	☐	☐	☐	☐
In the last year, has anyone in your household been trained in First Aid, Cardio-Pulmonary Resuscitation (CPR) or Automated External Defibrillator (AED)?	☐	☐	☐	☐

7. Have you ever received information about how to make your household and home safer from natural and human-caused disasters? ☐ Yes ☐ No *(If "no" skip to Question 9)*

8. From whom did you receive information about how to make your household and home safer from natural and human-caused disasters? *(Please check all that apply)*

News Media ☐
University or Research Institution ☐
Insurance Agent or Company ☐
Utility Company ☐
American Red Cross ☐
Emergency Management (County or State) ☐
Fire Department ☐
Health District ☐
Other Government Agency ☐
Other _____ ☐

PREPAREDNESS ACTIVITES IN YOUR HOUSEHOLD

9. What is the most effective way for you to receive information about how to make your household and home safer from natural and human-caused disasters? *(Please check all that apply)*

Newspaper
☐ Online
☐ Delivered

Television
☐ News Stories
☐ Advertisements/Commercials

Radio
☐ Stories
☐ Advertisements/Commercials

Other Methods
☐ Books
☐ Postal Mail
☐ Magazines

☐ Email
☐ Internet

☐ Outdoor Advertisement (Billboards, etc.)
☐ Fact Sheets/Brochures
☐ School/University or Research Institution

☐ Emergency Manager
☐ Fire Department
☐ Chamber or Commerce
☐ Public Workshops/ Meetings
☐ Other: _____

Comments:

Please return this questionnaire to: Tammy Kinsley, Sr. Planner, Lyon County Community Development - Planning Division 27 South Main Street, Yerington, NV 89447 or 34 Lakes Blvd. Dayton, NV 89403

Lyon County Mitigation Questionnaire

General Comments:

1. The Lyon County Hazard Mitigation Questionnaire was designed to help the Lyon County, City of Fernley and the City of Yerington MJHMP Planning Committee identify the community's concerns about natural and human-caused hazards. The questionnaire was considered an essential development tool to the County's Multi-Jurisdictional Hazard Mitigation Plan update.

2. The committee decided to have the public questionnaire available on the Lyon County's Emergency Management website, on the City of Fernley's website and the City of Yerington's website. A link was made available to the online questionnaire utilizing ArcGIS.com through "Survey123." Hard copies of the questionnaire were also available and handed out at the June 2, 2018 "Oodles of Noodles" public event. Questionnaires and website link information was made available to all of the Citizens Advisory Boards on the County. There were 43 responses to the mitigation questionnaire received. 33 responses received from the online mitigation questionnaire, 10 responses from hard copy questionnaires received. All questionnaire comments received are included at the end of as tally sheets.

3. The concerns (rated at Low, Med., High) of the citizens residing throughout the County are indicated below, highest to lowest:
   a. Wildland Fire
   b. Windstorm
   c. Drought
   d. Earthquake
   e. Extreme Heat
   f. Floods
   g. Hazardous Materials Event
   h. Hail and Thunderstorm
   i. Severe Winter Storm & Extreme Snowfall
   j. Dam/Canal Failure
   k. Landslide
   l. Land Subsidence & Ground Failure
   m. Epidemic
   n. Expansive Soil
   o. Infestation
   p. Terrorism/WMD
   q. Avalanche
   r. Tornado
   s. Tsunami/Seiche
   t. Volcano

4. The questionnaire revealed that a majority of the community's citizens wish to receive

the postal mail, factsheets and or brochures and by attending Public Workshops. Less effective receiving information was through television and newspaper stories, magazines, books, outdoor advertisements, such as billboards and the Chamber of Commerce.

5. The development of or planning to develop a household/family Emergency Plan and prepare a First Aid kit was, 58%. Approximately 58% also have prepared a "Disaster Supply Kit" with 69% have talked with members of their households about what to do in case a natural or human-caused disaster should occur. In addition, within the last year 60% of the responses received indicated that they have been trained in Frist Aid, Cardio-Pulmonary Resuscitation (CPR) or Automated External Defibrillator (AED) Training. 55% have attended meetings on preparing for a disaster.

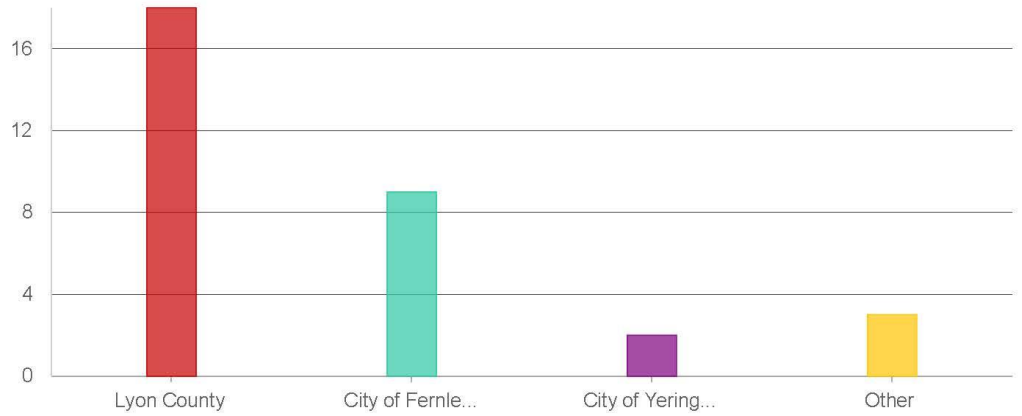
6. The questionnaire provided excellent feedback from the community throughout Lyon County, City of Fernley and the City of Yerington concerning hazard mitigation issues and was utilized in this update to the Lyon County Multi-Jurisdictional Hazard Mitigation Plan.

Questions	89403	89408	89428	89429	89430	89444	89447	89706	Do you own a home in ?	Lyon County	City of Fernley	City of Yerington	If you do not own a home do you rent a residence?	Lyon County	City of Fernley	City of Yerington	Do you own a business?	Lyon County	City of Fernley	City of Yerington	Do you own or operate a vehicle in the County?	Lyon County	City of Fernley	City of Yerington	Prior to receiving this questionnaire, were you aware of your Community's Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) ?	Management Agency (FEMA) requires your Communities to update the MJHMP every five years in order for your Communities to be eligible for federal pre- and post-disaster hazard mitigation funds?	have you or someone in your household experienced (been effected by or witnessed) within Lyon County, the cities of Fernley and Yerington, and the Yerington Paiute Tribe Colony and/or Reservation?
RESPONSES																											
1					1									1				1				1			1	1	
2							1			1												1			1		
3								1						1								1				1	
4						1				1												1					
5						1								1								1			1	1	
6							1			1												1			1	1	
7							1			1												1			1	1	
8	1									1												1			1	1	
9	1									1								1				1			1	1	
10							1			1												1					
	2				1	2	4	1		7	0	0		3	0	0		2	0	0	0	10	0	0	7	7	

Avalanche	Dam/Canal Failure	Drought	Earthquake	Epidemic	Expansive S	Extreme Heat	Floods	Hail & Thunderstorm	Hazardous Materials event	Infestation	Land Subsidence & Ground Failure	Landslide	Terrorism /WMD	Tornado	Tsunami/ Seiche	Volcano	Wildfire	Windstorm	The following questions focus on your household's ***preparedness*** for a disaster event.	Attended meetings or received written information on natural and human -caused disasters or emergency preparedness?
		1				1	1	1	1				1				1	1		1
		1	1			1	1	1									1	1		1
		1	1	1		1	1	1				1		1			1	1		1
		1	1	1		1	1	1									1	1		1
		1	1			1	1	1		1							1	1		1
		1	1			1	1	1										1		
	1	1	1			1	1	1									1	1		1
		1	1			1	1	1			1						1	1		1
	1	1	1			1	1	1		1	1							1		1
		1	1			1	1	1				1					1	1		1
	2	10	8	2	0	10	10	10	1	2	2	2	1	1	0	0	8	10		9

Talked with members of your household about what to do in case of natural and human-caused disasters 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" (stored extra food, water, batteries, or other Emergency supplies)?	In the last year, has anyone in your household been trained in First Aid, Cardio-Pulmonary Resuscitation (CPR) or Automated External Defibrillator (AED)?	Have you ever received information about how to make your household and home safer from natural and human-caused disasters?	From whom did you receive information about how to make your household and home safer from natural and human-caused disasters? (Please check all that apply)	News Media	University or Research Institution	Insurance Agent or Company	Utility Company	American Red Cross	Emergency Management (County or State)	Fire Department	Health District	Other Government Agency	Other _____	From whom did you receive information about how to make your household and home safer from natural and human-caused disasters?	News Media	Television	Radio advertisements	Postal Mail	Magazines	University or Research Institution	Insurance Agent or Company	Utility Company	American Red Cross	Emergency Management (County or State)	Fire Department	Email/ internet	Fact sheet/brochure	Health District	Public Workshop/ Meetings	Other _____	
			1	1		1	1		1	1	1	1		1																				
1		1	1	1			1					1					1		1										1	1		1		
1	1	1	1	1		1				1	1	1	1				1	1	1	1	1								1	1				
1	1	1	1	1									1					1									1		1	1				
1	1		1								1	1	1																					
																		1	1	1									1					
1				1		1					1	1		1			1	1	1								1		1					
1		1	1	1		1			1	1	1	1		1	1		1	1	1								1	1		1			1	Sheriff's Office Public Service Announcements
1		1		1		1	1		1					1					1										1					
1		1		1		1												1	1										1					
8	3	6	6	8		6	3	0	3	3	5	6	3	4	1		4	6	7	2	1	0	0	0	0	3	1	7	4	0	1		1	

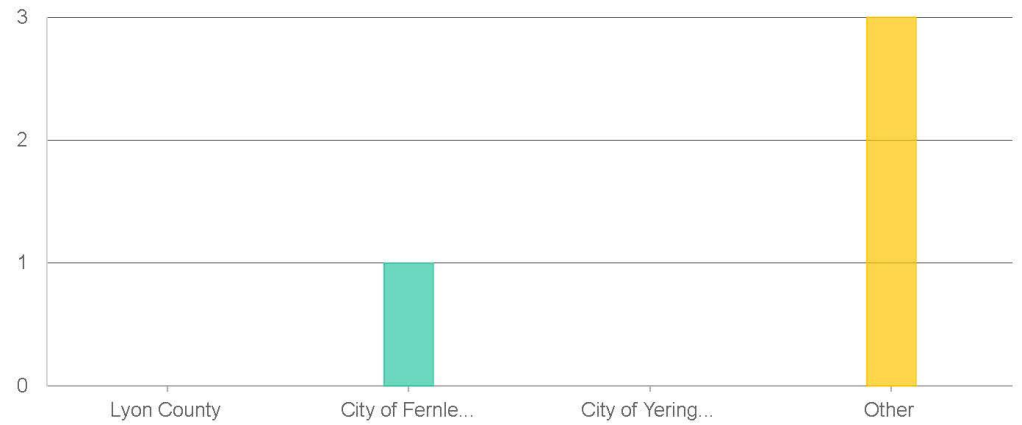
Do you own a home in ?



Answers	Count	Percentage
Lyon County	18	54.55%
City of Fernley	9	27.27%
City of Yerington	2	6.06%
Other	3	9.09%

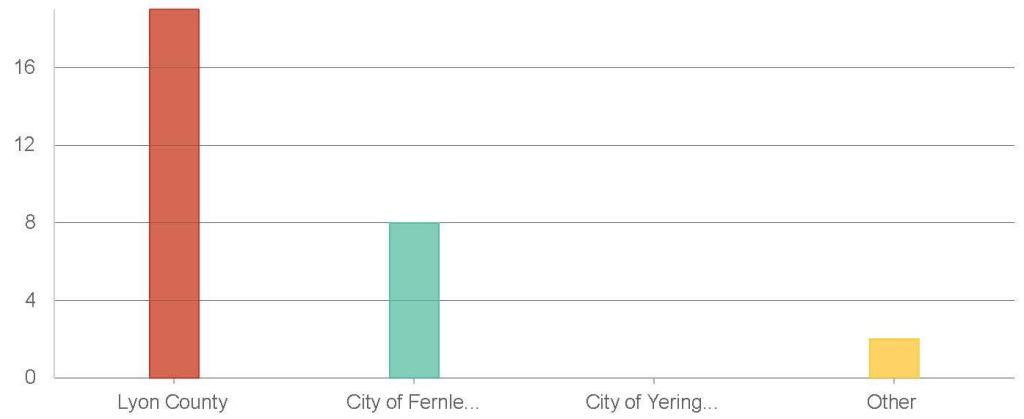
Answered: 32 Skipped: 1

If you do not own a home, do you rent a residence in?



7/26/2018 Mitigation Questionnaire

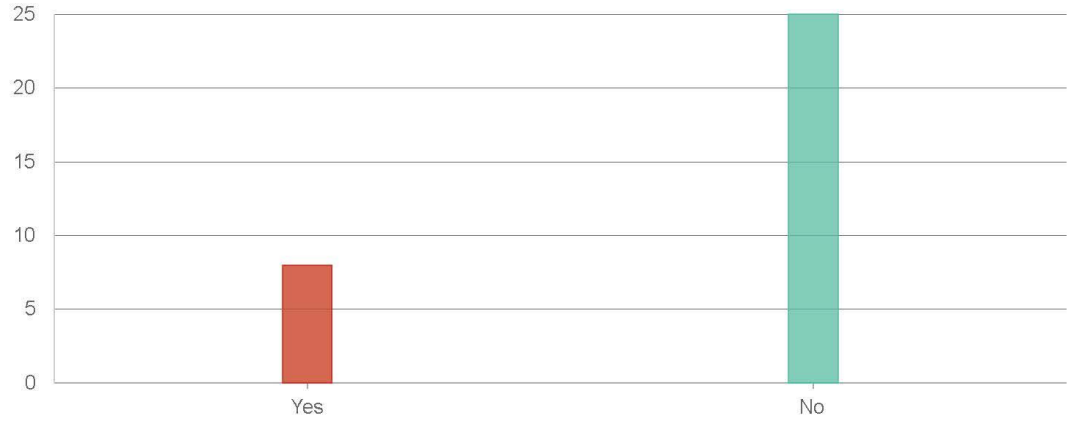
Do you own or operate a vehicle in ?



Answers	Count	Percentage
Lyon County	19	57.58%
City of Fernley	8	24.24%
City of Yerington	0	0.00%
Other	2	6.06%

Answered: 29 Skipped: 4

Prior to receiving this questionnaire, were you aware of your Community's Multi-Jurisdictional Hazard Mitigatio...

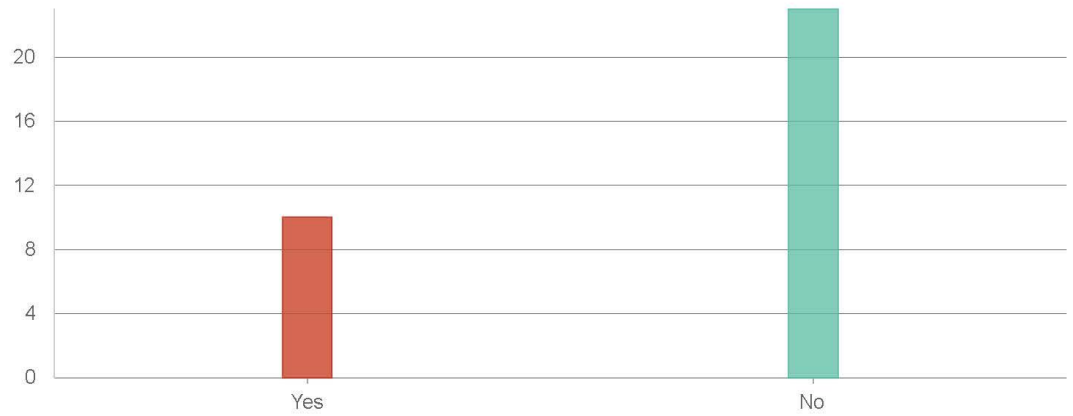


http://survey123.arcgis.com/surveys/6e0647a6bf5d4972a490094d7ae5ead3/analyze 4/31

Answers	Count	Percentage
Yes	8	24.24%
No	25	75.76%

Answered: 33 Skipped: 0

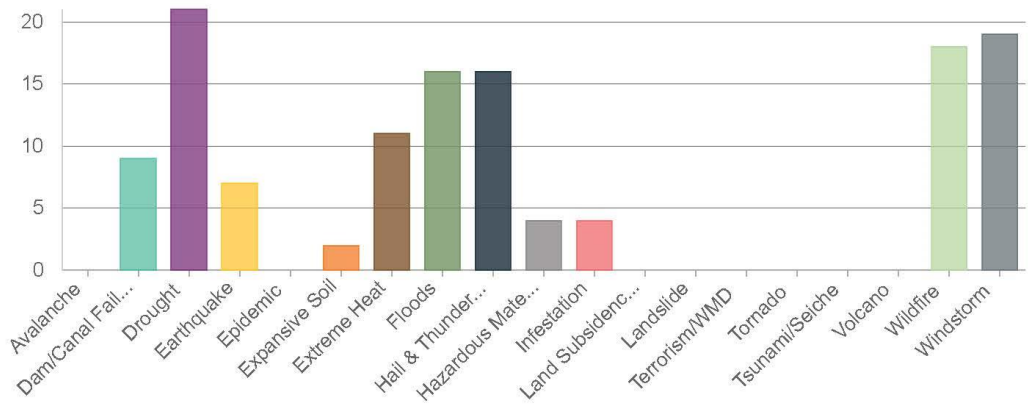
Prior to receiving this questionnaire, were you aware that the Federal Emergency Management Agency (FEMA) r...



Answers	Count	Percentage
Yes	10	30.30%
No	23	69.70%

Answered: 33 Skipped: 0

In the past 10 years, which of the following natural and human-caused hazard events have you or someone in y...

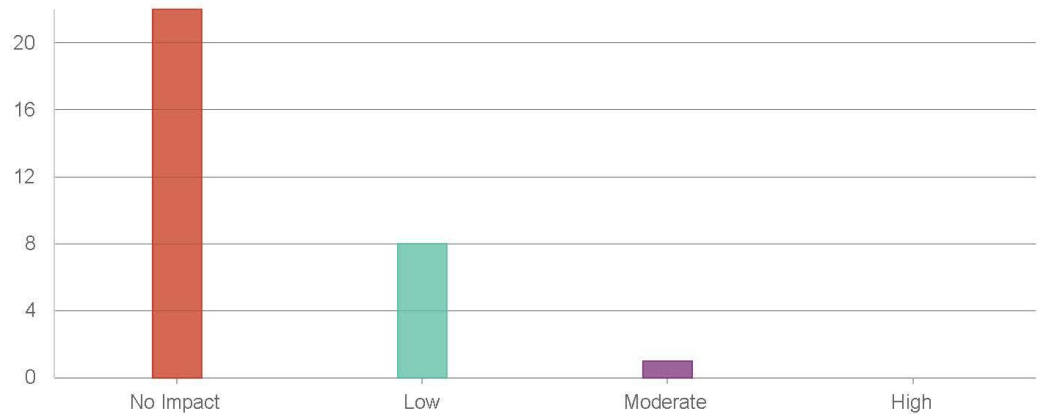


Answers	Count	Percentage

Answers	Count	Percentage
Avalanche	0	0.00%
Dam/Canal Failure	9	27.27%
Drought	21	63.64%
Earthquake	7	21.21%
Epidemic	0	0.00%
Expansive Soil	2	6.06%
Extreme Heat	11	33.33%
Floods	16	48.48%
Hail & Thunderstorm	16	48.48%
Hazardous Materials event	4	12.12%
Infestation	4	12.12%
Land Subsidence & Ground Failure	0	0.00%
Landslide	0	0.00%
Terrorism/WMD	0	0.00%
Tornado	0	0.00%
Tsunami/Seiche	0	0.00%
Volcano	0	0.00%
Wildfire	18	54.55%
Windstorm	19	57.58%

Answered: 30 Skipped: 3

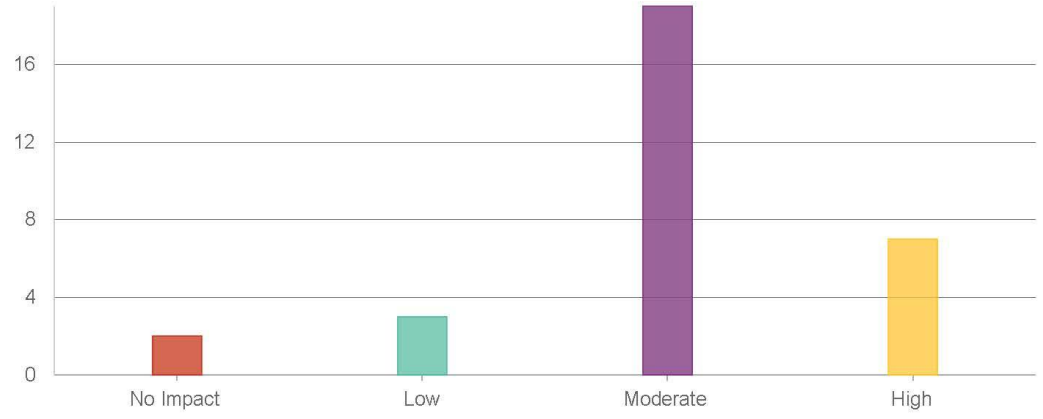
Avalanche



Answers	Count	Percentage
No Impact	22	66.67%
Low	8	24.24%
Moderate	1	3.03%
High	0	0.00%

Answered: 31 Skipped: 2

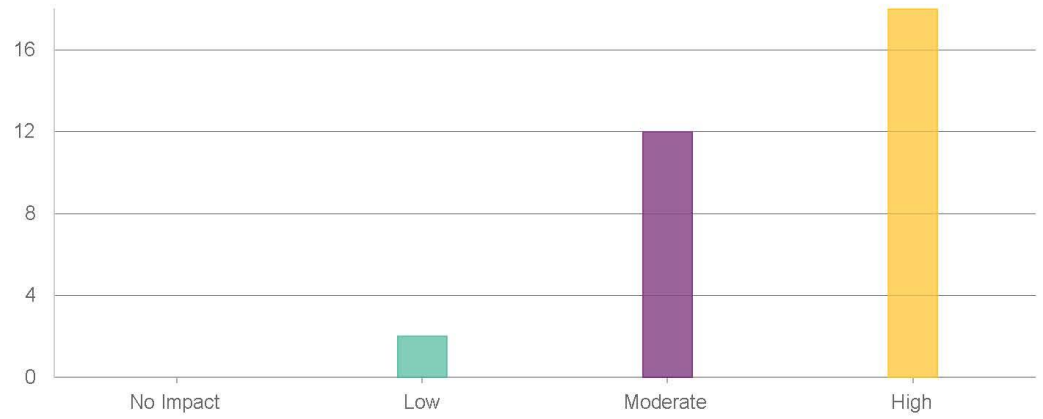
Dam/Canal Failure



Answers	Count	Percentage
No Impact	2	6.06%
Low	3	9.09%
Moderate	19	57.58%
High	7	21.21%

Answered: 31 Skipped: 2

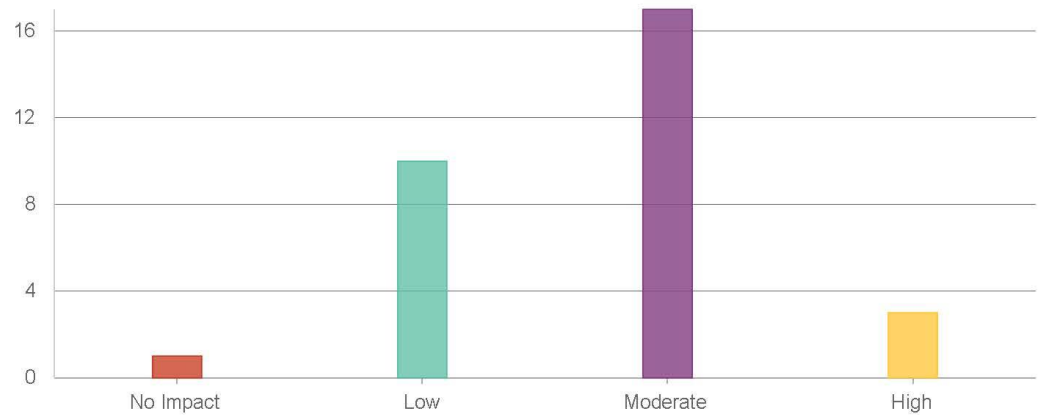
Drought



Answers	Count	Percentage
No Impact	0	0.00%
Low	2	6.06%
Moderate	12	36.36%
High	18	54.55%

Answered: 32 Skipped: 1

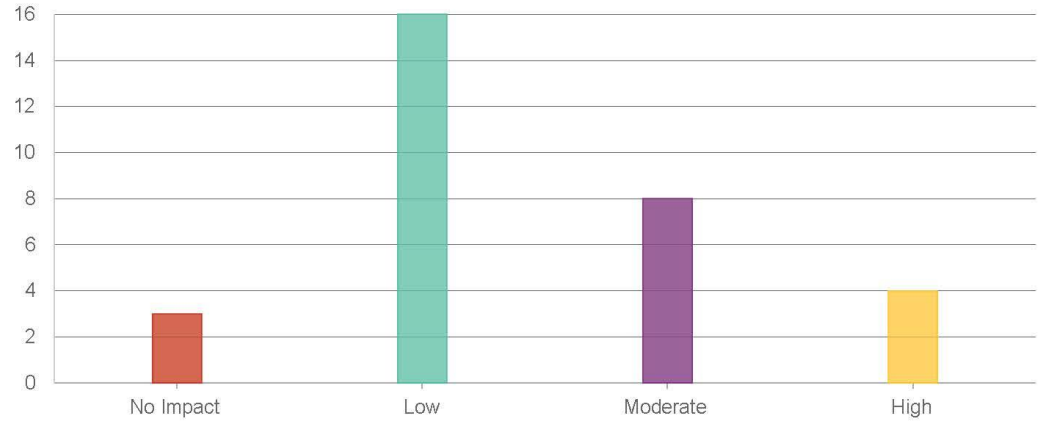
Earthquake



Answers	Count	Percentage
No Impact	1	3.03%
Low	10	30.30%
Moderate	17	51.52%
High	3	9.09%

Answered: 31 Skipped: 2

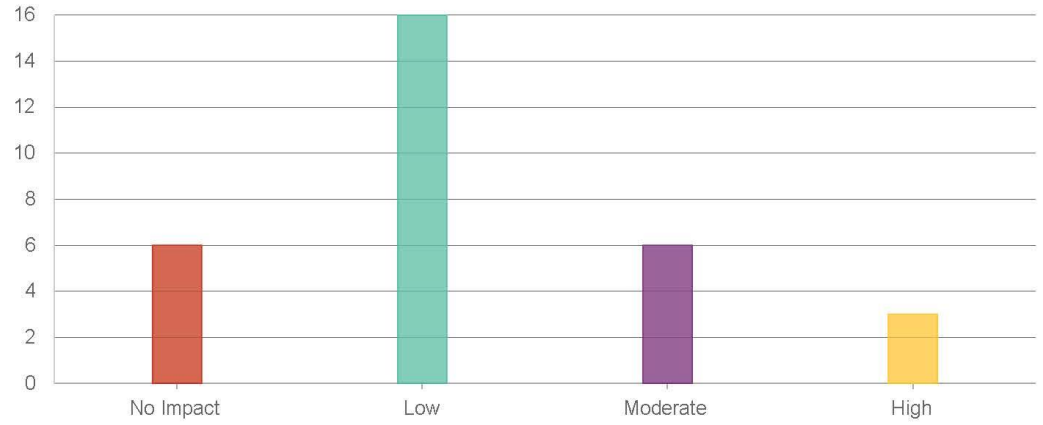
Epidemic



Answers	Count	Percentage
No Impact	3	9.09%
Low	16	48.48%
Moderate	8	24.24%
High	4	12.12%

Answered: 31 Skipped: 2

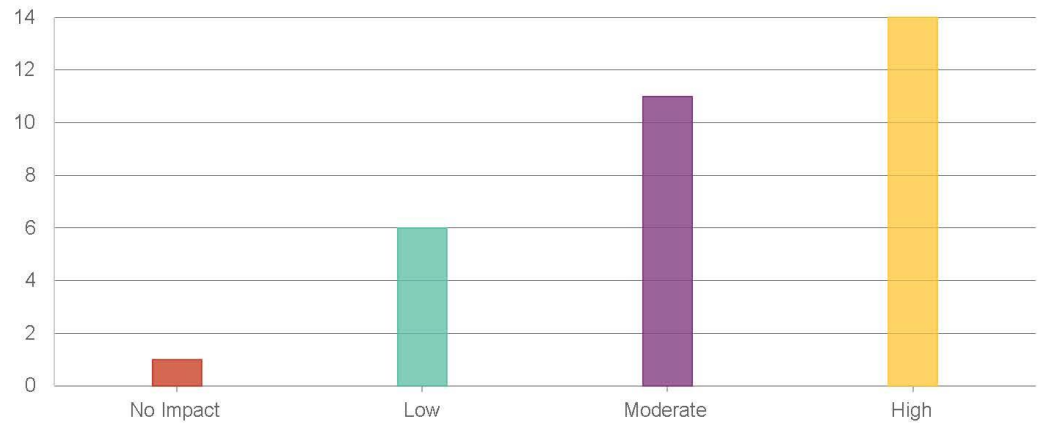
Expansive Soil



Answers	Count	Percentage
No Impact	6	18.18%
Low	16	48.48%
Moderate	6	18.18%
High	3	9.09%

Answered: 31 Skipped: 2

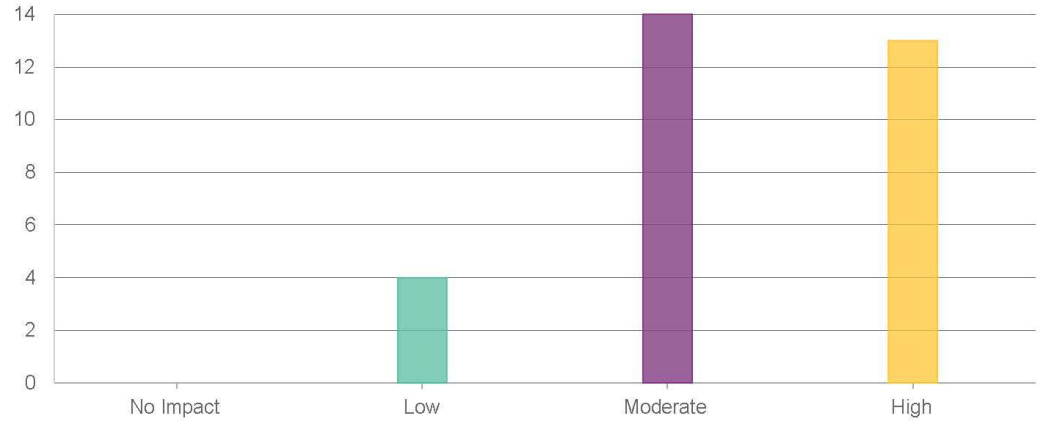
Extreme Heat



Answers	Count	Percentage
No Impact	1	3.03%
Low	6	18.18%
Moderate	11	33.33%
High	14	42.42%

Answered: 32 Skipped: 1

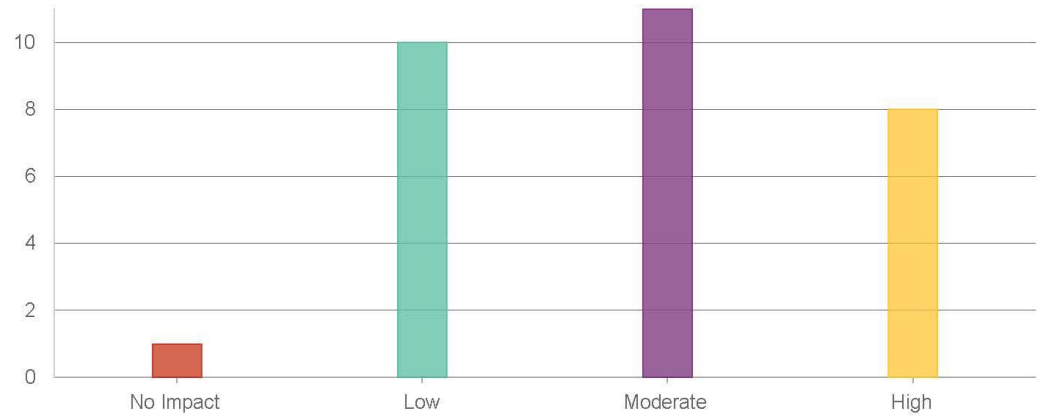
Floods



Answers	Count	Percentage
No Impact	0	0.00%
Low	4	12.12%
Moderate	14	42.42%
High	13	39.39%

Answered: 31 Skipped: 2

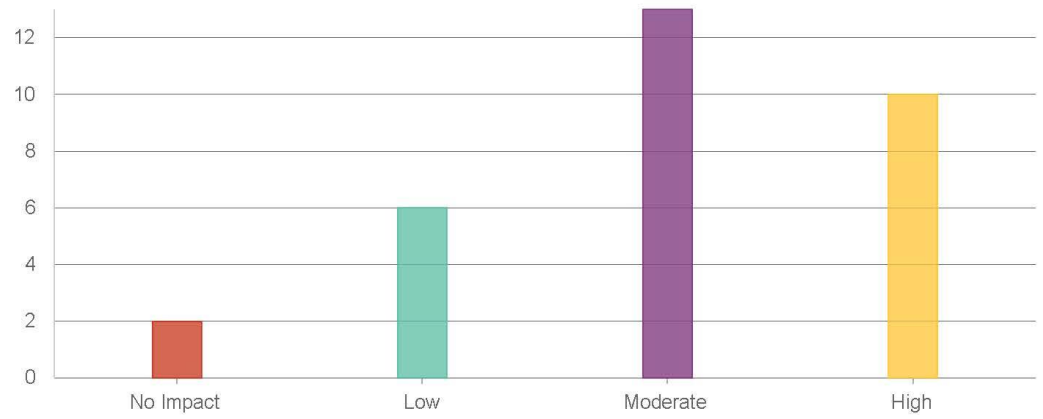
Hail & Thunderstorm



Answers	Count	Percentage
No Impact	1	3.03%
Low	10	30.30%
Moderate	11	33.33%
High	8	24.24%

Answered: 30 Skipped: 3

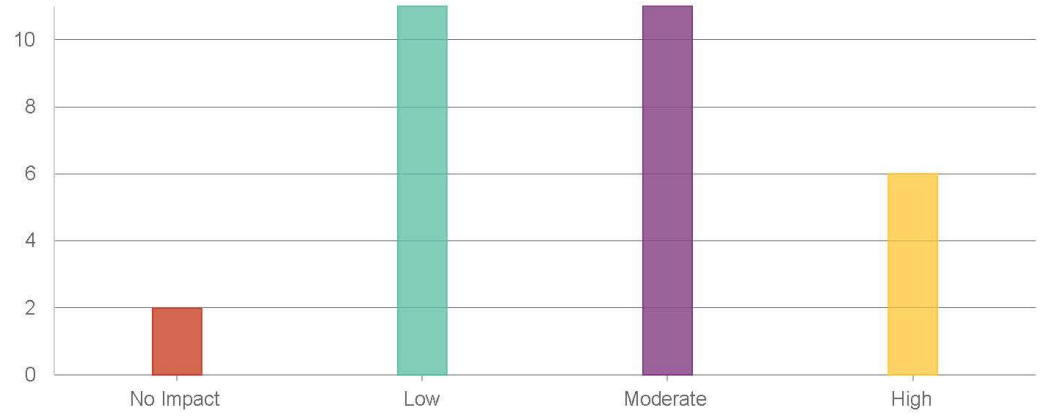
Hazardous Materials event



Answers	Count	Percentage
No Impact	2	6.06%
Low	6	18.18%
Moderate	13	39.39%
High	10	30.30%

Answered: 31 Skipped: 2

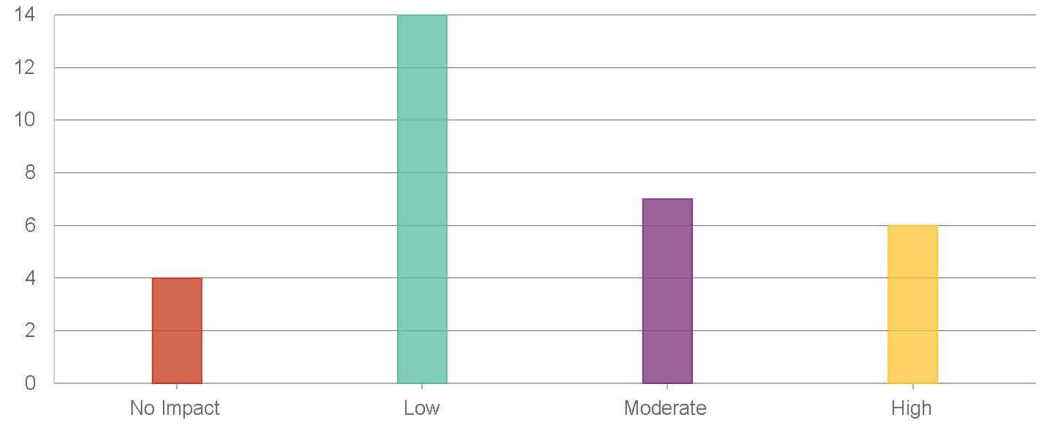
Infestation



Answers	Count	Percentage
No Impact	2	6.06%
Low	11	33.33%
Moderate	11	33.33%
High	6	18.18%

Answered: 30 Skipped: 3

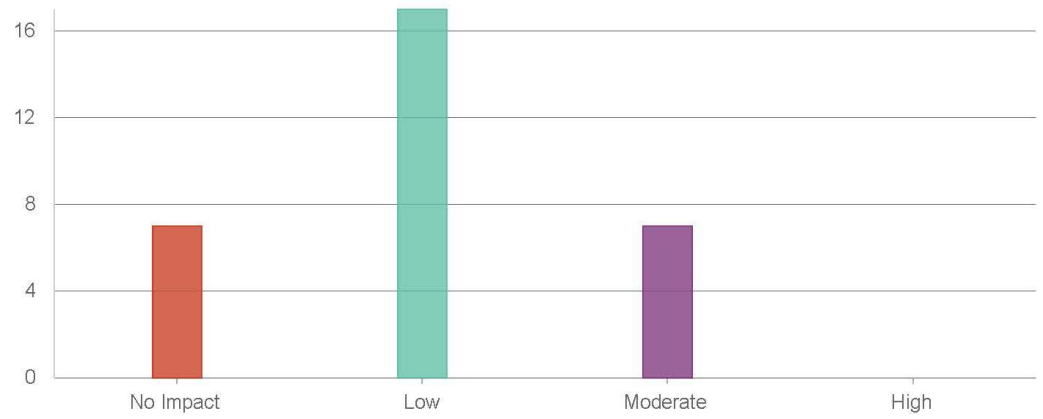
Land Subsidence & Ground Failure



Answers	Count	Percentage
No Impact	4	12.12%
Low	14	42.42%
Moderate	7	21.21%
High	6	18.18%

Answered: 31 Skipped: 2

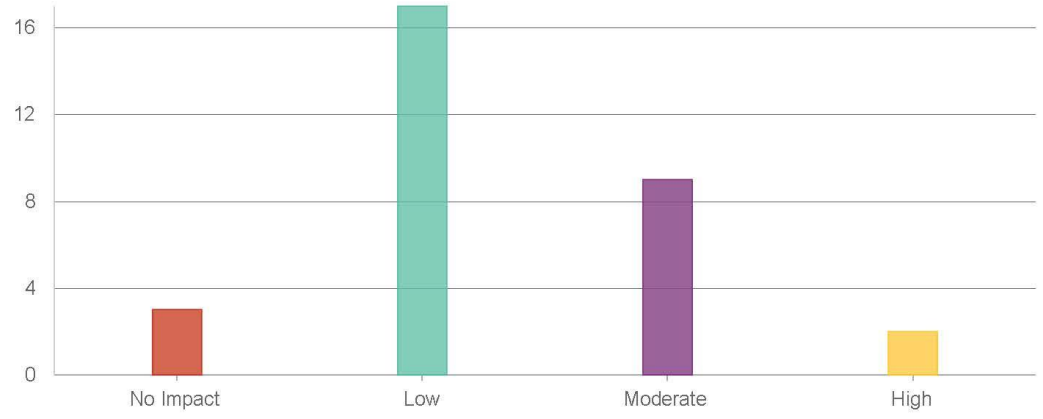
Landslide



Answers	Count	Percentage
No Impact	7	21.21%
Low	17	51.52%
Moderate	7	21.21%
High	0	0.00%

Answered: 31 Skipped: 2

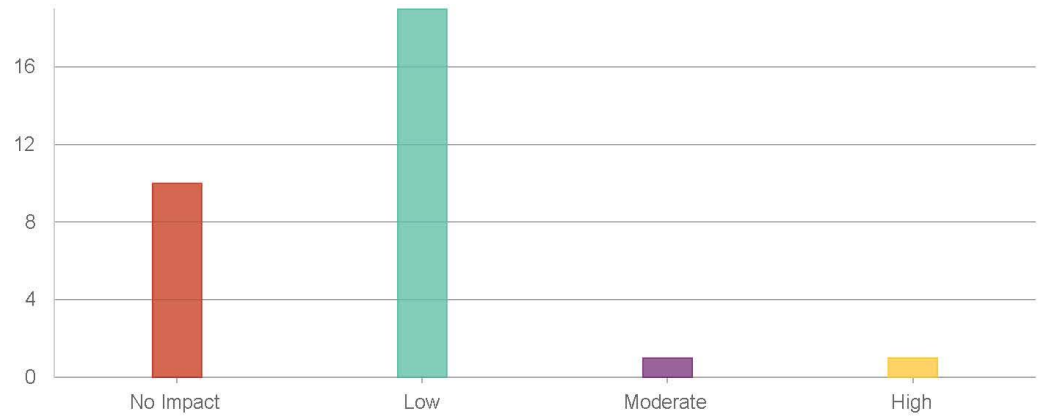
Terrorism/WMD



Answers	Count	Percentage
No Impact	3	9.09%
Low	17	51.52%
Moderate	9	27.27%
High	2	6.06%

Answered: 31 Skipped: 2

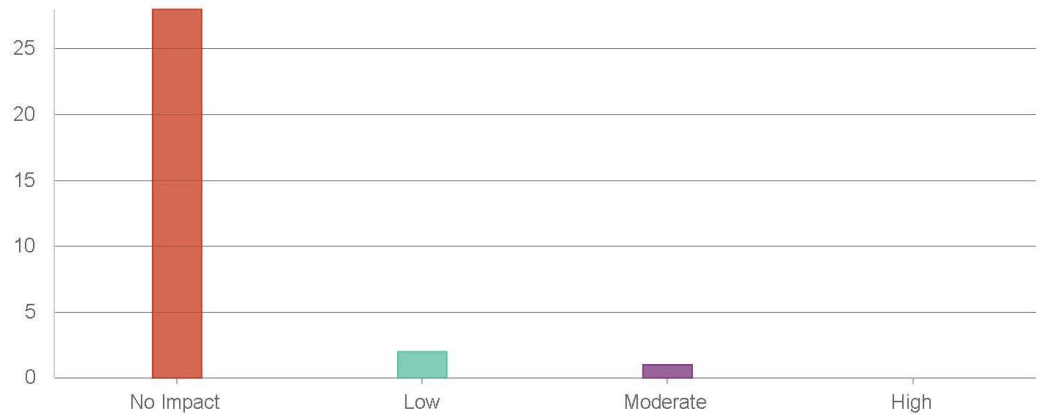
Tornado



Answers	Count	Percentage
No Impact	10	30.30%
Low	19	57.58%
Moderate	1	3.03%
High	1	3.03%

Answered: 31 Skipped: 2

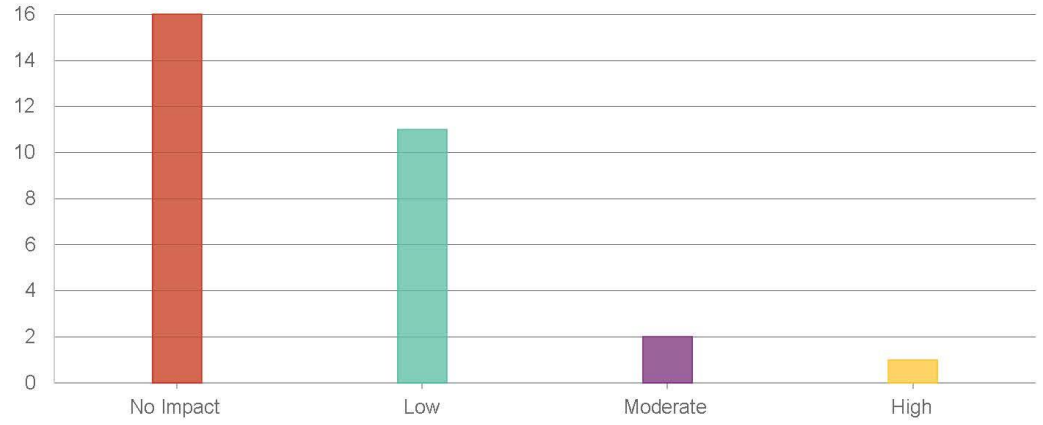
Tsunami/Seiche



Answers	Count	Percentage
No Impact	28	84.85%
Low	2	6.06%
Moderate	1	3.03%
High	0	0.00%

Answered: 31 Skipped: 2

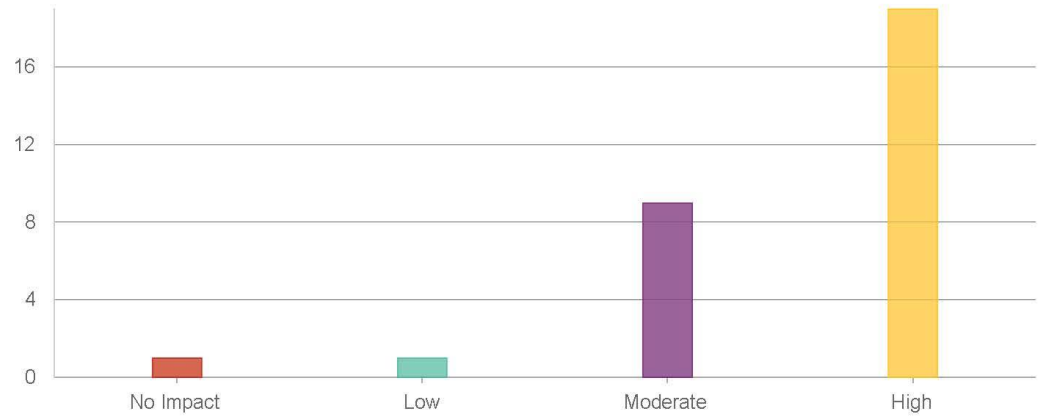
Volcano



Answers	Count	Percentage
No Impact	16	48.48%
Low	11	33.33%
Moderate	2	6.06%
High	1	3.03%

Answered: 30 Skipped: 3

Wildfire

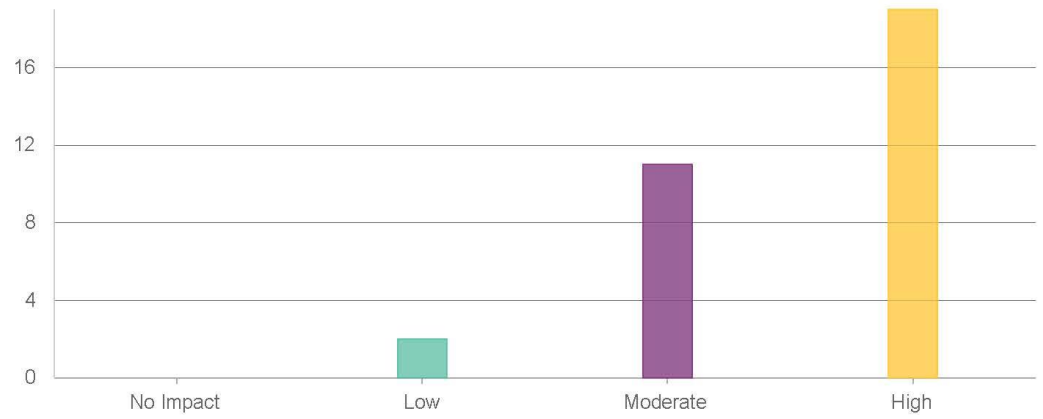


Answers	Count	Percentage
No Impact	1	3.03%
Low	1	3.03%
Moderate	9	27.27%
High	19	57.58%

Answered: 30 Skipped: 3

7/26/2018 Mitigation Questionnaire

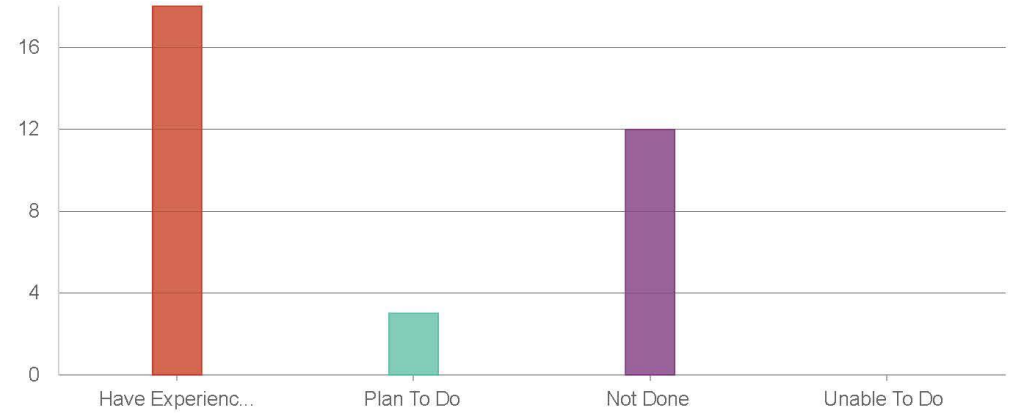
Windstorm



Answers	Count	Percentage
No Impact	0	0.00%
Low	2	6.06%
Moderate	11	33.33%
High	19	57.58%

Answered: 32 Skipped: 1

Attended meetings or received written information on natural and human -caused disasters or emergency prepa…

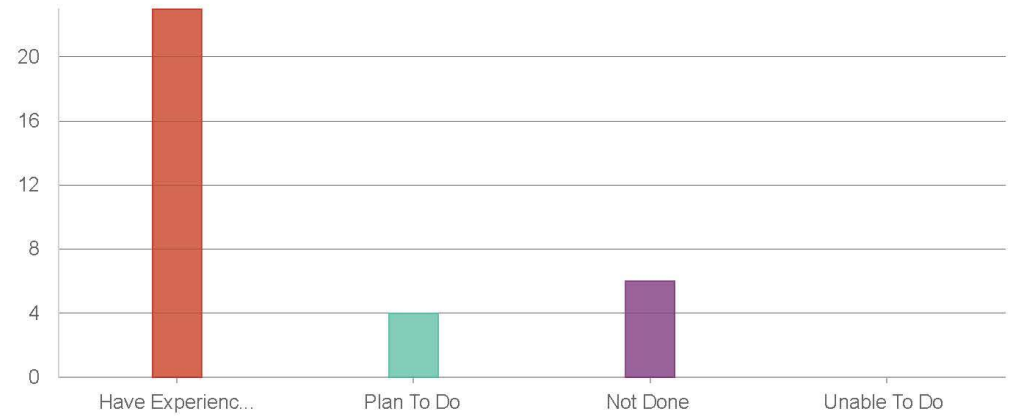


http://survey123.arcgis.com/surveys/6e0647a6bf5d4972a490094d7ae5ead3/analyze 20/31

Answers	Count	Percentage
Have Experienced	18	54.55%
Plan To Do	3	9.09%
Not Done	12	36.36%
Unable To Do	0	0.00%

Answered: 33 Skipped: 0

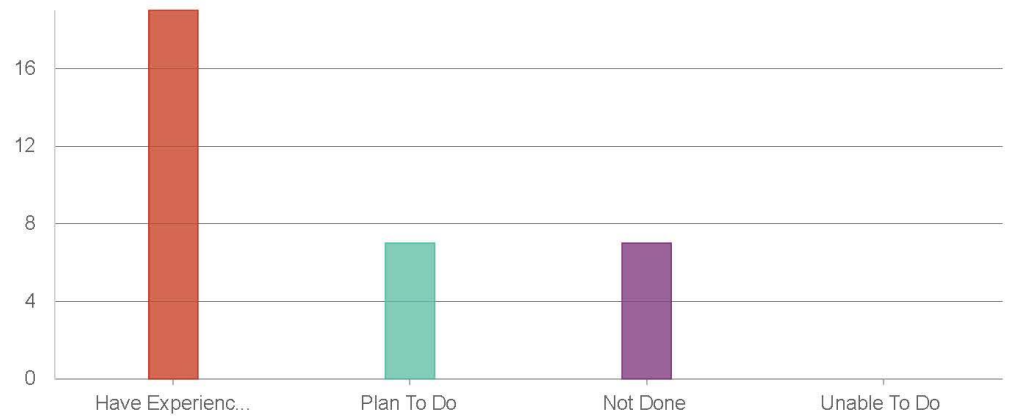
Talked with members of your household about what to do in case of natural and human-caused disasters or em...



Answers	Count	Percentage
Have Experienced	23	69.70%
Plan To Do	4	12.12%
Not Done	6	18.18%
Unable To Do	0	0.00%

Answered: 33 Skipped: 0

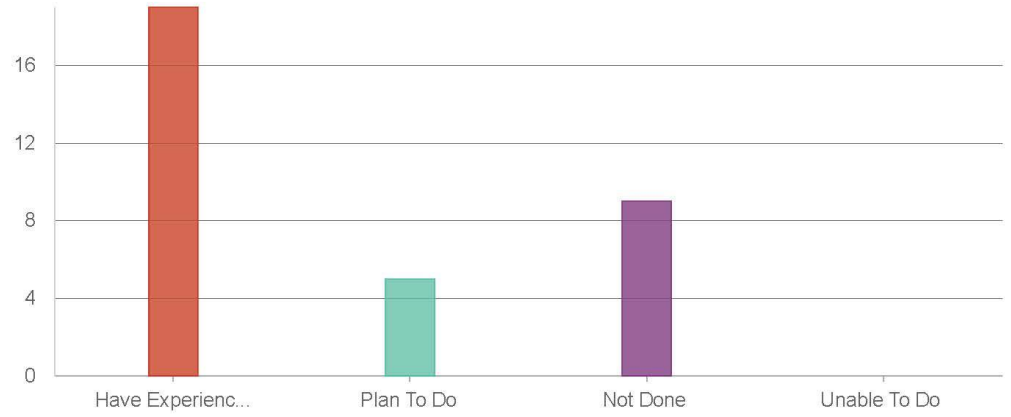
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a d…



Answers	Count	Percentage
Have Experienced	19	57.58%
Plan To Do	7	21.21%
Not Done	7	21.21%
Unable To Do	0	0.00%

Answered: 33 Skipped: 0

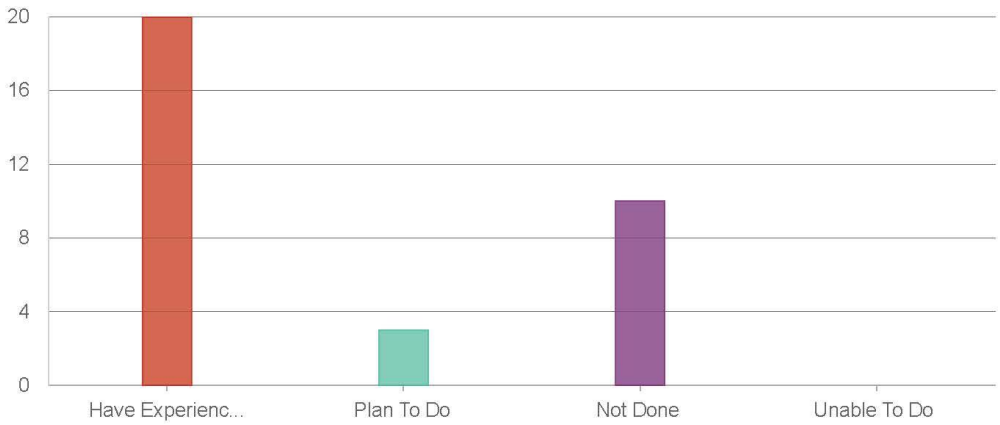
Prepared a "Disaster Supply Kit" (stored extra food, water, batteries, or other Emergency supplies)?



Answers	Count	Percentage
Have Experienced	19	57.58%
Plan To Do	5	15.15%
Not Done	9	27.27%
Unable To Do	0	0.00%

Answered: 33 Skipped: 0

In the last year, has anyone in your household been trained in First Aid, Cardio-Pulmonary Resuscitation (CPR) ...



Answers	Count	Percentage
Have Experienced	20	60.61%
Plan To Do	3	9.09%
Not Done	10	30.30%
Unable To Do	0	0.00%

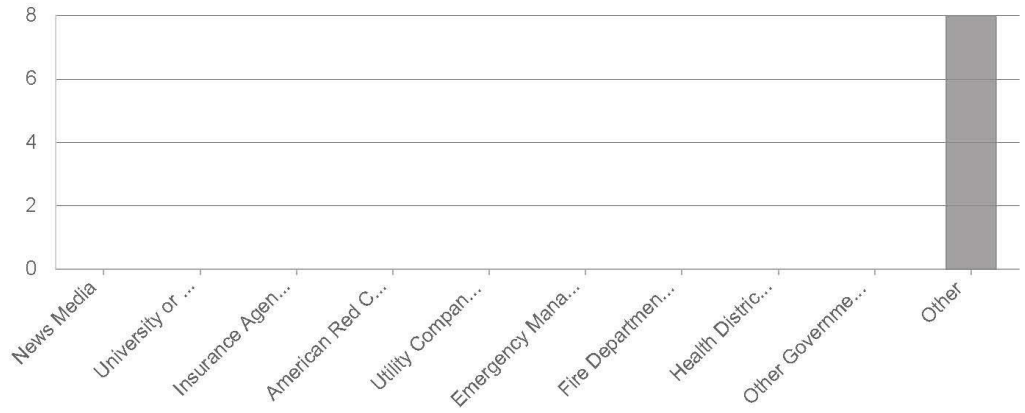
Answered: 33 Skipped: 0

Have you ever received information about how to make your household and home safer from natural and huma…

Answers	Count	Percentage
Yes	18	54.55%
No	15	45.45%

Answered: 33 Skipped: 0

From whom did you receive information about how to make your household and home safer from natural and h…

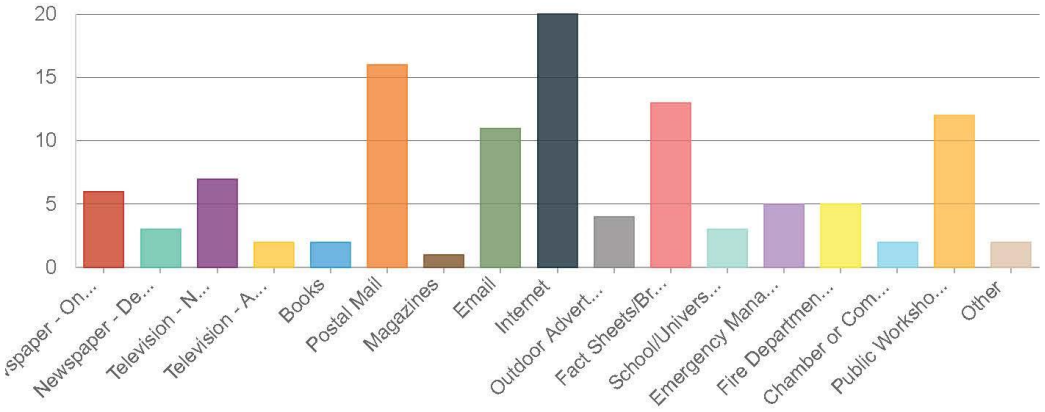


Answers	Count	Percentage

Answers	Count	Percentage
News Media	0	0.00%
University or Research Institution	0	0.00%
Insurance Agent or Company	0	0.00%
American Red Cross	0	0.00%
Utility Company	0	0.00%
Emergency Management (County or State)	0	0.00%
Fire Department	0	0.00%
Health District	0	0.00%
Other Government Agency	0	0.00%
Other	8	24.24%

Answered: 22 Skipped: 11

What is the most effective way for you to receive information about how to make your household and home saf...



Answers	Count	Percentage

Public Outreach Event held June 2, 2018 at the "Oodles of Noodles" event in Dayton, Nevada

In a joint effort with the Carson Water Subconservancy District and the Central Lyon County Fire Department, we were able to set up a booth, with large scale Hazard Maps of floods, wildland fire and earthquake faults for Lyon County. Along with handouts of the Mitigation Questionnaire and a handout card of the QR-Code with the online link to take the Mitigation Questionnaire, this information was given to citizens as they visited our booth. Below is the application to set up a booth for the event.

17th Annual Oodles of Noodles Festival & Pasta Cook-Off

VENDOR APPLICATION

Booth Space Fees for this ONE (1) Day Event
Space size: 10ft x 10ft
Check your choice of booth space below (Choose only one)-add up fees for multiple spaces (4 spaces max).

___ Chamber Member.....$25.00 ____ Food Booth.....$75.00
___ Non-Profit.....$50.00 ____ Political Party Booth.....$65.00
___ Crafter's Booth.....$65.00 ____ Business.....$65.00
___ Pasta Contestant Booth.....FREE ____Non-Profit, Service Organization
____Business ___X___ Professional

NUMBER OF SPACES___1___ SAME SPACE AS 2017:_____

SPECIAL NEEDS*(i.e., generator space)

To reserve your space(s), please submit the Vendor Application along with a check or Money Order. If you need to pay by Credit Card, please contact Denise Crites at 775-443-1900. **PLEASE PRINT PDF and WRITE CLEARLY – RETURN APPLICATION NO LATER THAN MAY 4, 2018. Booth rents INCREASE on May 5, 2018.**

Name: Tammy Kinsley, Senior Planner

Business Name: Lyon County Community Development - Planning Division

Address: 34 Lakes Blvd. City: Dayton State: NV Zip: 89403

Email Address: tkinsley@lyon-county.org

Phone: (775) 246-6135

Booth Description (Describe what you are selling/showing/promoting: Hazard Mitigation Plan update information and CWSD Floodplain model.

LIABILITY RELEASE: The undersigned releases the Dayton Area Chamber of Commerce, Board Members, and all other entities connected with the 17th Annual Oodles of Noodles Festival from any and all damages, injuries, judgments, and/or claims suffered by entrants to person or property.

Tammy J. Kinsley PLANNER Total Amount Enclosed:_____
Signature of Applicant LYON COUNTY COMMUNITY DEVELOPMENT

Date Signed

Page 2 of 4

Per Denise are Booth Fee will be $25.00 Please Invoice Lyon County.

****** Also please have our booth set-up next to Central Lyon Fire Exhibit Booth.***

Also a sign in sheet was provided for those citizens interested about hazard maps and further information on the MJHMP. These are provided below:

CARSON RIVER COALITION (CRC)
6-2-2018 SIGN UP SHEET

I'd like to learn more about the Carson River, Flooding, and other Watershed issues by receiving CRC emails.

First Name	Last Name	Address City & County	Email Address
DENNIS	BREWER	8335 E 5th ST. Lyon SILVER SPRINGS, NV	DSBINTL@MSN.COM MAIL FLOOD PLANE MAP
Joseph Roller	Roller	1898 E William St Ste 4 Box 609 CC NV 89701	Jroller@Health.Nv.Gov
Barbara Jones	Jones	2092 Lennie	daytoncaumeling010@gmail.com Fld map
Julie Barnett		90 Deerfield Ct. Dayton NV 89403	juliebarnett58@yahoo.com
Carolyn Sherve	Sherve	1340 Financial Blvd Reno, NV 89502	csherve@dmv.gov
Sheila	Redmon	10 Green Acres Ln. Yerington NV 89447	phoenixprize@yahoo.com Questline Lawn

Lyon County

CARSON RIVER COALITION (CRC)
6-2-2018 SIGN UP SHEET

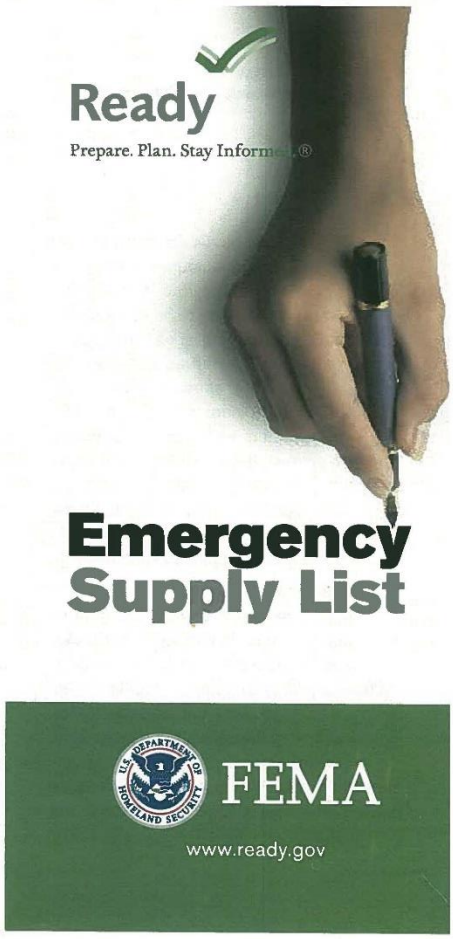
I'd like to learn more about the Carson River, Flooding, and other Watershed issues by receiving CRC emails.

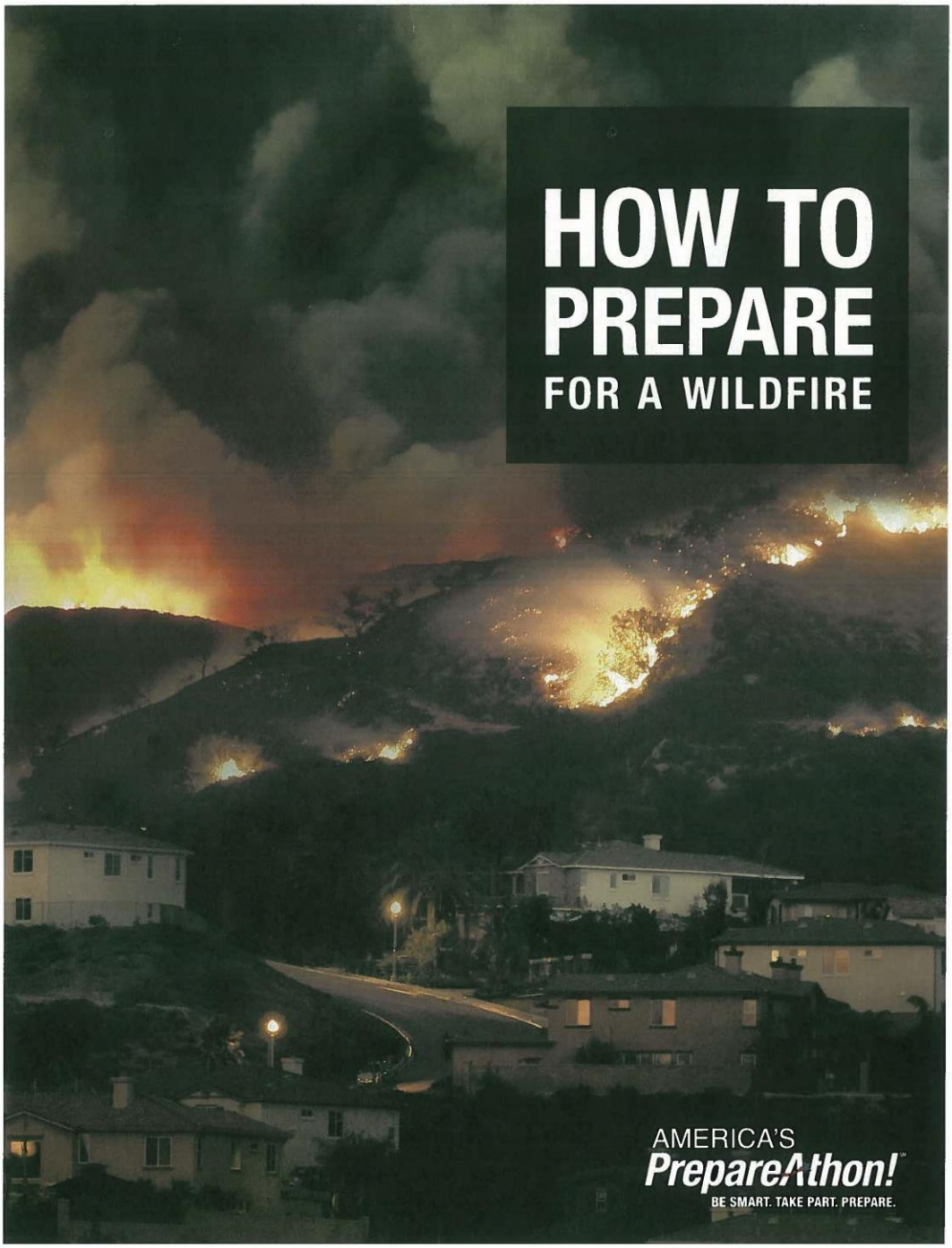
First Name	Last Name	Address City & County	Email Address
RON	WEIBEL	3345 E. Badger St	weibel835@gmail.com
Katie Griggs	Griggs	695 Schaad Ln	katiegriggs1ta@gmail.com
Monique	Smith	151 Northpoint Cir	M_hall76@yahoo.com
ROBERT	ROESNER	290 River Rd	svsolar@hotmail.com

The following flyers and information was also handed out at the event and during the first couple MJHMP public meetings, held in January through March.

Additional Items to Consider Adding to an Emergency Supply Kit:

- ❑ **Prescription medications and glasses**
- ❑ **Infant formula and diapers**
- ❑ **Pet food and extra water for your pet**
- ❑ **Important family documents such as copies of insurance policies, identification and bank account records in a waterproof, portable container**
- ❑ **Cash or traveler's checks and change**
- ❑ **Emergency reference material such as a first aid book or information from www.ready.gov**
- ❑ **Sleeping bag or warm blanket for each person. Consider additional bedding if you live in a cold-weather climate.**
- ❑ **Complete change of clothing including a long sleeved shirt, long pants and sturdy shoes. Consider additional clothing if you live in a cold-weather climate.**
- ❑ **Household chlorine bleach and medicine dropper** – When diluted nine parts water to one part bleach, bleach can be used as a disinfectant. Or in an emergency, you can use it to treat water by using 16 drops of regular household liquid bleach per gallon of water. Do not use scented, color safe or bleaches with added cleaners.
- ❑ **Fire Extinguisher**
- ❑ **Matches in a waterproof container**
- ❑ **Feminine supplies and personal hygiene items**
- ❑ **Mess kits, paper cups, plates and plastic utensils, paper towels**
- ❑ **Paper and pencil**
- ❑ **Books, games, puzzles or other activities for children**




HOW TO
PREPARE
FOR A WILDFIRE
AMERICA'S
PrepareAthon!
BE SMART. TAKE PART. PREPARE.

FEMA Fact Sheet

Flood After Fire: The Increased Risk October 2017

Flood After Fire: The Increased Risk

Floods are the most common and costly natural hazard in the nation. After a wildfire, the flood risk increases significantly. **The time to buy flood insurance is now.** Residents and business owners need to protect their homes and assets from the devastating financial losses from a flood, especially after a wildfire, before the next weather event occurs.

WILDFIRES

Large-scale wildfires dramatically alter the terrain and ground conditions. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water, creating conditions ripe for flash flooding and mudflow. Flood risk remains significantly higher until vegetation is restored—up to 5 years after a wildfire. Flooding after a fire is often more severe, as debris and ash left from the fire can form mudflows. As rainwater moves across charred and denuded ground, it can also pick up soil and sediment and carry it in a stream of floodwaters. This can cause more significant damage.

Residents and business owners are urged to purchase flood insurance **now** to assure financial protection from flooding. By law, there is a 30-day waiting period from the date of purchase until the flood insurance coverage takes effect with very few exceptions:

- the purchase of insurance is in connection with the extension, or renewal of a loan;
- the initial purchase is in connection with a revision or update to a Flood Insurance Rate Map and within 13 months of the revision or update; and
- FEMA determines that the property covered by the policy is affected by flooding on Federal land that is a result of, or exacerbated by, post-wildfire conditions.

*Ask your insurance agent about these exceptions.

REDUCE YOUR RISK

A flood does not have to be a catastrophic event to bring high out-of-pocket costs, and you do not have to live in a high-risk flood area to suffer flood damage. Around twenty percent of flood insurance claims occur in moderate-to-low-risk areas. Property owners should remember to:

- **Buy Flood Insurance.** Most standard homeowner's policies do not cover flood damage. Flood insurance is affordable, and important to protecting your investment. An average flood policy costs around $890 a year, and rates start at less than $516 a year for homes in moderate- to low-risk areas.

FEMA's mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

Photo by Karl Steinbrugge

Ground offset of about eight feet from the 1954 Dixie Valley earthquake forming the small cliff to the left of the cabin.

Nevada is Earthquake Country

There have been several large earthquakes in Nevada and more will occur. In fact, over the last 150 years, Nevada has been the third most active state in the Union in the number of large earthquakes. Since the 1850s, 63 earthquakes with potentially destructive magnitudes of 5.5 or greater have occurred in the state. Given the many "earthquake-generating" faults there are in Nevada, the geodetic deformation measured between the mountains, and the many historical earthquakes, it is clear that earthquakes will continue to occur in the state. Some of these events will be very large, and some will be near our communities.

For those who experience the next major earthquake that affects Nevada, whether in a rural or urban setting, the financial and psychological impacts can be life changing. If earthquake preparedness is neglected, the shaking from earthquakes can even be life threatening. Recent earthquakes in Nevada, California, Haiti, Italy, and Japan remind us that awareness of the earthquake threat is not enough.

Awareness must lead to action—YOUR action

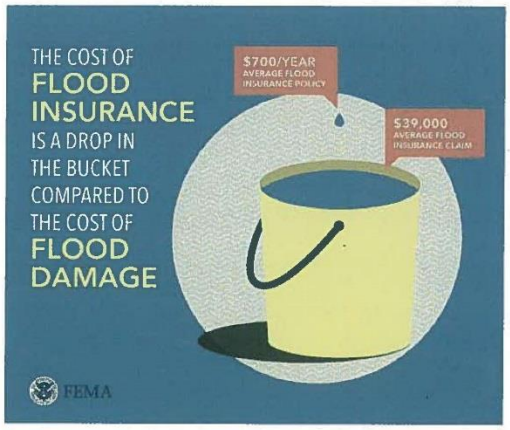
Earthquakes will continue to occur, but much of the damage from earthquakes can be avoided. We can construct buildings that will not fall down from shaking, and bridges that will sway but not break. On a personal level, we can secure water heaters and computers to keep them from falling, install cabinet latches to keep glassware and china contained, and keep heavy objects away from our beds. We can store water and practice family safety plans to overcome fear and better cope with the aftermath of earthquakes. A big lesson of the last decade of earthquakes is that you can make your home, your workplace, and your family safer.

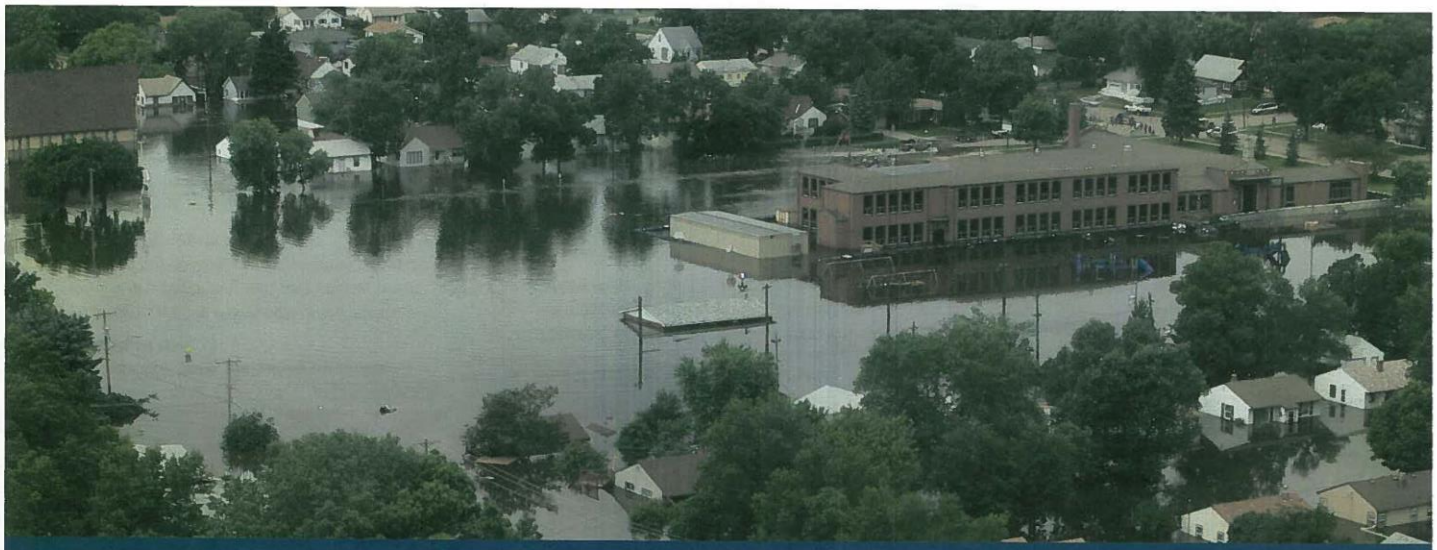
Spring Flooding Safety Tips

When spring hits, whether it's "official" or feels like spring, many of us are eager to get out of the office and into the fresh air. However, too much rain or thawing snow after a long winter from mountains can bring severe flooding. Floods are the most common and costly natural disaster in the United States. Here are some things to keep in mind as the spring flood season draws near.

- Never drive or walk through flooded streets. It only takes six inches of moving water to sweep a person off their feet and 12 inches to move a car. Remember, if a street is flooded, Turn Around; Don't Drown.
- Floods are expensive. A few inches of water in a 1,000-square foot home could cost more than $10,000 in repairs and replacement of personal possessions. Visits FEMA's data visualization website to learn more about the costs and impacts of floods in your state
- Most insurance does not cover flood damage. Only flood insurance will cover the damage from floods. Speak with your insurance agent to learn more and remember flood insurance takes 30 days to take effect, so purchase now to protect your family!
- Talk with your family and make an emergency plan for you and your pets. No matter the disaster, it's always a good idea to have emergency supplies ready at home, at work, and in the car.

You can learn more about the dangers of flooding and find information about flood insurance at Ready.gov/floods and Floodsmart.gov. We also have prepared a Flood Safety Social Media Toolkit so you can share tips with your friends and family prepare at www.ready.gov/flood-toolkit.





For more information about the NFIP and flood insurance, call 1-800-427-4661 or contact your insurance company or agent.

F-301 (12/13)

For an agent referral, call

1-888-435-6637

TDD 1-800-427-5593

http://www.fema.gov/national-flood-insurance-program

http://www.floodsmart.gov

CALL YOUR INSURANCE COMPANY OR AGENT TODAY!

FEMA

FEMA F-301
Catalog No. 09245-1

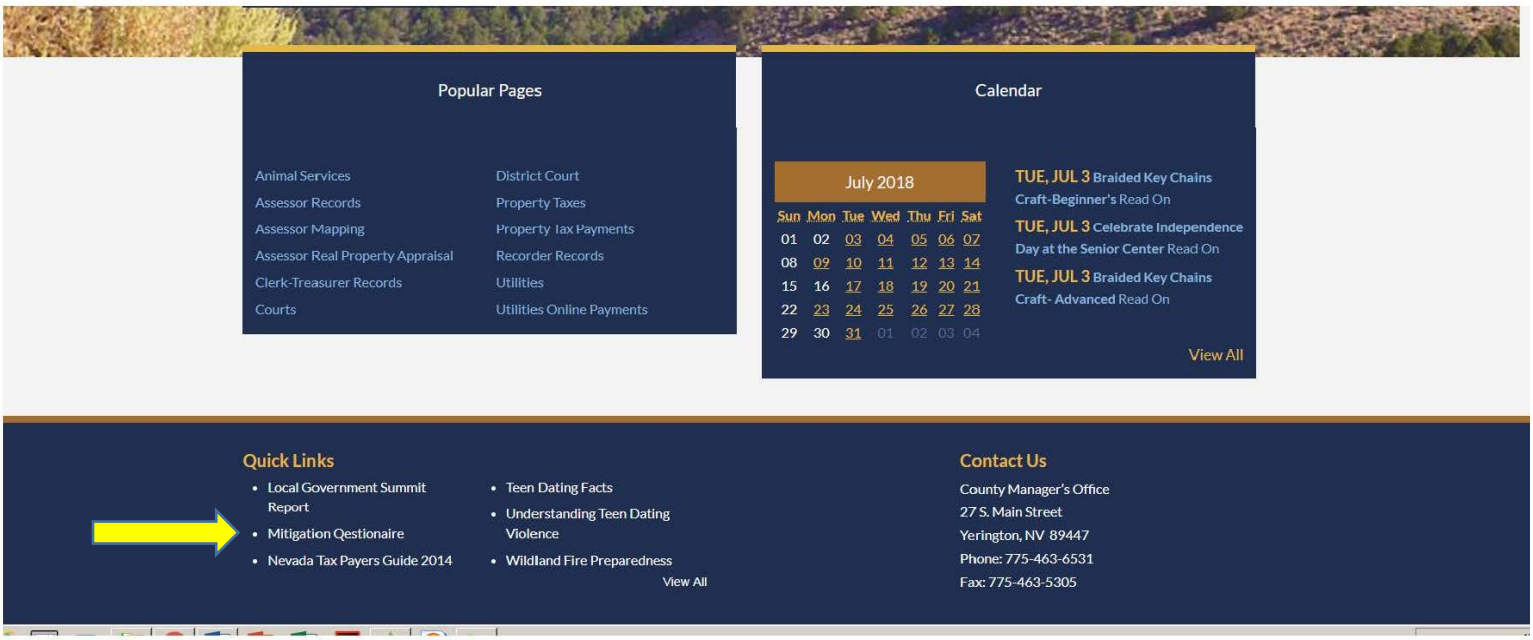
National Flood Insurance Program

Top Ten Facts for Consumers

FEMA F-301 / December 2013

FEMA

During the course of the MJHMP update, the online Mitigation Questionnaire was made available to the public. Lon County, and the Cities of Fernley and Yerington made information available on their respective Websites and through local social media announcements, such as Face book. Below are the information links from the websites.



Emergency Public Information

Information Links

Local Emergency Planning Committee

Water Testing & Disinfecting

Employment
Check out the latest job opportunities.

County Code
View the latest version of the county code.

Documents
View important documents.

Emergency Management

The Office of Emergency Management is responsible for:

- Developing and maintaining the County's ability to prepare for, respond to, recover from, and mitigate against major emergencies and disasters; to include minimizing the loss of life and property, ensuring continuity of government, and facilitating rapid recovery.
- Developing and maintenance of the County's Comprehensive Emergency Management Plan.
- Public education and training
- Education and training of local government employees
- Establishing procedures to staff and maintain the Emergency Operations Center.
- Coordination with local, regional, state and federal jurisdictions and agencies

To receive information on the status of emergencies in your neighborhood, information about community events, etc. please register with our provider.

Wildfire preparedness information is provided by the Living With Fire Program.

Mitigation Questionnaire for the 2018 to the Lyon County Multi-jurisdictional Hazard Mitigation Plan

This questionnaire is designed to help Lyon County, the cities of Fernley, Yerington and the Yerington Paiute Tribe of Nevada, identify the communities concerns about natural and Human-caused hazards.

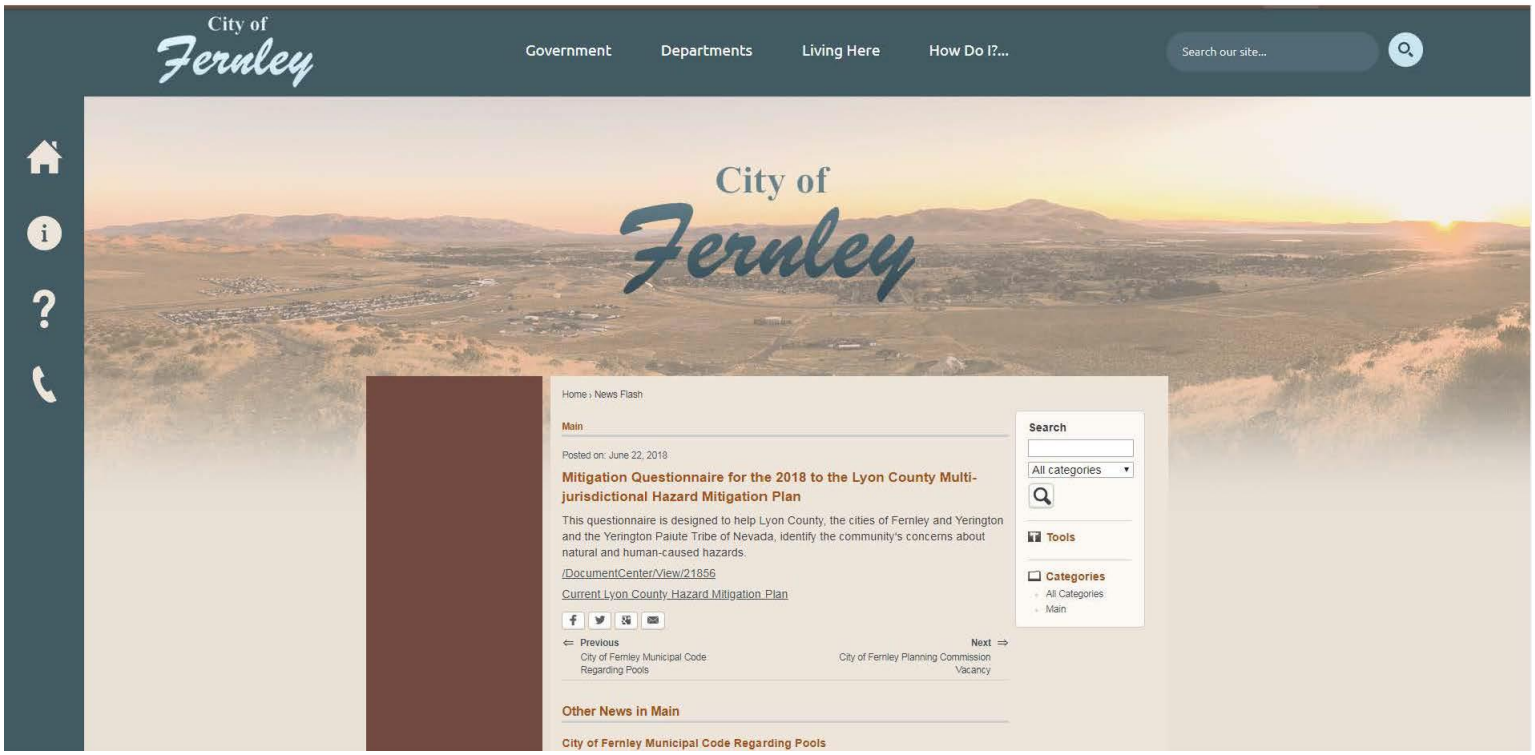
- Current Hazard Mitigation Plan
- Mitigation Questionnaire

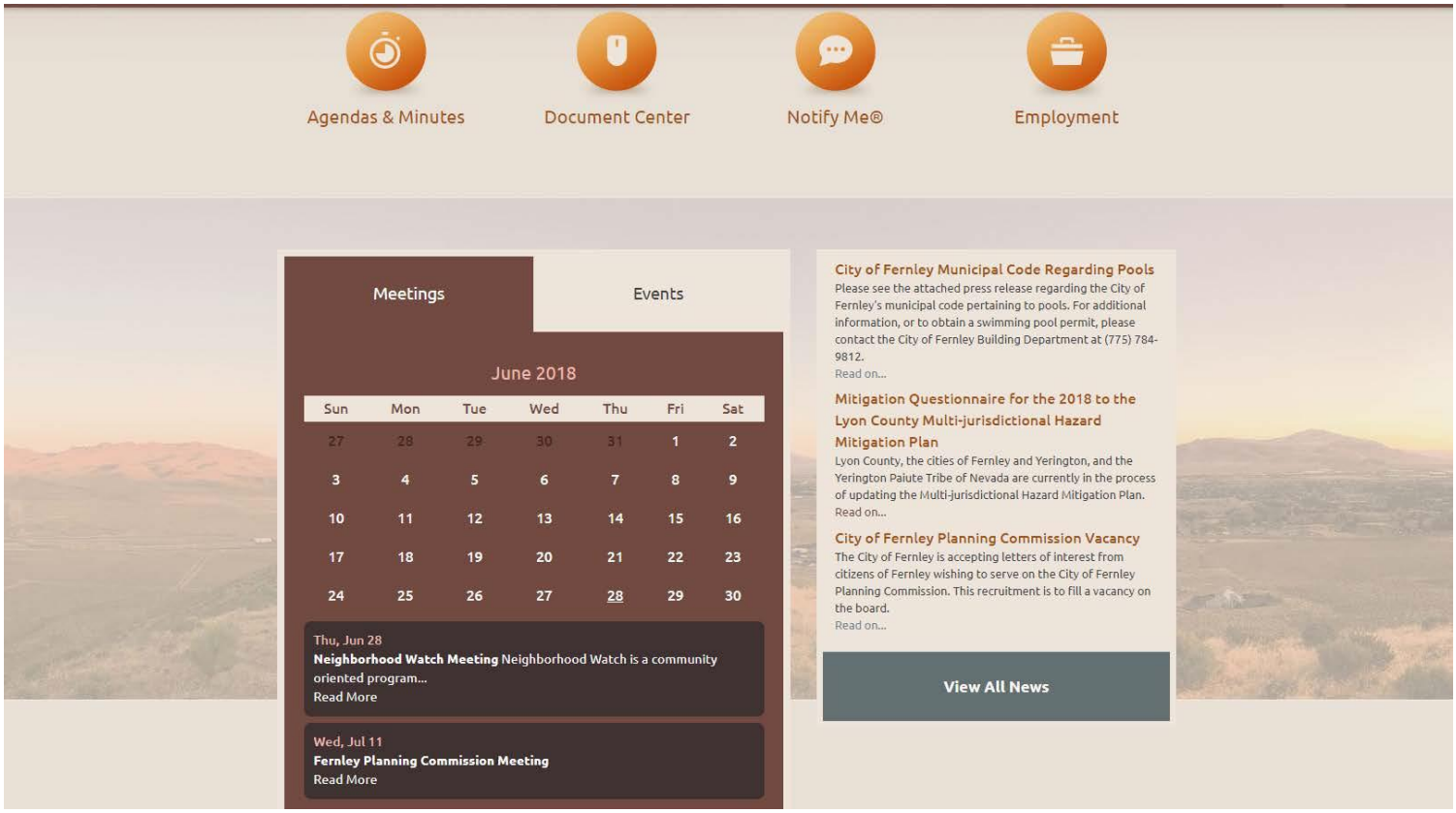
Jeff Page
County Manager

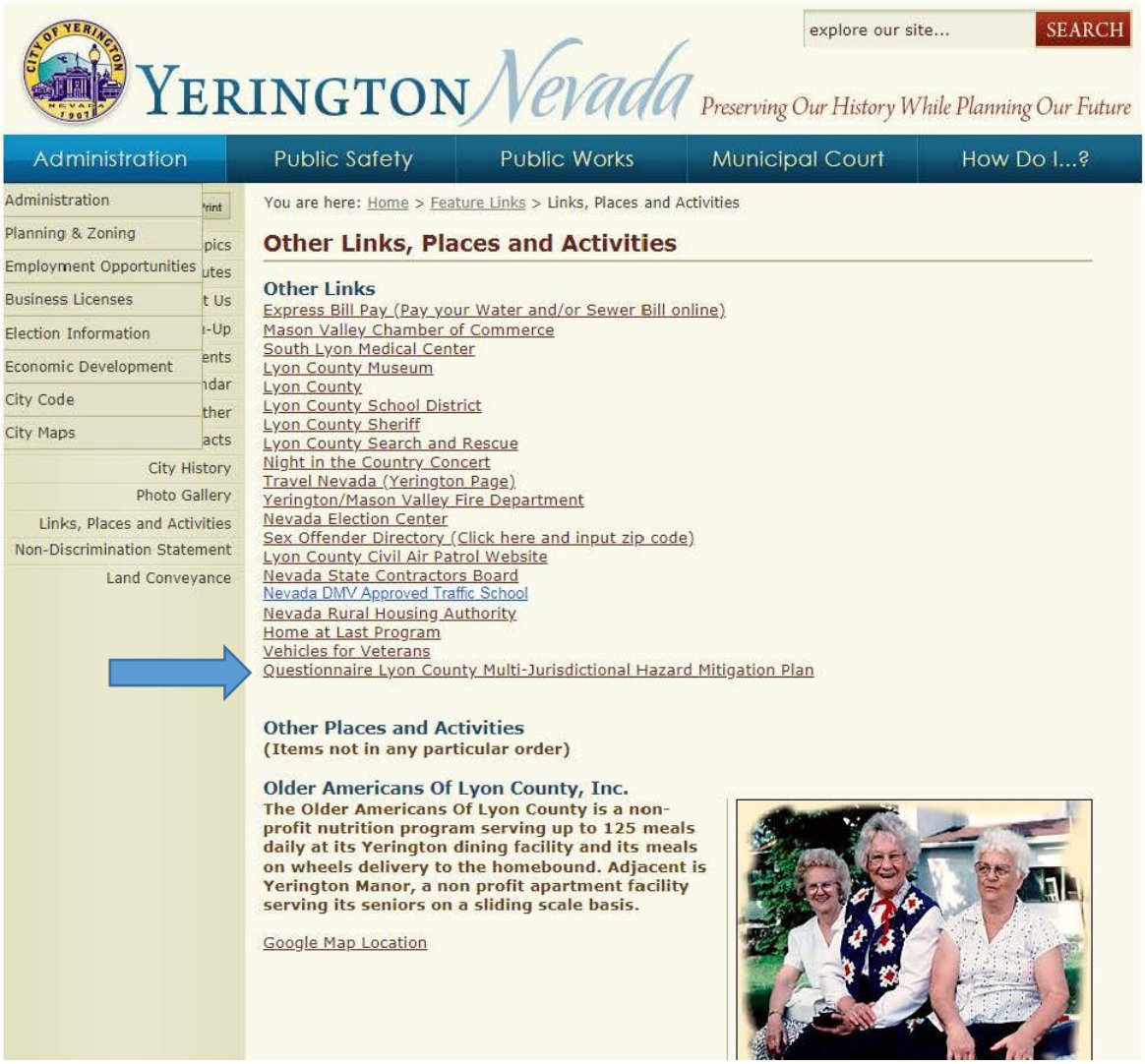
Emergency Management
Physical Address
27 S. Main Street
Yerington, NV 89447

Phone: (775) 463-6531 or (775) 577-5037
Fax: (775) 463-6533

Directory


City of
Fernley
Government
Departments
Living Here
How Do I?...
Search our site...
City of
Fernley
Home › News Flash
Main
Posted on: June 22, 2018
Mitigation Questionnaire for the 2018 to the Lyon County Multi-jurisdictional Hazard Mitigation Plan
This questionnaire is designed to help Lyon County, the cities of Fernley and Yerington and the Yerington Paiute Tribe of Nevada, identify the community's concerns about natural and human-caused hazards.
/DocumentCenter/View/21856
Current Lyon County Hazard Mitigation Plan
Previous
City of Fernley Municipal Code Regarding Pools
Next
City of Fernley Planning Commission Vacancy
Other News in Main
City of Fernley Municipal Code Regarding Pools
Search
All categories
Tools
Categories
All Categories
Main


Agendas & Minutes
Document Center
Notify Me®
Employment
Meetings
Events
June 2018
Sun Mon Tue Wed Thu Fri Sat
27 28 29 30 31 1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
Thu, Jun 28
Neighborhood Watch Meeting Neighborhood Watch is a community oriented program...
Read More
Wed, Jul 11
Fernley Planning Commission Meeting
Read More
City of Fernley Municipal Code Regarding Pools
Please see the attached press release regarding the City of Fernley's municipal code pertaining to pools. For additional information, or to obtain a swimming pool permit, please contact the City of Fernley Building Department at (775) 784-9812.
Read on...
Mitigation Questionnaire for the 2018 to the Lyon County Multi-jurisdictional Hazard Mitigation Plan
Lyon County, the cities of Fernley and Yerington, and the Yerington Paiute Tribe of Nevada are currently in the process of updating the Multi-jurisdictional Hazard Mitigation Plan.
Read on...
City of Fernley Planning Commission Vacancy
The City of Fernley is accepting letters of interest from citizens of Fernley wishing to serve on the City of Fernley Planning Commission. This recruitment is to fill a vacancy on the board.
Read on...
View All News



explore our site... SEARCH

YERINGTON Nevada *Preserving Our History While Planning Our Future*

Administration | Public Safety | Public Works | Municipal Court | How Do I...?

Administration
Planning & Zoning
Employment Opportunities
Business Licenses
Election Information
Economic Development
City Code
City Maps
City History
Photo Gallery
Links, Places and Activities
Non-Discrimination Statement
Land Conveyance

You are here: Home > Feature Links > Links, Places and Activities

Other Links, Places and Activities

Other Links

Express Bill Pay (Pay your Water and/or Sewer Bill online)
Mason Valley Chamber of Commerce
South Lyon Medical Center
Lyon County Museum
Lyon County
Lyon County School District
Lyon County Sheriff
Lyon County Search and Rescue
Night in the Country Concert
Travel Nevada (Yerington Page)
Yerington/Mason Valley Fire Department
Nevada Election Center
Sex Offender Directory (Click here and input zip code)
Lyon County Civil Air Patrol Website
Nevada State Contractors Board
Nevada DMV Approved Traffic School
Nevada Rural Housing Authority
Home at Last Program
Vehicles for Veterans
Questionnaire Lyon County Multi-Jurisdictional Hazard Mitigation Plan

Other Places and Activities

(Items not in any particular order)

Older Americans Of Lyon County, Inc.

The Older Americans Of Lyon County is a non-profit nutrition program serving up to 125 meals daily at its Yerington dining facility and its meals on wheels delivery to the homebound. Adjacent is Yerington Manor, a non profit apartment facility serving its seniors on a sliding scale basis.

Google Map Location

Appendix D
Meeting Agendas & Handouts

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Lyon County, City of Fernley, City of Yerington

HAZARD MITIGATION PLAN UPD

MEETING ONE

JANUARY 25, 2018 @ 1:00 - 2:00 PM

Commissioner's Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, NV 89447

AGENDA

WELCOME & INTRODUCTIONS	Jeff Page
PLANNING PROCESS OVERVIEW *a. General Information* *b. Lyon County Emergency Coordination Center* *c. Purpose of the Plan* *d.* Public Participation	NDEM Representative
MITIGATION ACTION ITEM REVIEW	Tammy Kinsley
INCORPORATION OF EXISTING PLANS	Tammy Kinsley
HAZARD IDENTIFICATION TABLE & HAZARD RANKINGS	All Attendees
PLAN FOR PUBLIC OUTREACH AND/OR WORKSHOPS	Tammy Kinsley
ANNOUNCEMENT OF FUTURE MEETINGS	Tammy Kinsley

FUTURE MEETINGS ARE TENTATIVELY SCHEDULED AS FOLLOWS:

Wednesday, February 14, 2018

Thursday, March 22, 2018

Thursday, April 26th, 2018

Thursday, May 24th, 2018

Lyon County, City of Fernley, City of Yerington, Yerington Paiute Tribe

HAZARD MITIGATION PLAN UPDATE

MEETING ONE

JANUARY 25, 2018 @ 1:00 - 2:00 PM

Commissioner's Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, NV 89447

NAME	AGENCY/DEPARTMENT	CONTACT PHONE	EMAIL ADDRESS
Craig dePolo	NV Bur Mines & Geology	(775) 343-2500	eq_dude@sbcglobal.net
Mike Workman	Lyon Co. Utilities	775-246-6220x3	muworkman@lyon-county.org
MARK FOX	NHP	775 600 3654	MFOX@DPS.STATE.NV.US
Ray Edgington	city of Fernley	775-790 5655	mayor@cityoffernley.org
JESSICA SMITH	WRID	775-463-3523	jessica@wrid.us
Amy Geddes	Library	775 463 6645	ageddes@lyon-county.org
ROB LOVEBERG	SVFPD	775-721-2282	firechief.svfpd@frontier.com
Bill Hoon	DES	775-443-8193	wallroth@des.state.nv.us
Sherri Dues	LCSD	775-463-6800	sdues@lyoncsd.org
Erin Lopez	managers office	6531	elopez –
Bert Bryan	WRID	463-3523	bert@wrid.us
Erin Singley	Assessor	463-6520	esingley@lyon-county.org
ERIC SCHMIDT	Douglas Co GIS	782-9045	eschmidt@douglasnv.us
ABEL ORTIZ	Lyon Co. SO	463-6600	ABELORTIZ@LYON-COUNTY.ORG
MICHAEL CARLSON	LCSO	463-6600	MCARLSON@LYON-COUNTY.ORG
Scott Huntley	NLCFPD	302-612 3	shuntley@nlcfpd.com
Al McNeil	LCSO	463 6600	amcneil@lyon-county.org
Josh Foli	Lyon County / Comptroller	463-6510	jfoli@lyon-county.org
TAMMY KINSLEY	Lyon Co PLANNING	463-4574	tkinsley@lyon-county.org

LYON COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT
BUILDING • DEVELOPMENT ENGINEERING • PLANNING

27 S. MAIN STREET
YERINGTON, NEVADA 89447
(775) 463-6592
FAX: (775) 463-5305

34 LAKES BOULEVARD
DAYTON, NEVADA 89403
(775) 246-6135
FAX: (775) 246-6147

January 25, 2018

Dear Neighboring Community,

We invite you to participate in the Lyon County Multi-Jurisdictional Hazard Mitigation Plan update.

Over the next few months, Lyon County, the Cities of Fernley, Yerington, and the Yerington Paiute Tribe will be conducting a planning effort to update their Multi-Jurisdictional Hazard Mitigation Plan. This update to the plan will be developed to facilitate compliance with federal requirements and to provide a tool for local government, industry, and private venues to help reduce the impact of natural and human-caused hazard threats. Further, the plan will help our community develop infrastructure to lessen potential damage.

One of the major components of the plan development is having a good cross-section of Community input and participation by neighboring communities, and that is the reason for this invitation. I hope that you will agree to be included on our planning team. The level of commitment will involve a meeting once a month, plus a review of the components of the plan as they are written. I anticipate a meeting every month for the next five months. Generally the work can be done via e-mail after our introductory meeting.

Our next ECC meeting will be held on March 7, 2018 from 1:00 pm to 2:00 pm in the Lyon County Board Chambers. Lyon County Administrative Complex, 27 S. Main Street, Yerington, NV.

I am hoping that you can participate as a representative of your profession. If you are willing to join our group, please RSVP to Tammy Kinsley, Sr. Planner, Lyon County Community Development at e-mail address tkinsley@lyon-county.org.

Cordially,

Jeff Page
County Manager
Lyon County

Page | 1 of 1

News Release
Lyon County
1/25/2018
www.lyon-county.org

FOR IMMEDIATE RELEASE

Hazard Mitigation Plan
Yerington, NV – January 25, 2018

In recent years, nature has been restless in Nevada – there has been a swarm of earthquakes rattling portions of Northern Nevada, and every year there are major wildland fires throughout the state. Most recently in Lyon County we have experienced Floods in July of 2017 and Severe Weather hazards in January and February, 2017 produced major Flood events in our region. All of these emergency events demonstrate that Lyon County can experience hazardous disasters. The risks from such hazards will continue to increase as the county's population continues to grow.

Lyon County and the Cities of Fernley and Yerington have launched a planning effort to update the 2013 *Multi Jurisdiction Hazard Mitigation Plan*. This plan will assess and prioritize the risks posed by natural and manmade hazards and identify ways to reduce those risks. This plan is required by the Federal Disaster Mitigation Act of 2000 and is a prerequisite to acquiring federal funding for mitigation or recovery from disasters. This update will include an Annex to the plan by the Yerington Paiute Tribe community.

As we work through the update process, a questionnaire will be distributed to the public asking for input on local disaster mitigation and recovery needs. The county, cities and tribe plan on submitting a draft plan to local governing boards in the summer of 2018 for their approval. The final plan will then be sent to FEMA for review and final approval.

Public comments and participation are welcomed and encouraged. For additional information, to Volunteer or attend public meetings, or to make comments, please contact Jeff Page, Lyon County Manager at (775) 463-6531 or jpage@lyon-county.org

-End-

HAZARD RANKING INSTRUCTIONS

This exercise requires completion of the Hazard Profiling Worksheets, which provides a tabulated ranking of each hazard. The exercise formula takes into account the four criterion below, based on historical occurrences.

Please rank each hazard based on the Hazard Prioritization Criteria table below, with a value of 1 (low) to 5 (high). Please provide a total tabulation for each hazard. Your ranking will be included in the averaging of the data in order to analyze and prioritize the hazards for Lyon County, City of Fernley, City of Yerington and the Yerington Paiute Tribe.

Hazard Prioritization Criteria

Criterion	Value	Category	Description
Probability/Frequency	1	Very Low	Occurs less than once in 1000 years.
	2	Low	Occurs less than once in 100 to once in 1000 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 100 years.
	5	Very High	Occurs more frequently than once in 5 years.
Magnitude/Severity (includes Economic Impact, Area Affected and Vulnerability)	1	Very Low	• Negligible property damages (less than 5% of all buildings and infrastructure). • No deaths and injuries/illnesses treatable with first aid and do not require hospitalization. • Negligible loss of quality of life. • Economic and geographic effects are localized.
	2	Low	• Slight property damages (5% to 15%) of all buildings and infrastructure). • No deaths and few injuries/illnesses require hospitalization. • Slight loss of quality of life. • Economic and geographic effects felt at the city or community.
	3	Medium	• Moderate property damages (15% to 30% of all buildings and infrastructure). • Fewer than 5 deaths and multiple injuries/illnesses require hospitalization. • Some loss of quality of life. • Economic and geographic effects felt countywide.
	4	High	• Moderate property damages (30% to 50% of all buildings and infrastructure). • More than 5 deaths and considerable injuries/illnesses require hospitalization in multiple facilities with some resulting in permanent disability. • Moderate loss of quality of life. • Economic and geographic effects felt statewide.
	5	Very High	• Moderate property damages (30% to 50% of all buildings and infrastructure). • Significant number of deaths and injuries/illnesses requiring hospitalization in multiple facilities with some resulting in permanent disability. • Significant loss of quality of life. • Economic and geographic effects felt at the Region IX level.
Warning Time	1	Very Low	Greater than 48 hrs
	2	Low	24 to 48 hrs
	3	Medium	12 to 24 hrs
	4	High	6 to 12 hrs
	5	Very High	Less than 6 hrs
Duration of Loss of Critical Facilities and Services	1	Very Low	1 to 3 days
	2	Low	4 to 7 days
	3	Medium	8 to 14 days
	4	High	15 to 20 days
	5	Very High	More than 20 days

HAZARD PROFILING WORKSHEET

LYON COUNTY PROFILE:

Name: _____ Date: _____

Agency: _____ Expertise: _____

Currently in the 2013 MJHMP	Hazard Type	Probability/ Frequency	Magnitude/ Severity	Warning Time	Duration of Loss of Critical Facilities and Services	Total
	Avalanche					
☑	Dam Failure					
☑	Drought					
☑	Earthquakes					
	Epidemic					
	Expansive Soils					
☑	Extreme Heat					
☑	Floods					
☑	Hail & Thunderstorms					
☑	Hazardous Materials					
	Infestation					
☑	Land Subsidence & Ground Failure					
☑	Landslide					
☑	Severe Winter Storm, & Extreme Snowfall					
	Terrorism/WMD					
☑	Tornado					
	Tsunami/Seiche					
☑	Volcano					
☑	Wildfire					
☑	Windstorm					

HAZARD PROFILING WORKSHEET

CITY OF FERNLEY PROFILE:

Name: _____ Date: _____

Agency: _____ Expertise: _____

Currently in the 2013 MJHMP	Hazard Type	Probability/ Frequency	Magnitude/ Severity	Warning Time	Duration of Loss of Critical Facilities and Services	Total
	Avalanche					
☑	Dam Failure					
☑	Drought					
☑	Earthquakes					
	Epidemic					
	Expansive Soils					
☑	Extreme Heat					
☑	Floods					
☑	Hail & Thunderstorms					
☑	Hazardous Materials					
	Infestation					
☑	Land Subsidence & Ground Failure					
☑	Landslide					
☑	Severe Winter Storm, & Extreme Snowfall					
	Terrorism/WMD					
☑	Tornado					
	Tsunami/Seiche					
☑	Volcano					
☑	Wildfire					
☑	Windstorm					

HAZARD PROFILING WORKSHEET

CITY OF YERINGTON PROFILE:

Name: _____ Date: _____

Agency: _____ Expertise: _____

Currently in the 2013 MJHMP	Hazard Type	Probability/ Frequency	Magnitude/ Severity	Warning Time	Duration of Loss of Critical Facilities and Services	Total
	Avalanche					
☑	Dam Failure					
☑	Drought					
☑	Earthquakes					
	Epidemic					
	Expansive Soils					
☑	Extreme Heat					
☑	Floods					
☑	Hail & Thunderstorms					
☑	Hazardous Materials					
	Infestation					
☑	Land Subsidence & Ground Failure					
☑	Landslide					
☑	Severe Winter Storm, & Extreme Snowfall					
	Terrorism/WMD					
☑	Tornado					
	Tsunami/Seiche					
☑	Volcano					
☑	Wildfire					
☑	Windstorm					

STATE OF NEVADA HAZARD RISK ASSESSMENT:

From the State of Nevada's Enhanced Hazard Mitigation Plan - 2013

SECTION THREE RISK ASSESSMENT *Page 3-8*

Table 3-4. Risk Categories Assigned to Nevada hazards		
High Risk	**Medium/Significant Risk**	**Low Risk**
Earthquake	Terrorism/WMD	Tsunami/seiche
Wildfire	Hazardous Materials	Hail and thunderstorm
Flood	Drought	Avalanche
	Severe winter storm and extreme snowfall	Epidemic
		Windstorm
		Landslide
		Heat, extreme
		Tornado
		Infestation
		Land Subsidence
		Volcano
		Expansive Soil

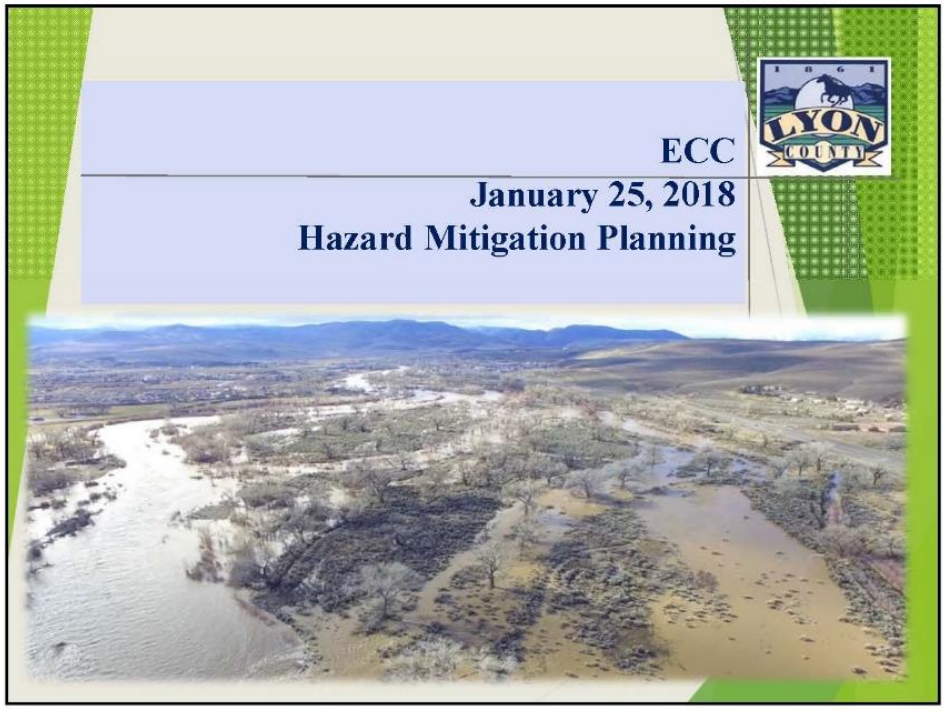
Current 2013 MJHMP Goals

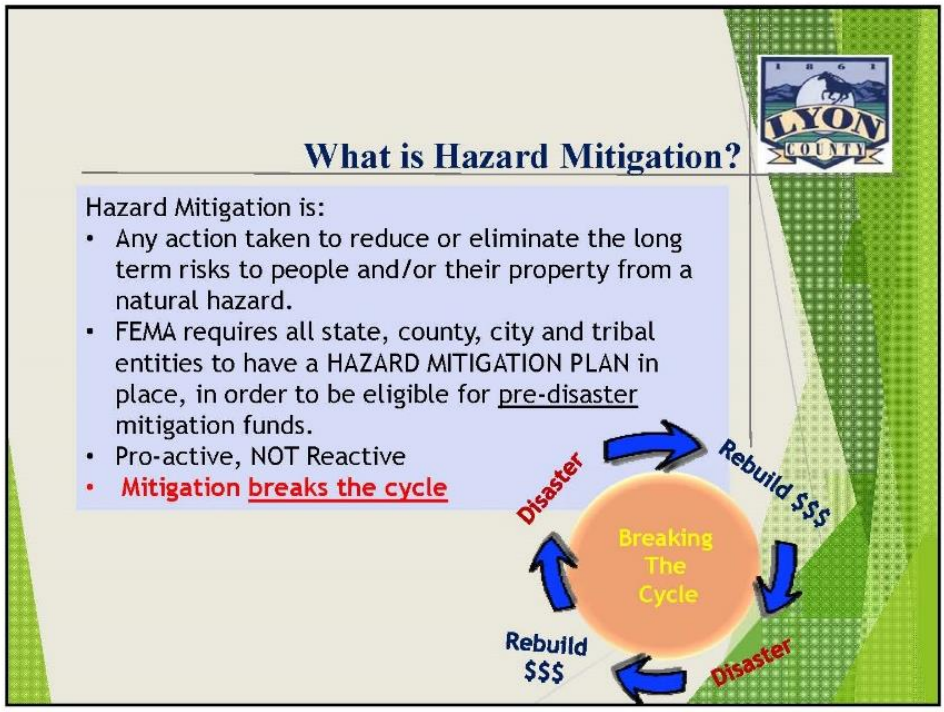
Goals	County/ Cities/ YPT	Action	New or Existing Buildings	Description
Goal 1: ***Promote increased and ongoing involvement in hazard-mitigation planning and projects***		1.A		Integrate the Lyon County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)
		1.B		Add mitigation actions to each jurisdiction's website.
Goal 2: ***Build and support local capacity to enable the public to prepare for, respond to, and recover form disasters***		2.A		Establish density incentives for future construction (to encourage ~~more~~ less development in more hazardous ~~friendly~~ areas).
Goal 3: ***Reduce the possibility of damage and losses due to dam failure:***		3.A		Develop a public outreach program that informs property owners located in the dam inundation areas about voluntary flood insurance.
Goal 4: ***Reduce the possibility of damage and losses due to drought***		4.A		Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.
		4.B		Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.
		4.C		Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping
		4.D		Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.*
		4.E		Implement a thirsty/invasive weed public awareness and educational campaign.
Goal 5: ***Reduce the possibility of***		5.A		Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.
		5.B		Seismically retrofit or replace unreinforced masonry buildings, located in an high ground shaking areas, and/or are necessary for

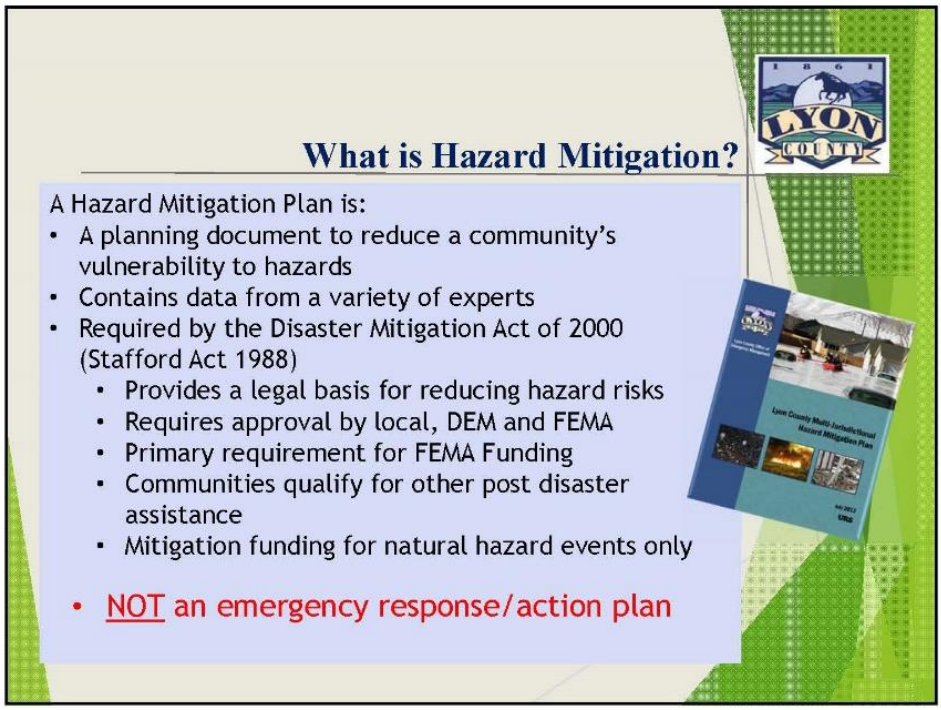
damage and losses due to earthquakes				first responders to use during and/or immediate after a disaster or emergency (as identified by the University of Nevada Reno inventory).
		5.C		Teach the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and attractive hands-on displays ("Living with Earthquakes in Nevada" is good public outreach material).
		5.D		Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).
		5.E		Develop better Earthquakes maps to ensure future growth is most compatible with the hazard.
Goal 6: ***Reduce the possibility of damage and losses due to extreme heat***		6.A		Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.
Goal 7: ***Reduce the possibility of damage and losses due to flooding***		7.A		Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.
		7.B		Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.
		7.C		Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.
		7.D		Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps)
		7.E		Work with surrounding counties to develop a watershed coordination organization for Walker River.*
		7.F		Fix low points along river banks.
		7.G		Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance).*
		7.H		Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.
		7.I		Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.
Goal 8: ***Reduce the possibility of damage and losses due to Hail***		8.A		Implement Warning Systems that monitor Implement Hail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.*

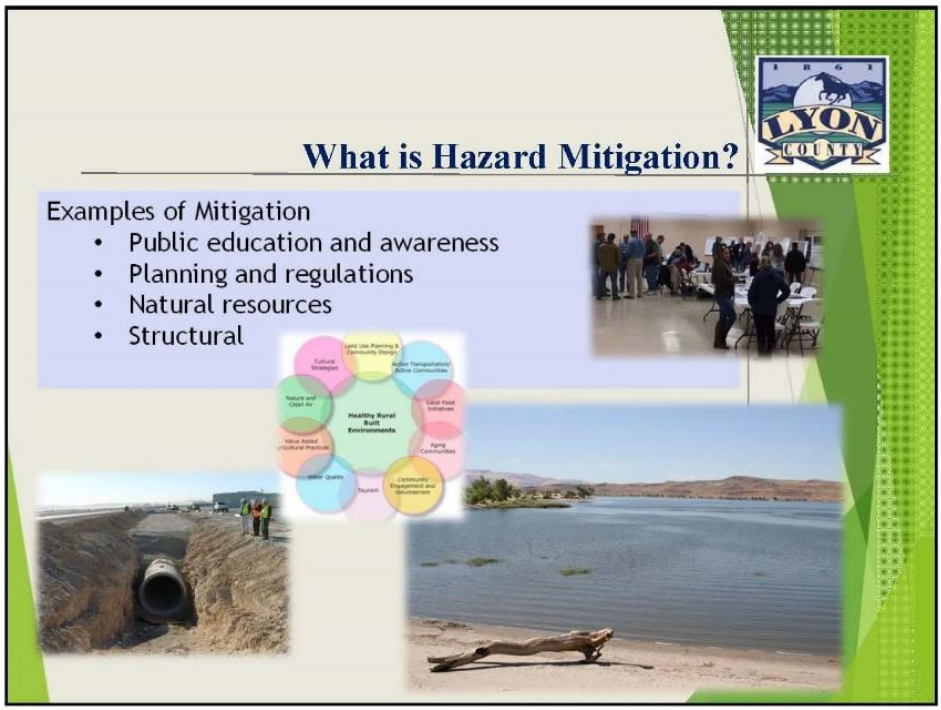
Goal 9: ***Reduce the possibility of damage and losses due to hazardous materials***		9.A		Work with NDOT to require all transport of hazardous materials to follow approved routes.
		9.B		Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.
Goal 10: ***Reduce the possibility of damage and losses due to landslide***		10.A		Establish County code which requires the stabilization of landslide-prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, drained earth buttresses, and subdrains.
Goal 11: ***Reduce the possibility of damage and losses due to subsidence***		11.A		Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.
Goal 12: ***Reduce the possibility of damage and losses due to severe weather***		12.A		Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).*
Goal 13: ***Reduce the possibility of damage and losses due to wildfire***		13.A		Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).
		13.B		Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.
		13.C		Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.
		13.D		Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.
		13.E		Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.
Goal 14: ***Reduce the possibility of damage and losses due to windstorm***		14.A		Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of acceleration corridors within vegetated areas.
		14.B		Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.
		14.C		Bolt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.
		14.D		In areas at risk to winter storms, retrofit public buildings to withstand snowloads and prevent roof collapse.
		14.E		Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.

Incorporation of Existing Plans/Study Table	
Plan/Study	**Findings/Incorporation**
Lyon County Comprehensive Master Plan 2010	This document is a general, long-range, policy and implementation guide for elected and appointed officials in making choices concerning the overall needs, growth and development of the County and its communities. It outlines the County's vision and goals for the future and forms the basis for other County plans and regulations.
Lyon County Title 12 Flood Control, Chapter 1, (2010)	It is the purpose of this chapter to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed: A. To protect human life and health; B. To minimize expenditure of public money for costly flood control projects; C. To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; D. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas; E. To ensure that potential buyers are notified that property is in an area of special flood hazard; F. To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; and G. To maintain eligibility for state and federal disaster relief. (Ord. 543, 6-17-2010)
State of Nevada Enhanced Hazard Mitigation Plan 2013	The standard version of the SHMP was originally submitted by the Nevada Division of Emergency Management (NDEM) and approved by FEMA in 2004; it was updated in 2007, updated and enhanced in the 2010 iteration. Since 2010, the Nevada Hazard Mitigation Planning Committee (NHMPC), NHMPC Planning Subcommittee, NDEM staff Nevada Bureau of Mines and Geology staff at the University of Nevada Reno contributed to the current 2013 update of the Enhanced State Hazard Mitigation Plan (SHMP).
FEMA Flood Insurance Study 32019CV000B for Lyon County October 20, 2016	This Flood Insurance Study (FIS) revises and updates information about the existence and severity of flood hazards in the geographic area of Lyon County, Nevada, including the Cities of Fernley and Yerington and unincorporated areas of Lyon County (hereinafter referred to collectively as Lyon County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Lyon County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development.
Lyon County Title 10, Chapter 7 and Lyon County Building Design Criteria & Building Permit Information 2015	These regulations concern zoning districts, variances, and general development and construction standards within Lyon County. These include the adopted 2012 IBC and IRC codes.
NNICC 2012 Northern Nevada Code Amendments 2013	These regulation amendments concern general development and construction standards within the City of Fernley. These include the adopted 2012 IBC and IRC codes.
Carson River Watershed Regional Floodplain Management Plan (Carson Water Subconservancy District) updated 2013	This plan provides strategies for floodplain management that can be applied regionally as well as locally.
Lyon County Emergency Preparedness Guide	This brochure, funded through the U.S. Department of Homeland Security, is the result of statewide participation from public safety officials and first responders in addressing "Evacuation and Mass Care" preparedness. It was developed to provide helpful tips and techniques to citizens for emergency conditions.
Living with Fire - A Guide for Homeowners – Great Basin Version (2006 edition)	Lyon County Emergency Management has made this information brochure, produced by the University of Nevada Cooperative Extension, to its citizens to inform, mitigate and prepare citizens from wildfire hazard threat.
Winter Storm Brochure	Produced by the National Disaster Education Coalition: American Red Cross, FEMA, IAEM, IBHS, NFPA, NWS, USDA/ CSREES, and USGS. Lyon County has provided this brochure on the Emergency Management website for its citizens to prepare and mitigate for the threat of winter storm hazards.
Carson River Geographic Response Plan 2006	This is a regional plan covering five counties in two states. The plan was developed to protect the health, safety, environment, and property (both public and private) from the effects of hazardous materials incidents in or near the Carson River.

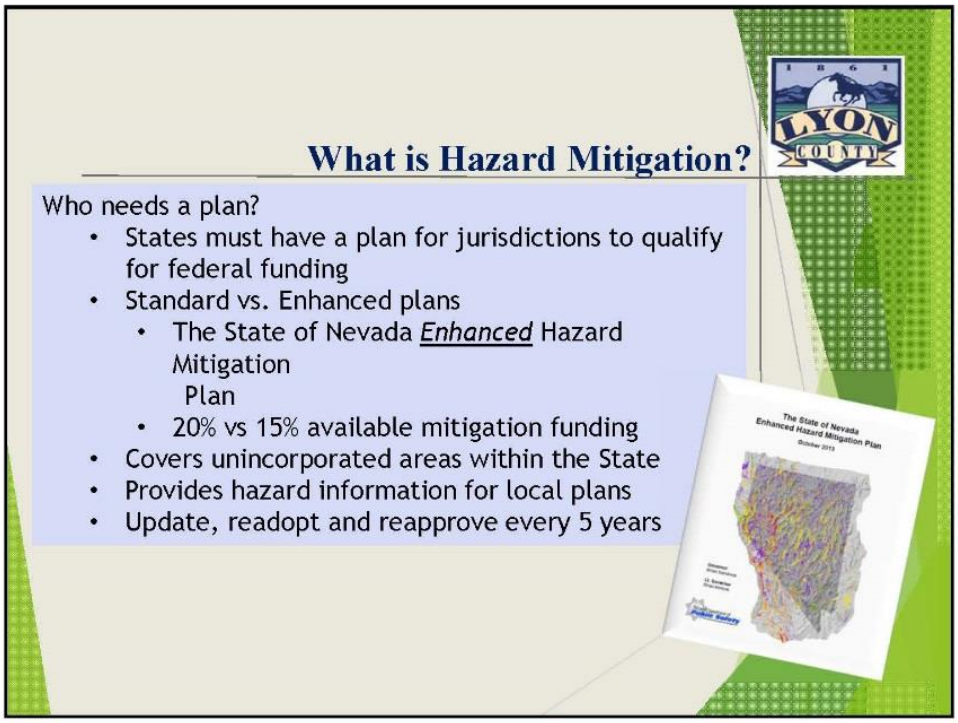

ECC
January 25, 2018
Hazard Mitigation Planning


What is Hazard Mitigation?
Hazard Mitigation is:
• Any action taken to reduce or eliminate the long term risks to people and/or their property from a natural hazard.
• FEMA requires all state, county, city and tribal entities to have a HAZARD MITIGATION PLAN in place, in order to be eligible for pre-disaster mitigation funds.
• Pro-active, NOT Reactive
• Mitigation breaks the cycle
Disaster
Rebuild $$$
Breaking The Cycle
Disaster
Rebuild $$$


What is Hazard Mitigation?
A Hazard Mitigation Plan is:
• A planning document to reduce a community's vulnerability to hazards
• Contains data from a variety of experts
• Required by the Disaster Mitigation Act of 2000 (Stafford Act 1988)
• Provides a legal basis for reducing hazard risks
• Requires approval by local, DEM and FEMA
• Primary requirement for FEMA Funding
• Communities qualify for other post disaster assistance
• Mitigation funding for natural hazard events only
• NOT an emergency response/action plan


What is Hazard Mitigation?
Examples of Mitigation
• Public education and awareness
• Planning and regulations
• Natural resources
• Structural


What is Hazard Mitigation?
Other reasons mitigation is necessary
• Increase community pride
• Improve quality of life
• Prevent damages
• Save lives


What is Hazard Mitigation?
Who needs a plan?
• States must have a plan for jurisdictions to qualify for federal funding
• Standard vs. Enhanced plans
• The State of Nevada Enhanced Hazard Mitigation Plan
• 20% vs 15% available mitigation funding
• Covers unincorporated areas within the State
• Provides hazard information for local plans
• Update, readopt and reapprove every 5 years
The State of Nevada
Enhanced Hazard Mitigation Plan


What is the Planning Process?
Organize Resources
Gather the experts, Technical staff and Community leaders Who will:
• Perform plan review,
• Submit edits,
• Update the current Plan information,
• Create the meat of the document.
Identify & Assess Risks
Within the Jurisdiction's Boundaries.
• Hazard identification
• Assess risks & capabilities
Impact Assessment
Vulnerability Assessment
Plan Development
• Vision
• Goals
• Mitigation Strategies
• Actions
• Prioritize
• Integration with other plans
Implement Plan, Monitor Progress & Maintenance
• Plan Implementation
• On going Monitoring of the Plan
• Progress of Mitigation Actions


Who gets things done
Some of the Partnering agencies:
• Lyon County
• City of Fernley
• City of Yerington
• Paiute Tribe of Yerington
Other stakeholders:
• Federal agencies
• State agencies
• Private industry
• Non-Profits
• Public
Organize Resources
Assess Risks
Develop a Mitigation Plan
Implement the Plan & Monitor Progress


What are the Hazards
Natural Hazards
• Drought
• Earthquake
• Epidemic
• Flood
• Hail Storm
• Severe Weather
• Tornado
• Volcano
• Wildfire
• Windstorm
Human Caused Hazards
• Hazardous Materials Event
• Terrorism/WMD


Something to think about!
Natural Hazard Mitigation Saves:
2017 Interim Report
Summary of Findings
Federal Mitigation Grants Save $6 per $1 Spent, Exceeding Codes Saves $4 per $1 Spent
Natural hazards present significant risks to many communities across the United States. Fortunately, there are measures governments, building owners, developers, tenants, and others can take to reduce the impacts of such events. These measures—commonly called mitigation—can result in significant savings in terms of safety, and preventing property loss and disruption of day-to-day life.
Given the rising frequency of disaster events and the increasing cost of disaster recovery across the nation, mitigation actions are crucial for saving money, property, and, most importantly, lives. Activities designed to reduce disaster losses also may spur job growth and other forms of economic development.
Mitigation represents a sound financial investment. This Interim Study examined two sets of mitigation strategies and found that society saves $6 for every $1 spent through mitigation grants funded through select federal agencies and a corresponding benefit-cost ratio (BCR) of 4:1 for investments to exceed select provisions of the 2015 model building codes.
Just implementing these two sets of mitigation strategies would prevent 600 deaths, 1 million nonfatal injuries, and 4,000 cases of post-traumatic stress disorder (PTSD) in the long term. In addition, designing new buildings to exceed the 2015 International Building Code (IBC) and International Residential Code (IRC), the model building codes developed by the International Code Council (also known as the I-Codes) would result in 87,000 new, long-term jobs, and an approximate 1% increase in utilization of domestically produced construction material.
Overall Hazard Benefit-Cost Ratio 6:1 4:1
Riverine Flood 7:1 5:1
Hurricane Surge 7:1
Wind 5:1 5:1
Earthquake 3:1 4:1
Wildland-Urban Interface Fire 3:1 4:1

How Can You Get Involved:

- Review and Comment on the Draft plan
  - As we work through the update process, via emails and meetings, we will have the MJHMP available on the Lyon County, City of Fernley, City of Yerington and the Yerington Paiute Tribe websites.
- Attend the next public meeting
  - Next ECC meetings are tentatively scheduled as follows:
    - Wednesday, March 7th , 2018
    - Thursday, April 26th, 2018
    - Thursday, May 24th, 2018
  - Public Workshops:
    - May, June and July 2018
- Review and submit questionnaire
  - A Questionnaire will be provided online and at workshops in order to receive feedback from the public.
    - May, June and July 2018

Next Meeting:

- Hazard Ranking Results - Discussion of Priority
- What Hazards to analyze
- Begin to Develop Update to the Plan:
  - Review Sections 1 - 4
  - Review Section 5 Hazards:
    - Dam/Canal Failure
    - Drought
    - Epidemic
    - Extreme Heat
    - Infestation
- Review Mitigation Actions


Thank You for your Participation,
in updating the
MJHMP
It is greatly Appreciated!

Lyon County, City of Fernley, City of Yerington,
HAZARD MITIGATION PLAN UPDATE
MEETING TWO
March 7, 2018 @ 1:00 - 2:00 PM

Commissioner's Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, NV 89447

AGENDA

WELCOME & INTRODUCTIONS	All Attendees
HAZARD RANKING RESULTS *(Compiled from January 25th meeting and emails provided from review team)*	All Attendees
Review of Sections 1 - 4	All Attendees
Review Section 5 including Hazards: Drought *(High)* Epidemic *(Med)* Hazardous Materials *(High)* Infestation *(Low)* Tornado *(Med)*	Tammy Kinsley
Review Mitigation Actions	All Attendees
PLAN FOR PUBLIC OUTREACH AND/OR WORKSHOPS Organize a committee for outreach Set possible dates for public outreach events	Tammy Kinsley

FUTURE MEETINGS ARE TENTATIVELY SCHEDULED AS FOLLOWS:

Thursday, April 26th, 2018 @ 1:00 pm

Thursday, May 24th, 2018 @ 1:00 pm

Wednesday, June 27th, 208 @ 1:00 pm

Wednesday, July 18, 2018 @ 1:00 pm

LYON COUNTY, CITY OF FERNLEY, CITY OR YERINGTON

HAZARD MITIGATION PLAN UPDATE

MEETING TWO

March 7, 2018

1:00 - 2:00 PM

NAME	AGENCY/DEPARTMENT	CONTACT PHONE	EMAIL ADDRESS
JESSICA SMITH	WRID	463·3523	jessica@wrid.us
Janell Woodward	NDEM	687-0314	jwoodward@dps.state.nv.us
Roy Edginston	city of Fernley	790 · 5655	mayor@cityofFernley.org
Bunny Bishop	NDWR	775-684-2834	bbishop@water.nv.gov
ERIN LOPEZ	County manager	463-6581	elopez@lyon-county.org
ERIC SCHMIDT	DOUGLAS Co GIS	782-9045	eschmidt@douglasnv.us
DARREN WAGNER	YPD	463-2333	darrenw@yerington.net
AL MCNEIL	LCSO	463-6600	amcneil@lyon-county.org
ROD LOVERRERCA	SVFPD	721·2282	firechief.svfpd@frontier.com
TAMMY KINSLEY	LYON COUNTY PLANNING	463-	tkinsley@lyon-county.org

Hazard Ranking outcome from first meeting responses.

LEVEL	RANKING	HAZARD RISK
HIGH (12 -16)	16	Wildfire
	15	Earthquakes
	14	Floods
	14	Hazardous Materials
	13	Drought
	13	Windstorm
	12	Dam/Canal Failure
MED (8-11)	11	Hail & Thunderstorms
	11	Terrorism/WMD
	10	Extreme Heat
	10	Severe Winter Storm, & Extreme Snowfall
	9	Landslide
	9	Tornado
	9	Volcano
	8	Epidemic
	8	Land Subsidence & Ground Failure
LOW (1-7)	7	Infestation
	4	Avalanche
	4	Expansive Soils
	3	Tsunami/Seiche

Table 8-2: Mitigation Goals and Potential Actions

Goals	County/Cities /YPT	Action	New or Existing Bldgs.	Description
Goal 1: ***Promote increased and ongoing involvement in hazard-mitigation planning and projects***		1.A		Integrate the Lyon County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)
		1.B		Add mitigation actions to each jurisdiction's website.
Goal 2: ***Build and support local capacity to enable the public to prepare for, respond to, and recover form disasters***		2.A		Establish density incentives for future construction (to encourage ~~more~~ less development in more hazardous ~~friendly~~ areas).
Goal 3: ***Reduce the possibility of damage and losses due to dam failure:***		3.A		Develop a public outreach program that informs property owners located in the dam inundation areas about voluntary flood insurance.
Goal 4: ***Reduce the possibility of damage and losses due to drought***		4.A		Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.
		4.B		Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.
		4.C		Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping

Table 8-2: Mitigation Goals and Potential Actions

		4.D		Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.*
		4.E		Implement a thirsty/invasive weed public awareness and educational campaign.
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		5.C		Teach the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and attractive hands-on displays ("Living with Earthquakes in Nevada" is good public outreach material).
		5.D		Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).
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Goal 6: ***Reduce the possibility of damage and losses due to extreme heat***		6.A		Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.
Goal 7: ***Reduce the possibility of damage and losses due to flooding***		7.A		Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.
		7.B		Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.
		7.C		Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.
		7.D		Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not

Table 8-2: Mitigation Goals and Potential Actions

				acknowledged on FEMA flood insurance rate maps)
		7.E		Work with surrounding counties to develop a watershed coordination organization for Walker River.*
		7.F		Fix low points along river banks.
		7.G		Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance).*
		7.H		Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.
		7.I		Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.
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Goal 9: ***Reduce the possibility of damage and losses due to hazardous materials***		9.A		Work with NDOT to require all transport of hazardous materials to follow approved routes.
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Goal 11: ***Reduce the possibility of damage and losses due to***		11.A		Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.

Table 8-2: Mitigation Goals and Potential Actions

Land subsidence				
Goal 12: ***Reduce the possibility of damage and losses due to severe weather***		12.A		Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).*
Goal 13: ***Reduce the possibility of damage and losses due to wildfire***		13.A		Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).
		13.B		Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.
		13.C		Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.
		13.D		Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.
		13.E		Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.
Goal 14: ***Reduce the possibility of damage and losses due to windstorm***		14.A		Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.
		14.B		Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.

Table 8-2: Mitigation Goals and Potential Actions

		14.C		Bolt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.
		14.D		In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.
		14.E		Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.

LYON COUNTY, CITY OF FERNLEY, CITY OF YERINGTON

HAZARD MITIGATION PLAN UPDATE
MEETING THREE
APRIL 26, 2018
1:30 - 2:30 PM

Commissioner's Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, NV 89447

AGENDA		
WELCOME & INTRODUCTIONS		*Tammy Kinsley, Planner*
Review of Sections 1 - 5 (based on edits received to date)		*All attendees*
Review Section 5 Hazards:		*All attendees*
Earthquake	*(High)*	
Expansive Soil	*(Low)*	
Flood	*(High)*	
Land Subsidence	*(Med)*	
Wildfire	*(High)*	
Review Mitigation Actions for the above Hazards		*All attendees*
Review Section 6 Vulnerability Assessment		*All attendees*
Review Section 7 Capabilities Assessment		*All attendees*

FUTURE MEETINGS ARE TENTATIVELY SCHEDULED AS FOLLOWS:

Thursday, May 24th, 2018 @ 1:00 pm

Wednesday, June 27th, 208 @ 1:00 pm

Wednesday, July 18, 2018 @ 1:00 pm

LYON COUNTY, CITY OF FERNLEY, CITY OR YERINGTON

HAZARD MITIGATION PLAN UPDATE
MEETING THREE
APRIL 26, 2018
1:30 - 2:30 PM

NAME	AGENCY/DEPARTMENT	CONTACT PHONE	EMAIL ADDRESS
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TAMMY J. KINSLEY	LYCO PLANNING	246-6135	tkinsley@lyon-county.org

Table 8-2: Mitigation Goals and Potential Actions

Goals	County/Cities /YPT	Action	New or Existing Bldgs.	Description
Goal 1: ***Promote increased and ongoing involvement in hazard-mitigation planning and projects***		1.A		Integrate the Lyon County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)
		1.B		Add mitigation actions to each jurisdiction's website.
Goal 2: ***Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters***		2.A		Establish density incentives for future construction (to encourage less development in more hazardous areas).
Goal 3: ***Reduce the possibility of damage and losses due to dam/ or canal failure:***		3.A		Develop a public outreach program that informs property owners located in ~~the~~ a dam/ or canal inundation area about voluntary flood insurance.
		3.B		Utilize the Sheep Camp Dam Emergency Plan - 2018
		3.C		Annually monitor dams and canals.
Goal 4: ***Reduce the possibility of damage and losses due to drought***		4.A		Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.
		4.B		Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.

Table 8-2: Mitigation Goals and Potential Actions

		4.C		Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping
		4.D		Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.*
		4.E		Implement a thirsty/invasive weed public awareness and educational campaign.
		4.F		With all Water system purveyors prepare a drought mitigation plan and review and update annually.
Goal 5: ***Reduce the possibility of damage and losses due to earthquakes***		5.A		Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.
		5.B		Seismically retrofit or replace unreinforced masonry buildings, located in ~~an~~ high ground shaking areas, and/or ~~are~~ as necessary for first responders to use during and/or immediate after a disaster or emergency (as identified by the University of Nevada Reno inventory).
		5.C		~~Teach~~ Provide education to the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and ~~attractive~~ hands-on displays ("Living with Earthquakes in Nevada") ~~is~~ as good public outreach material~~)~~.
		5.D		Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).
		5.E		Develop ~~better~~ current Earthquake fault ~~s~~ maps to ensure future growth is most compatible with the hazard area.
		5.F		In coordination with the State, implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities and infrastructure, and retrofit buildings, if necessary.
Goal 6: ***Reduce the possibility of damage and losses due to extreme heat***		6.A		Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.

Table 8-2: Mitigation Goals and Potential Actions

Goal 7: ***Reduce the possibility of damage and losses due to flooding***		7.A		Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.
		7.B		Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.
		7.C		Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.
		7.D		Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps as being in the Special Flood Hazard Areas.)
		7.E		Work with surrounding counties to develop a watershed coordination organization for Walker River.*
		7.F		Fix low points along river banks at critical areas.
		7.G		Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance).*
		7.H		Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.
		7.I		Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.
		7.K		Continue the ongoing ability to remove sediment and debris from rivers.
		7.J		Keep the current floodplain open as natural storage, the "Living River Concept" as identified in the Carson River Regional Watershed Floodplain Management Plan – 2018.
Goal 8: ***Reduce the possibility of damage and losses due to Hail***		8.A		Implement Warning Systems that monitor ~~Implement~~ Hail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.*
Goal 9:		9.A		Work with NDOT to require all transport of hazardous materials to follow approved routes.

Table 8-2: Mitigation Goals and Potential Actions

Reduce the possibility of damage and losses due to hazardous materials		9.B		Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.
Goal 10: ***Reduce the possibility of damage and losses due to landslide***		10.A		Establish County code which requires the stabilization of landslide-prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, drained earth buttresses, and subdrains.
Goal 11: ***Reduce the possibility of damage and losses due to Land subsidence***		11.A		Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.
Goal 12: ***Reduce the possibility of damage and losses due to severe weather***		12.A		Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).*
Goal 13: ***Reduce the possibility of damage and losses due to wildfire***		13.A		Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).
		13.B		Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.
		13.C		Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for

Table 8-2: Mitigation Goals and Potential Actions

				review and approval prior to beginning construction.
		13.D		Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.
		13.E		Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.
		13.F		Continue to have public education outreach for wildfire awareness month in May of each year.
Goal 14: ***Reduce the possibility of damage and losses due to windstorm***		14.A		Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.
		14.B		Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.
		14.C		Secure/b~~B~~olt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.
		14.D		In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.
		14.E		Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.
Goal 15: Reduce the possibility of threat to life and losses due to epidemic		15.A		Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats.
		15.B		Develop public outreach regarding current community plan medicine and plans for vaccines, utilizing the Tri-County information.
		15.C		Develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sherriff and Tri-County and local hospitals.
Goal 16: Reduce the possibility of damage and losses due to Terrorism/WMD		16.A		Continue planning and training staff for events if they occur.
		16.B		Continue to communicate regionally with other/all agencies.
		16.C		Plan to address mitigation if other communities experience an event and citizens are traveling to and through Lyon County. Coordination with NDOT and hospitals in the area.

Table 8-2: Mitigation Goals and Potential Actions

		16.D		Continue SRO with Lyon County School District
		16.E		Continue with NTAC Agreement

LYON COUNTY, CITY OF FERNLEY, CITY OF YERINGTON
AND THE YERINGTON PAIUTE TRIBE
HAZARD MITIGATION PLAN UPDATE
MEETING FOUR
MAY 31, 2018
1:30 - 2:30 PM

Commissioner's Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, NV 89447

AGENDA

WELCOME & INTRODUCTIONS		*Tammy Kinsley, Planner*
Review Section 5 Hazards:		*All attendees*
Severe Winter Storm & Extreme Snowfall	*(Med)*	*Chris Smallcomb - NOAA*
Hail and Thunderstorms	*(Med)*	
Extreme Heat	*(Med)*	
Windstorm	*(High)*	
Landslide	*(Med)*	*All attendees*
Terrorism/WMD	*(Med)*	*All attendees*
Dam/Canal Failure	*(High)*	*All attendees*
Volcano	*(Med)*	*All attendees*
Review Mitigation Actions for the above Hazards		*All attendees*
Public Outreach and Questionnaire - update		*Tammy Kinsley, Planner*
Review Section 7 Capabilities Assessment		*All attendees*

FUTURE MEETINGS ARE TENTATIVELY SCHEDULED AS FOLLOWS:

Wednesday, June 27th, 2018 @ 1:30 pm

Wednesday, July 18, 2018 @ 1:30 pm

LYON COUNTY, CITY OF FERNLEY, CITY OR YERINGTON
AND THE YERINGTON PAIUTE TRIBE
HAZARD MITIGATION PLAN UPDATE
MEETING FOUR
MAY 31, 2018
1:30 - 2:30 PM

NAME	AGENCY/DEPARTMENT	CONTACT PHONE	EMAIL ADDRESS
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TAMMY KINSLEY	LyCo Planning	463-6592	tkinsley@lyon-county.org

17th Annual Oodles of Noodles Festival & Pasta Cook-Off

VENDOR APPLICATION

Booth Space Fees for this ONE (1) Day Event
Space size: 10ft x 10ft
Check your choice of booth space below (Choose only one)-add up fees for multiple spaces (4 spaces max).

___ Chamber Member.....$25.00
___ Non-Profit.....$50.00
___ Crafter's Booth.....$65.00
___ Pasta Contestant Booth.....FREE
_____Business ___X___Professional

_____ Food Booth.....$75.00
_____ Political Party Booth.....$65.00
_____ Business.....$65.00
____Non-Profit, Service Organization

NUMBER OF SPACES___1_____ SAME SPACE AS 2017:_____

SPECIAL NEEDS*(i.e., generator space)

To reserve your space(s), please submit the Vendor Application along with a check or Money Order. If you need to pay by Credit Card, please contact Denise Crites at 775-443-1900. **PLEASE PRINT PDF and WRITE CLEARLY – RETURN APPLICATION NO LATER THAN MAY 4, 2018. Booth rents INCREASE on May 5, 2018.**

Name: Tammy Kinsley, Senior Planner

Business Name: Lyon County Community Development - Planning Division

Address: 34 Lakes Blvd. City: Dayton State: NV Zip: 89403

Email Address: tkinsley@lyon-county.org

Phone: (775) 246-6135

Booth Description (Describe what you are selling/showing/promoting: Hazard Mitigation Plan update information and CWSD Floodplain model.

LIABILITY RELEASE: The undersigned releases the Dayton Area Chamber of Commerce, Board Members, and all other entities connected with the 17th Annual Oodles of Noodles Festival from any and all damages, injuries, judgments, and/or claims suffered by entrants to person or property.

Tammy J. Kinsley PLANNER LYON COUNTY COMMUNITY DEVELOPMENT
Signature of Applicant

Total Amount Enclosed:_____

Date Signed

Page 2 of 4

** ***Per Denise are Booth Fee will be $25.00 Please Invoice Lyon County.*** **

** ****** Also please have our booth set-up next to Central Lyon Fire Exhibit Booth.*** **

SEVERE WEATHER PROFILE

Lyon County, Nevada 1/1/2013 - 3/1/2018

KEY POINTS UP FRONT

- ★ Number of Days with an Event: 77 out of 1,885 (4.1%) High winds, snowfall, and flooding were easily the most frequent weather hazards in Lyon County.
- ★ Much of the reporting period took place during a severe drought which spanned roughly 2012 to 2016. Dust storms, heat, and wildfire related flash flooding became a particular concern during this period.
- ★ Data sources - 1) NWS Storm Events (www.ncdc.noaa.gov/stormevents) Some event types (noted *) are done on a zone basis that may encompass nearby counties. Thunderstorm and flood hazards are tabulated on a county basis. 2) Temperature data is from the NWS cooperative observer station in Yerington, NV.

BY THE NUMBERS - BULK STATS

High Wind* (60+ mph, non-thunderstorm)	31 events	**Dust Storm***	5 events
Snowfall*	14 events	**Hail (1" or larger)**	2 events
Flood & Flash Flood	13 events	**Funnel Cloud or Tornado**	2 events
High Wind (60+ mph, thunderstorm)	5 events	**Hurricanes & Tsunami**	0 events

Yerington Highs 105°+	6 days	**Lows 70°+**	10 days
Highs 32° or Below	34 days	**Lows 0° or Below**	0 days (10 or below = 40)

NOTABLE EVENTS

- ★ **July 4, 2013 Fernley Flash Flood** - Repeated thunderstorms brought very heavy rain to the Fernley area during the afternoon and evening of the 4th. Flash flooding caused a 10 ft sinkhole to form near the intersection of Cable Canyon Rd and Seabiscuit Dr. One inch diameter hail was reported in Yerington from the same complex of storms.
- ★ **September 14, 2013 Post-Wildfire Flash Flood** - Heavy rainfall from thunderstorms on the Bison Fire scar caused a large debris flow which closed a road in the far western portion of the Smith Valley on the 14th. Lyon County officials reported a debris flow (mainly mud/small rocks) which covered Artesia Road to a depth of 3 feet and a width of 200 to 300 feet during the evening of the 14th.
- ★ **February 6, 2015 High Wind** - The second of two major atmospheric rivers hit the region during the winter

of "peak drought". These storms were heavily rain shadowed, and as such produced widespread high wind impacts for Lyon County with minimal precipitation. Wind gusts to 63 mph were measured in the Smith and Mason Valleys, with a gust to 86 mph near Sweetwater Summit. Alternate highway 95 east of Yerington was closed for a few hours due to several accidents, with high winds and very low visibility due to blowing dust reported by the Lyon County EM.

★ **January 30-31, 2016 Heavy Snows** - Fernley received 11 inches of snow. This was enhanced substantially by lake-effect snow off of Pyramid Lake during the afternoon and evening of the 31st. In addition to snow, observations from the Lovelock, Silver Springs and Fallon airfields indicated sustained winds in the 15 to 25 mph range, with gusts 30 to 40 mph in the afternoon and evening of the 31st. This caused blowing snow with visibilities generally between 1 and 3 miles, but occasionally below 1 mile.

★ **July 26-31, 2016 Heat Wave** - Stagnant high-pressure, dry conditions, and ample sunshine allowed temperatures to soar above 100+ at Yerington for 6 consecutive days. The length of the extreme heat was unusual. The warmest temperature was 105 on July 30. Typically in Western Nevada heat health impacts start increasing dramatically when high temperatures are 105+ and overnight lows are 70+.

★ **January 8, 2017 River Flooding** - An extreme atmospheric river brought heavy rain with widespread flooding on the 8th and 9th. Twenty five structures, including at least 10 homes (one 8-plex and two single-family homes), were damaged by flood waters in Dayton by the morning of the 9th. Flooding of the two single family homes in East Dayton may have been largely due to breaks in ditches and culverts incapable of handling the exceptionally large volume of water. Water depth varied from 6 inches to as much as 3 feet on the south side of the Carson River. Standing flood waters lasted for at least several days after the initial flood surge on the 8th. Schools were closed county-wide on the 9th.

★ **July 24, 2017 Thunderstorm Wind and Possible Tornado** - Eighteen power poles were snapped along Farm District Road, with short dry grass completely stripped from a nearby field. The wind gust was an estimate based on a utility company foreman's experience, who stated that it usually takes around 100 mph to snap power poles cleanly. Minor damage was reported to 4 homes and numerous billboards along Interstate 80 near mile marker 48, with moderate damage to 3 trucks and 2 outbuildings. Radar and damage patterns (examined by a NWS employee) did not indicate any rotation so straight-line winds are the most probable cause. However a brief tornado spin-up cannot be ruled out.

★ **February 10, 2018 - Dust Storm in Winter** - A fast moving cold front swept south across the Pacific Northwest and the Great Basin bringing blowing dust to parts of western Nevada. Dust off the Carson Sink reduced visibility to less than ½ mile across much of the region. The winter to this point had been very dry, allowing for the unusual dust production. Dust storms are normally a summer hazard in Western Nevada.

FUTURE IMPACT POTENTIAL

★ Based on NWS experience in the region and the recent statistics, the combined probability and potential impact of these hazards affecting Lyon County within the next five years are:

- **High Risk:** High winds from winter storms and thunderstorms, Flooding from rivers and flash flooding from thunderstorms
- **Moderate Risk:** Heavy snowfall, Dust storms, Extreme heat
- **Low Risk:** Tornadoes, Large Hail, Extreme cold

Updated May 30, 2018 - chris.smallcomb@noaa.gov, Meteorologist (PIO), National Weather Service Reno, NV

OBJECTIVE ANALYSIS.
EFFECTIVE SOLUTIONS.

RAND > Published Research > Research Briefs > RB-7565 >

Agroterrorism

What Is the Threat and What Can Be Done About It?

RESEARCH BRIEF

View the print-friendly version: PDF (0.1 MB)
Visit the National Defense Research Institute

Since the 9/11 terrorist attacks, potential vulnerabilities in the nation's critical infrastructure have come under increasing scrutiny. However, compared with the attention focused on such vital "nodes" as transportation and telecommunications, relatively little consideration has been paid to threats to the agriculture and food industries.

A study by RAND researcher Peter Chalk focuses attention on the issue of agroterrorism — the deliberate introduction of a disease agent, either against livestock or into the food chain, to undermine socioeconomic stability and/or generate fear. He lays out the consequences of such an attack, examines key weaknesses inherent in the agricultural sector and the food chain, assesses the capabilities needed to exploit those vulnerabilities, and discusses potential ways to improve agricultural emergency response and management.

Abstract

Although the consequences of an agroterrorism attack are substantial, relatively little attention has been focused on the threat. Unfortunately, the agricultural and food industries are vulnerable to disruption, and the capabilities that terrorists would need for such an attack are not considerable. In the short term and medium term, a series of targeted initiatives could improve the current situation; over the longer term, efforts should be directed toward standardizing and streamlining food-supply and agricultural safety measures within the framework of a single, integrated strategy.

An Attack Would Have Huge Impact

A major agroterrorist attack would have substantial economic repercussions, especially when allied industries and services — suppliers, transporters, distributors, and restaurant chains — are taken into account. The fiscal downstream effect of a deliberate act of sabotage would be multidimensional, reverberating through other sectors of the economy and ultimately impacting the consumer.

Aside from economic considerations, a successful bio-assault against the agricultural sector could also undermine the public's confidence in, and support for, the government. The mechanics of dealing with an attack — especially the potential need for mass animal slaughter to contain a major disease outbreak — could certainly generate public criticism (as it did during the 2001 foot and mouth epidemic in the United Kingdom).

Beyond the immediate economic and political impact, such attacks could also elicit fear and anxiety among the public. This would be particularly true in the event of a public health scare resulting from foodborne outbreaks or the spread of animal pathogens contagious to humans.

Significant Vulnerabilities Exist

Key vulnerabilities in the agricultural sector stem from:

- **Concentrated and intensive contemporary farming practices.** Highly crowded breeding and rearing conditions mean an outbreak of a contagious disease would be very difficult to contain, especially if it is airborne, and could require the destruction of all exposed livestock.
- **Increased susceptibility of livestock to disease.** This has occurred because of changes in husbandry practices — from sterilization programs to dehorning, branding, and hormone injections — and from the overuse and misuse of antibiotics.
- **Insufficient farm/food-related security and surveillance.** Farms seldom incorporate vigorous means to prevent unauthorized access; most animal auctions and barn sales are devoid of organized on-site surveillance; and food processing and packing plants tend to lack uniform security and safety preparedness measures, particularly the small- and medium-scale facilities that have proliferated in recent years.
- **An inefficient passive disease-reporting system.** Responsibility for reporting unusual occurrences of animal disease lies with livestock producers, who may have disincentives for doing so because of the lack of a consistent program for agricultural indemnity.
- **Inappropriate veterinarian and diagnostic training.** The number of veterinarians able to recognize and treat foreign livestock diseases is declining, reflecting a relatively poorly paid profession that suffers from a lack of appropriate training in exotic animal epidemiology.
- **A focus on aggregate rather than individual livestock statistics.** The movement toward larger herds and breeding operations largely precludes the option of attending to animals individually, making it more likely that emerging diseases will be overlooked.

Capabilities to Exploit Vulnerabilities in Agriculture Are Not Considerable

Terrorists can choose from a large menu of bio-agents, most of which are environmentally hardy, are not the focus of concerted livestock vaccination programs, and can be easily smuggled into

the country. The food chain offers a low-tech mechanism for achieving human deaths. Many animal pathogens cannot be transmitted to humans, which makes them easier for terrorists to work with. Finally, because livestock are the primary vector for pathogenic transmission, there is no weaponization obstacle to overcome.

Despite the ease and implications of a successful attack, agroterrorism is unlikely to constitute a primary form of terrorist aggression because it lacks a single, highly visible point of focus for the media (a primary consideration in any terrorist attack). However, disrupting the food sector could well emerge as a viable secondary modus operandi to further destabilize an already disoriented society after a conventional terrorist campaign. Being able to use cheap and unsophisticated means to undermine a state's economic base gives this form of aggression a high cost/benefit payoff that would be very useful to groups faced with overcoming significant power asymmetries.

Recommendations

Short- to medium-term recommendations include the following:

1. Conducting a comprehensive needs analysis to determine appropriate investment requirements for the federal emergency management infrastructure.
2. Increasing the number of state and local personnel with the skills to identify and treat exotic foreign animal diseases.
3. Assessing how to foster more coordinated and standardized links between the U.S. agricultural and intelligence communities.
4. Focusing attention on issues of law enforcement and the use of forensic investigations to determine whether disease outbreaks are deliberate or naturally occurring.
5. Revisiting the effectiveness of the passive (voluntary) disease reporting system, especially in providing more consistency with indemnity payments to compensate farmers for destroyed livestock.
6. Evaluating surveillance, internal quality control, and emergency response at food processing and packing plants to weigh the immediate costs of improving biosecurity against the long-term benefits of instituting those upgrades.

Over the longer term, additional effort should be directed toward standardizing and streamlining food-supply and agricultural safety measures within the framework of a single, integrated strategy that cuts across the missions and capabilities of federal, state, and local agencies. (See the table.)

Preventive Measures	Response Measures

Intelligence measures (identify potential threats; understand motivations; predict behavior) Monitoring programs (detect/track specific pathogens/diseases) Establishment of laboratories to research the most-virulent diseases International counterproliferation treaties, protocols, and agreements Creation of agent-specific resistance in livestock Specific vaccination against the most-threatening animal disease agents Modification (where possible) of vulnerable food/agriculture practices Biosecurity and surveillance Education and training (federal, state, and local)	Early detection of exotic/foreign pathogenic agents Early prediction of disease dispersion patterns Early containment procedures Epidemiology and treatment Depopulation and carcass disposal Diplomatic/legal/economic/ political responses Compensation and indemnity Education and training Public awareness and outreach programs Vaccine and pharmaceutical stockpiling

SOURCE: Most of the above items are from Henry Parker, *Agricultural Bioterrorism: A Federal Strategy to Meet the Threat*, McNair Paper 65, Washington, D.C.: Institute for National Strategic Studies, National Defense University, March 2000, pp. 40-41.

An effort such as this would help to unify the patchwork of largely uncoordinated bio-emergency preparedness and response initiatives that now exist. Integrating agriculture and food safety measures would also reduce jurisdictional conflicts and eliminate unnecessary duplication of effort.

This research brief describes work done for the RAND National Security Research Division documented in *Hitting America's Soft Underbelly: The Potential Threat of Deliberate Biological Attacks Against the U.S. Agricultural and Food Industry*, by Peter Chalk, MG-135-OSD, 2004, 66 pages, ISBN: 0-8330-3522-3 (Full Document).

This product is part of the RAND Corporation research brief series. RAND research briefs present policy-oriented summaries of individual published, peer-reviewed documents or of a body of published work.

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RB-7565-OSD (2003)

ABOUT

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NRP

Terrorism Incident Law Enforcement and Investigation Annex

Coordinating Agency:

Department of Justice/Federal Bureau of Investigation

Cooperating Agencies:

Department of Defense
Department of Energy
Department of Health and Human Services
Department of Homeland Security
Department of State
Environmental Protection Agency

Introduction

Purpose

The purpose of this annex is to facilitate an effective Federal law enforcement and investigative response to all threats or acts of terrorism within the United States, regardless of whether they are deemed credible and/or whether they escalate to an Incident of National Significance. To accomplish this, the annex establishes a structure for a systematic, coordinated, unified, timely, and effective national law enforcement and investigative response to threats or acts of terrorism within the United States.

Scope

This annex is a strategic document that:

- Provides planning guidance and outlines operational concepts for the Federal law enforcement and investigative response to a threatened or actual terrorist incident within the United States; and
- Acknowledges and outlines the unique nature of each threat or incident, the capabilities and responsibilities of the local jurisdictions, and the law enforcement and investigative activities necessary to prevent or mitigate a specific threat or incident.

Policies

The United States regards terrorism as a potential threat to national security, as well as a violent criminal act, and applies all appropriate means to combat this danger. In doing so, the United States vigorously pursues efforts to deter and preempt these crimes and to apprehend and prosecute directly, or assist other governments in prosecuting, individuals who perpetrate or plan terrorist attacks.

To ensure the policies established in applicable Presidential directives are implemented in a coordinated manner, this annex provides overall guidance to Federal, State, local, and tribal agencies concerning the Federal Government's law enforcement and investigative response to potential or actual terrorist threats or incidents that occur in the United States, particularly those involving weapons of mass destruction (WMD), or chemical, biological, radiological, nuclear, or high-explosive (CBRNE) material.

Federal Agencies

The law enforcement and investigative response to a terrorist threat or incident within the United States is a highly coordinated, multiagency State, local, tribal, and Federal responsibility. In support of this mission, the following Federal agencies have primary responsibility for certain aspects of the overall law enforcement and investigative response:

- Department of Defense (DOD)
- Department of Energy (DOE)
- Department of Health and Human Services (HHS)
- Department of Homeland Security (DHS)
- Department of Justice/Federal Bureau of Investigation (FBI)
- Environmental Protection Agency (EPA)

According to HSPD-5, "The Attorney General has lead responsibility for criminal investigations of terrorist acts or terrorist threats by individuals or groups inside the United States, or directed at U.S. citizens or institutions abroad, where such acts are within the Federal criminal jurisdiction of the United States, as well as for related intelligence collection activities within the United States, subject to the National Security Act of 1947 and other applicable law, Executive Order 12333, and Attorney General-approved procedures pursuant to that Executive order. Generally acting through the Federal Bureau of Investigation, the Attorney General, in cooperation with other Federal departments and agencies engaged in activities to protect our national security, shall also coordinate the activities of the other members of the law enforcement community to detect, prevent, preempt, and disrupt terrorist attacks against the United States. Following a terrorist threat or an actual incident that falls within the criminal jurisdiction of the United States, the full capabilities of the United States shall be dedicated, consistent with U.S. law and with activities of other Federal departments and agencies to protect our national security, to assisting the Attorney General to identify the perpetrators and bring them to justice. The Attorney General and the Secretary shall establish appropriate relationships and mechanisms for cooperation and coordination between their two departments."

Although not formally designated under this annex, other Federal departments and agencies may have authorities, resources, capabilities, or expertise required to support terrorism-related law enforcement and investigation operations. Agencies may be requested to participate in Federal planning and response operations, and may be requested to designate liaison officers and provide other support as required.

Deployment/Employment Priorities

In addition to the priorities identified in the National Response Plan (NRP) Base Plan, the law enforcement and investigative response to terrorist threats or incidents is based on the following priorities:

- Preserving life or minimizing risk to health; which constitutes the first priority of operations.
- Preventing a threatened act from being carried out or an existing terrorist act from being expanded or aggravated.
- Locating, accessing, rendering safe, controlling, containing, recovering, or disposing of a WMD that has not yet functioned, and disposing of CBRNE material in coordination with appropriate departments and agencies (e.g., DOD, DOE, EPA). FBI
- Apprehending and successfully prosecuting perpetrators of terrorist threats or incidents.

Planning Assumptions and Considerations

In addition to the planning assumptions and considerations identified in the NRP Base Plan, the law enforcement and investigative response to terrorist threats or incidents, particularly those involving WMD and CBRNE material, are based on the following assumptions and considerations:

- A terrorist threat or incident may occur at any time of day with little or no warning, may involve single or multiple geographic areas, and may result in mass casualties.
- The suspected or actual involvement of terrorists adds a complicating dimension to incident management.
- The response to a threat or actual incident involves FBI law enforcement and investigative activity as an integrated element.

- In the case of a threat, there may be no incident site, and no external consequences, and, therefore, there may be no need for establishment of traditional Incident Command System (ICS) elements such as an Incident Command Post (ICP) or a Joint Field Office (JFO).
- An act of terrorism, particularly an act directed against a large population center within the United States involving nuclear, radiological, biological, or chemical materials, will have major consequences that can overwhelm the capabilities of many local, State, and/or tribal governments to respond and may seriously challenge existing Federal response capabilities.
- In the case of a biological attack, the effect may be temporally and geographically dispersed, with no determined or defined "incident site." Response operations may be conducted over a multijurisdictional, multistate region.
- A biological attack employing a contagious agent may require quarantine by Federal, State, local, and tribal health officials to contain the disease outbreak.
- If appropriate personal protective equipment and capabilities are not available and the area is contaminated with CBRNE or other hazardous materials, it is possible that response actions into a contaminated area may be delayed until the material has dissipated to a level that is safe for emergency response personnel to operate or until appropriate personal protective equipment and capabilities arrive, whichever is sooner.

Situation

The complexity, scope, and potential consequences of a terrorist threat or incident require that there be a rapid and decisive capability to resolve the situation. The resolution to an act of terrorism demands an extraordinary level of coordination of law enforcement, criminal investigation, protective activities, emergency management functions, and technical expertise across all levels of government. The incident may affect a single location or multiple locations, each of which may be an incident scene, a hazardous scene, and/or a crime scene simultaneously.

Concept of Operations

Command and Control

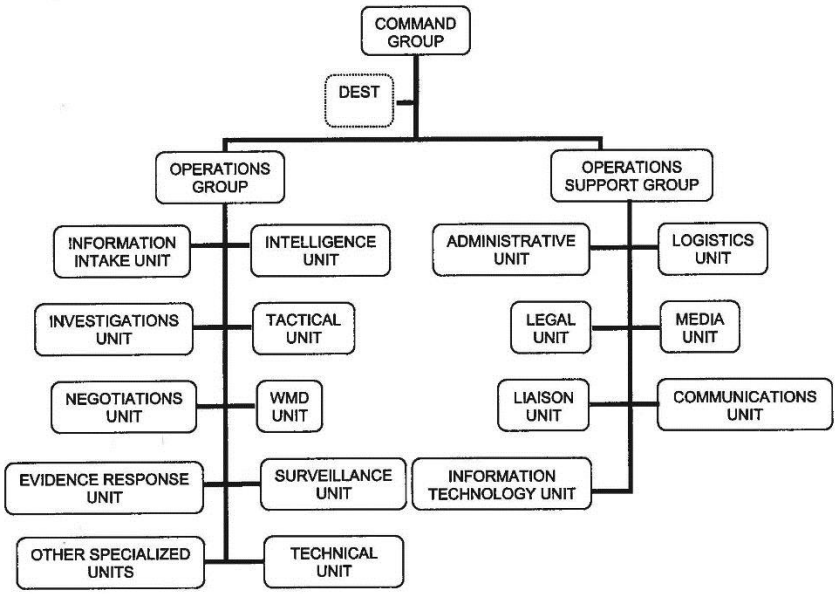
The FBI is the lead agency for criminal investigations of terrorist acts or terrorist threats and intelligence collection activities within the United States. Investigative and intelligence activities are managed by the FBI from an FBI command post or Joint Operations Center (JOC). The command post or JOC coordinates the necessary Federal law enforcement assets required to respond to and resolve the threat or incident with State, local, and tribal law enforcement agencies.

The FBI Special Agent in Charge (SAC) of the local Field Office establishes a command post to manage the threat based upon a graduated and flexible response. This command post structure generally consists of three functional groups: Command, Operations, and Operations Support, and is designed to accommodate participation of other agencies, as appropriate (see Figure 1).

When the threat or incident exceeds the capabilities and resources of the local FBI Field Office, the SAC can request additional assistance from regional and national assets to augment existing capabilities. In a terrorist threat or incident that may involve a WMD or CBRNE material, the traditional FBI command post will transition to a JOC, which may temporarily incorporate a fourth functional entity, the Consequence Management Group (see Figure 2), in the absence of an activated JFO.

When, in the determination of the Secretary of Homeland Security, in coordination with the Attorney General, the incident becomes an Incident of National Significance and a JFO is established, the JOC becomes a section of the JFO and the FBI SAC becomes the Senior Federal Law Enforcement Official (SFLEO) in the JFO Coordination Group. In this situation, the JOC Consequence Management Group is incorporated into the appropriate components of the JFO (see NRP Base Plan, Figure 4 and Figure 7).

FIGURE 1. FBI command post



The JOC structure may also be used to coordinate law enforcement, investigative, and intelligence activities for the numerous threats or incidents that occur each year that do not escalate to Incidents of National Significance.

Joint Operations Center

- The JOC is an interagency command and control center for managing multiagency preparation for, and the law enforcement and investigative response to, a credible terrorist threat or incident. Similar to the Area Command concept within the ICS, the JOC also may be established to coordinate and organize multiple agencies and jurisdictions during critical incidents or special events. Following the basic principles established in the National Incident Management System (NIMS), the JOC is modular and scalable and may be tailored to meet the specific operational requirements needed to manage the threat, incident, or special event.

- A JOC may be established and staffed in a pre-incident, pre-emptive role in support of a significant special event. This "watch mode" allows for rapid expansion to full operations if a critical incident occurs during the special event. The JOC is a strategic management tool that effectively coordinates law enforcement investigative, intelligence, and operational activities at multiple sites from a single location. The JOC may be the only management structure related to a threat, critical incident, or special event, or it may integrate into other management structures in accordance with the NRP.

- Law enforcement public safety functions, such as proactive patrol and traffic control, historically are managed through the Operations Section of the ICS. Criminal investigation and the collection, analysis, and dissemination of intelligence are sensitive law enforcement operations that require a secure environment and well-defined organizational management structure. The JOC is designed to coordinate this specialized law enforcement investigative and intelligence activity. It provides mechanisms for controlling access to and dissemination of sensitive or classified information. Management of crisis information and intelligence is recognized under the NIMS as a sixth functional area within ICS. The structure of the JOC supports this functional area and enhances the overall management of critical incidents and special events.

- The NIMS provides the framework within which the ICS and JOC structures operate for a unified approach to domestic incident management.

- The JOC is composed of four main groups: the Command Group, the Operations Group, the Operations Support Group, and the Consequence Management Group.

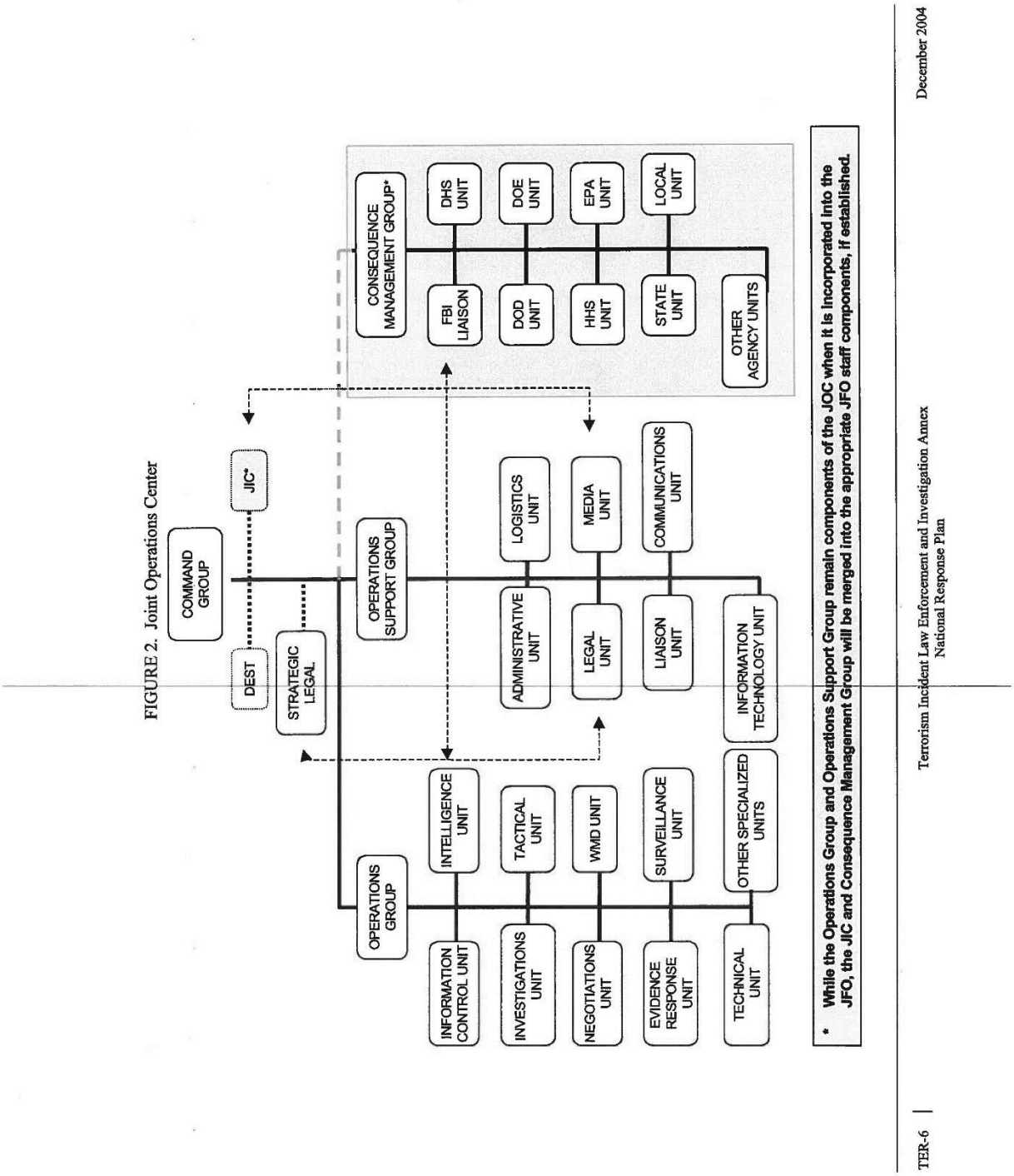


FIGURE 2. Joint Operations Center

Command Group

- The Command Group of the JOC provides recommendations and advice to the FBI SAC regarding the development and implementation of strategic decisions to resolve the situation. It is responsible for approving the deployment and employment of law enforcement investigative and intelligence resources. The Command Group maintains its advisory role to the FBI SAC when the JOC becomes a section of the JFO for an Incident of National Significance. When a JFO is established in this situation, the FBI SAC becomes the SFLEO in the JFO Coordination Group. The Assistant SAC or an alternate senior FBI official leads the JOC Command Group once the SAC has transitioned to the JFO.

- The FBI representatives in the Command Group include the SAC, the Assistant SAC, and an executive-officer position known as the Crisis Management Coordinator (CMC). The SAC of the FBI Field Office in which the incident occurs is responsible for developing the overall strategy for managing Federal investigative law enforcement activities at the critical incident or special event and coordinating the implementation of that strategy with other agency decisionmakers and FBI Headquarters. The FBI SAC also is responsible for coordinating Federal law enforcement activities with other Federal incident management personnel during domestic critical incidents and special events. The CMC ensures that the strategy of the SAC is communicated to everyone in the JOC and that the JOC is staffed and equipped to effectively implement the strategy of the SAC. The CMC also ensures that information flows efficiently within the JOC and between the JOC and other command and control centers.

- The JOC Command Group includes senior officials with decisionmaking authority from local, State, and Federal agencies, as appropriate, based upon the circumstances of the threat or incident. Consistent with the Unified Command concept, law enforcement investigative and intelligence strategies, tactics, and priorities are determined jointly within the JOC Command Group. Federal law enforcement investigative, intelligence, and operational decisions are made cooperatively to the extent possible, but the authority to make these decisions rests ultimately with the FBI SAC.

- Three specialized teams provide guidance and expertise directly to the Command Group. These teams are the Strategic Legal Team, the Joint Information Center Team, and the Domestic Emergency Support Team.

  - The Strategic Legal Team is composed of legal counsel from the FBI, U.S. Attorney's Office, and the District or State's Attorney's Office. This team provides legal guidance to the Command Group concerning the strategies under consideration for resolution of the crisis.

  - The Joint Information Center (JIC) Team is integrated into the JFO when established. It is composed of the public affairs (media) officers from the participating local, State, and Federal public safety agencies. It manages information released to the public through a coordinated, unified approach. A separate media unit within the JOC Operations Support Group provides FBI-specific guidance and expertise to the FBI SAC and coordinates with the JIC to ensure the media strategy is consistent with the overall investigative strategy.

  - The Domestic Emergency Support Team (DEST) is a specialized interagency team composed of subject-matter experts from the FBI, the DHS/Emergency Preparedness and Response/Federal Emergency Management Agency (DHS/EPR/FEMA), DOD, DOE, HHS, and EPA. It provides guidance to the FBI SAC concerning WMD threats and actual incidents.

Operations Group

- The Operations Group handles all investigative, intelligence, and operational functions related to the threat, critical incident, or special event.

- Each unit within the Operations Group provides expertise in a specific functional area that is important in the overall resolution of the incident.

- The units within the Operations Group are scalable and modular, and may be tailored to the specific threat, critical incident, or special event.

- The Operations Group normally consists of the Information Intake unit (formerly referred to as the Control unit), the Intelligence unit, the Investigations unit, and Field Operations units.

Information Intake (or Control)

- Information Intake is the central point for receiving all information that comes into the JOC. The purpose of Information Intake is to ensure that telephone calls, e-mail messages, fax reports, and other incoming information are assessed for relevance to the threat, critical incident, or special event. The information is checked to determine if it has been previously reported. It is prioritized and entered into the information management system. Through this filtering mechanism the Information Intake unit ensures that only current and relevant information is disseminated to the JOC.

- The Information Intake Coordinator is responsible for providing guidance and direction to all personnel within the Information Intake unit and coordinating the activities of the unit with all other units within the JOC. Personnel within the Information Intake unit are responsible for receiving incoming information, processing new information, routing followup information appropriately, and implementing procedures for tracking evidentiary material that is introduced into the command post.

Intelligence

- The Intelligence unit manages the collection, analysis, archiving, and dissemination of relevant and valid investigative and strategic intelligence. It fuses historical intelligence from a variety of sources with new intelligence specific to the threat, critical incident, or special event. The Intelligence unit also disseminates intelligence products and situation reports to all JOC units, FBI Headquarters Strategic Information and Operations Center (SIOC), and the JFO Coordination Group. This information is shared with the DHS Homeland Security Operations Center (HSOC), the National Counterterrorism Center (NCTC), and, as appropriate, other government agencies, consistent with operational security considerations.

- The Intelligence unit usually is divided into teams based on functional responsibility. Teams manage intelligence related to the crisis site or target, build intelligence portfolios and databases on significant elements related to the investigation (subjects, vehicles, and organizations), analyze and identify trends in activities related to the investigation (predictive and strategic intelligence), conduct liaison with outside members of the Intelligence Community, and prepare periodic briefings and reports concerning the status of the crisis or investigation. The Intelligence unit is responsible for collecting and reviewing all intelligence related to the threat, crisis, or special event to enable the SAC to further develop and refine strategic objectives.

Investigations

- The Investigations unit provides oversight and direction to all investigative activity related to the threat, critical incident, or special event. The Investigations unit implements the strategy of the SAC by directing the collection and management of investigative information. It is composed of investigative personnel from the agencies with specific jurisdiction or authority for investigating crimes related to the threat, critical incident, or special event. The Investigations Unit Coordinator is usually an FBI Supervisor who has responsibility for investigating the most significant substantive law violation.

- Teams within the Investigations unit review all incoming information to determine investigative value. The Investigations unit assigns, tracks, and reviews all investigative leads and documents the investigation in the appropriate case file(s). The case agents or primary investigators within the Investigations unit manage all evidence and information, and prepare it for court presentation, if appropriate. The case agents or primary investigators are assisted by analytical personnel to ensure that all investigative information is pursued to its logical conclusion. A Records Check Team within the Investigations unit reviews case files and databases to ensure that all items of investigative value are identified and evaluated. The Investigations unit is responsible for collecting and reviewing all reports of investigative activity to enable the SAC to further develop and refine strategic objectives.

Field Operations

- The Field Operations units are based upon the specific needs of the threat, critical incident, or special event. The personnel staffing these units are subject-matter experts in a number of specialized skill areas. Field Operations unit coordinators are responsible for ensuring the activity of the specialized units is consistent with and in support of the strategy of the SAC.

- Field Operations units may include representatives of tactical, negotiations, WMD/CBRNE, evidence response, surveillance, technical, or any other specialized unit deployed to the crisis site(s) or staged in readiness. The mission of these units is to provide the SAC with current information and specialized assistance in dealing with the threat, critical incident, or special event. Information is communicated between the JOC and the crisis site(s) through the Field Operations unit representatives in the JOC. This ensures that decisionmakers both in the JOC and in the forward areas maintain full situational awareness. The Field Operations units coordinate their activities within the JOC to ensure each is aware of the impact of their activities on the other field units.

- Local, State, and Federal law enforcement specialty units assigned to assist with field operations during the threat, incident, or special event coordinate their activities with the appropriate FBI Field Operations units through the JOC. Federal Government mission-specific units are designated to help the FBI maintain their respective chains of command and coordinate their activities through representation in the JOC. The JOC manages the activities of the specialized units at a strategic level. Activities at the individual or "tactical" level are managed at the crisis site(s) through forward command structures such as the Tactical Operations Center, Negotiations Operations Center, and Evidence Response Team Operations Center.

Operations Support Group

- The Operations Support Group units designated within the JOC are based upon the specific needs of the threat, critical incident, or special event. The personnel who staff these units are subject-matter experts in a number of specialized areas. Operations Support Group unit coordinators are responsible for ensuring the activity of their units is consistent with and in support of the strategy of the SAC.

- Operations Support Group units can include administrative, logistics, legal, media, liaison, communications, and information management. The mission of these units is to support the investigative, intelligence, and operational functions of the JOC.

- The Administrative and Logistics units have responsibilities that are similar to the Finance and Logistics Sections in ICS. However, they are tasked with managing only the activities related to the law enforcement investigative, intelligence, and operational functions; they do not manage the administrative and logistics functions associated with the overall incident.

- The Legal and Media units support the investigative and intelligence operations of the JOC through the preparation of specific legal processes and management of media affairs. These units focus on specific objectives related to the investigation such as search warrants and press releases, and not the strategic overall objectives handled by the Strategic Legal Team and JIC that are attached to the Command Group.

- The Liaison unit is composed of representatives from outside agencies who assist the FBI with resolution of the threat, critical incident, or special event. The Liaison unit may include agencies without clear authority or jurisdiction over the threat, critical incident, or special event if they have a potential investigative interest. For example, law enforcement agencies that border affected jurisdictions may be represented in the JOC to maintain situational awareness of potential threats. Additional Liaison unit representatives may include fire department personnel, utility company workers, or engineering specialists.

- The Communications unit handles radio and telephone communications to support JOC operations. The Communications unit establishes communications networks within the JOC. It also establishes networks to facilitate timely and reliable information-sharing between the JOC and other command and control centers.

- The Information Technology unit is responsible for the JOC computer system operation within each unit and between units. Information technology specialists and facilitators assigned to this unit are responsible for ensuring the uninterrupted operation of the information management system used during JOC operations.

Consequence Management Group

- The JOC Consequence Management Group consists of representatives of agencies that provide consequence-focused expertise in support of law enforcement activities. The JOC does not manage consequence functions; rather, it ensures that law enforcement activities with emergency management implications are communicated and coordinated to appropriate personnel in a complete and timely manner.

- A DHS representative coordinates the actions of the JOC Consequence Management Group, and expedites activation of a Federal incident management response should it become necessary. FBI and DHS representatives screen threat/incident intelligence for the Consequence Management Group. Representatives of the JOC Consequence Management Group monitor the law enforcement criminal investigation and may provide advice regarding decisions that impact the general public or critical infrastructure. This integration provides continuity should a Federal incident management response become necessary.

- Agencies comprising the Consequence Management Group may also have personnel assigned to other units within the JOC structure. Depending on the nature of the incident and required assets, additional teams assigned to support the FBI may be included under Other Specialized Units.

- Should the threat of a terrorist incident become imminent, the JOC Consequence Management Group may forward recommendations to the RRCC Director to initiate limited pre-deployment of assets under the Stafford Act.

- Requests for DOD assistance for law enforcement and criminal investigation during the incident come from the Attorney General to the Secretary of Defense through the DOD Executive Secretary. Once the Secretary approves the request, the order is transmitted either directly to the unit involved or through the Chairman of the Joint Chiefs of Staff. The FBI SAC informs the Principal Federal Official (PFO), if one has been designated, when requesting this additional assistance.

- The Consequence Management Group is established when a JOC is necessary but a JFO has not yet been activated, or the event has not reached the level of being considered an Incident of National Significance.

- Representatives in this group may move to appropriate positions in other sections of the JFO when one is established.

The Response

- Receipt of a terrorist threat may be through any source or medium and may be articulated or developed through intelligence sources. It is the responsibility of all local, State, and Federal agencies and departments to notify the FBI when such a threat is received. As explained below, the FBI evaluates the credibility of the terrorist threat and notifies the HSOC, NCTC, and other departments and agencies, as appropriate.

- Upon receipt of a threat of terrorism within the United States, the FBI conducts a formal threat credibility assessment in support of operations with assistance from select interagency experts. For a WMD or CBRNE threat, this assessment includes three perspectives:

  - Technical Feasibility: An assessment of the capacity of the threatening individual or organization to obtain or produce the material at issue;

  - Operational Practicability: An assessment of the feasibility of delivering or employing the material in the manner threatened; and

  - Behavioral Resolve: A psychological assessment of the likelihood that the subject(s) will carry out the threat, including a review of any written or verbal statement by the subject(s).

- A threat assessment is conducted to determine whether the potential threat is credible, and confirm whether WMD or CBRNE materials are involved in the developing terrorist incident. Intelligence varies with each threat and impacts the level of the Federal response. If the threat is credible, the situation requires the tailoring of response actions to use Federal resources needed to anticipate, prevent, and/or resolve the situation. The Federal response focuses on law enforcement/investigative actions taken in the interest of public safety and welfare, and is predominantly concerned with preventing and resolving the threat. In addition, contingency planning focuses on the response to potential consequences and the pre-positioning of tailored resources, as required. The threat increases in significance when the presence of a CBRNE device or WMD capable of causing a significant destructive event, prior to actual injury or loss, is confirmed or when intelligence and circumstances indicate a high probability that a device exists. In this case, the threat has developed into a WMD or CBRNE terrorist situation requiring an immediate process to identify, acquire, and plan the use of Federal resources to augment State, local, and tribal authorities in lessening or averting the potential consequence of terrorist use or employment of WMD or CBRNE material. It should be noted that a threat assessment would also be conducted if an incident occurs without warning. In this case, the assessment is focused on criminal intent, the extent of the threat, and the likelihood of secondary devices or locations.

- The FBI manages a Terrorist Threat Warning System to ensure that vital information regarding terrorism reaches those in the U.S. counterterrorism and law enforcement community responsible for countering terrorist threats. This information is coordinated with DHS and the NCTC, and is transmitted via secure teletype. Each message transmitted under this system is an alert, an advisory, or an assessment—an alert if the terrorist threat is credible and specific, an advisory if the threat is credible but general in both timing and target, or an assessment to impart facts and/or threat analysis concerning terrorism.

- Upon determination of a credible threat, FBI Headquarters activates its SIOC to coordinate and manage the national-level support to a terrorism incident. At this level, the SIOC generally mirrors the JOC structure operating in the field. The SIOC is staffed by liaison officers from other Federal agencies who coordinate with and provide assistance to the FBI. The SIOC serves as the focal point for law enforcement operations and maintains direct connectivity with the HSOC. The HSOC is notified immediately by the SIOC once a threat has been determined to be credible. In turn, this notification may result in activation of NRP components in coordination with the FBI.

- The FBI leads the criminal investigation related to the incident, and the SIOC is the focal point for all intelligence related to the investigative law enforcement response to the incident. Consistent with the NRP, affected Federal agencies operate headquarters-level emergency operations centers, as necessary. FBI Headquarters initiates appropriate liaison with other Federal agencies to activate their operations centers and provide liaison officers to the SIOC. In addition, FBI Headquarters initiates communications with the SAC of the responsible Field Office, apprising him/her of possible courses of action and discussing deployment of the DEST. The FBI SAC establishes initial operational priorities based upon the specific circumstances of the threat or incident. This information is then forwarded to FBI Headquarters to coordinate identification and deployment of appropriate resources.

- The JOC is established by the FBI under the operational control of the FBI SAC, and acts as the focal point for the field coordination of criminal investigation, law enforcement, and intelligence activities related to the threat or incident. When a PFO is designated for a terrorism incident, the FBI SAC provides full and prompt cooperation, resources, and support to the PFO, as appropriate and consistent with applicable authorities. The PFO (or an initial PFO designated by the Secretary of Homeland Security) may elect to use the JOC as an initial operating facility for strategic management and identification of State, local, and tribal requirements and priorities, and coordination of the Federal response. The FBI SAC coordinates with the PFO, including providing incident information to the PFO as requested, coordinating the public communications strategy with the PFO, and approving Federal interagency communications for release to the public through the PFO. It is recognized, however, that in some cases it may be necessary for the FBI SAC to respond directly to media/public inquiries on investigative operations and matters affecting law enforcement operations, particularly during the early stages of the emergency response.

- The local FBI Field Office activates a Crisis Management Team to establish the JOC in the affected area, possibly collocated with an existing emergency operations facility. In locating the JOC, consideration is given to the possibility that the facility may have to accommodate other Federal incident management field activities including the JFO, the JIC, and other supporting teams. Additionally, the JOC is augmented by outside agencies, including representatives from the DEST (if deployed), who provide interagency technical expertise as well as interagency continuity during the transition from an FBI command post structure to the JOC structure.

- Based upon a credible threat assessment and a request by the SAC, the FBI Director and DHS Under Secretary for Emergency Preparedness and Response, in consultation with the Attorney General and Secretary of Homeland Security, may request authorization through the National Security Council to deploy the DEST to assist the SAC in mitigating the crisis situation. The DEST is a rapidly deployable, interagency team responsible for providing expert advice and support concerning the Federal Government's capabilities in resolving the terrorist threat or incident. This includes law enforcement, criminal investigation, and emergency management assistance, technical and scientific advice, and contingency planning guidance tailored to situations involving chemical, biological, or nuclear/radiological weapons.

- Upon arrival at the FBI command post or JOC, the DEST may act as a stand-alone advisory team to the SAC providing recommended courses of action. Although it would be unusual, the DEST may be tasked to deploy before a JOC is established. The DEST may handle some of the specialized interagency functions of the JOC until the JOC is fully staffed. The DEST emergency management component merges into the Consequence Management Group in the JOC structure.

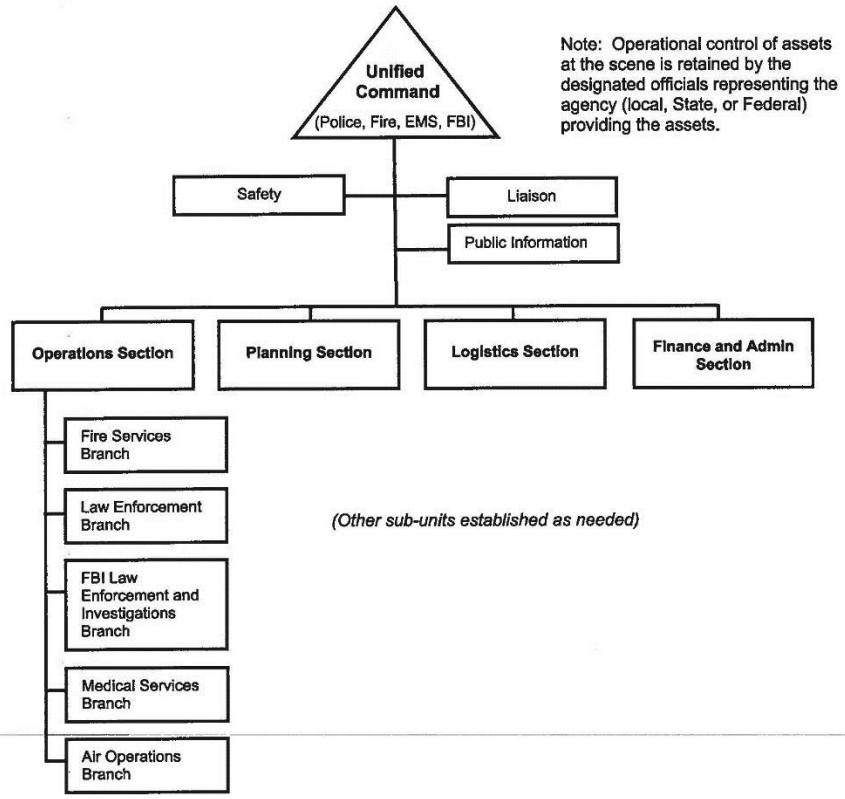
- Prior to an actual WMD or CBRNE incident, law enforcement, intelligence, and investigative activities generally have priority. When an incident results in the use of WMD or CBRNE material, rescue and life-safety activities generally have priority. Activities may overlap and/or run concurrently during the incident management, and are dependent on the threat and/or the strategies for responding to the incident.

- Upon determination that applicable law enforcement/intelligence goals and objectives are met and no further immediate threat exists, the FBI SAC may deactivate the JOC and order a return to routine law enforcement/investigative operations in accordance with pre-event protocols.

- When an incident occurs and an ICP is established on-scene, FBI personnel integrate into the ICP to enhance the ability of the FBI to carry out its mandated mission (see Figure 3). Three specific positions within an ICP are provided. The first FBI Special Agent (SA) or Joint Terrorism Task Force (JTTF) member responding receives an initial briefing from the Incident Commander or his/her designee and works closely with the Incident Commander as a member of the Unified Command. The FBI representative then informs the local Field Office of the current situation and, if necessary, requests additional assets. When a more senior FBI SA arrives on the scene, he/she assumes the role of the FBI representative in the Unified Command.

- The first arriving SA or JTTF member moves to the Operations Section as the Deputy Chief of Operations. This position is responsible for managing the deployment and coordination of Federal law enforcement and investigative assets in support of the Incident Action Plan. Additionally, an FBI SA assumes the position of Deputy Chief of Planning within the ICP. This position permits the FBI SA to remain updated on the situation and serve as a conduit for requests for additional law enforcement and investigative assets. The Agent also inputs Federal objectives into the developing incident action plan and performs other duties as appropriate. Also, FBI assets form a unit in the Operations Section. Throughout the incident, the actions and activities of the Unified Command at the incident scene and the Command Group of the JOC (and the JFO Coordination Group if established) are continuously and completely coordinated throughout the incident.

FIGURE 3. On-scene coordination



LYON COUNTY, CITY OF FERNLEY, CITY OF YERINGTON

HAZARD MITIGATION PLAN UPDATE

MEETING FIVE

JULY 18, 2018

1:30 - 2:30 PM

Commissioner's Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, NV 89447

AGENDA

WELCOME & INTRODUCTIONS	Tammy Kinsley, Planner
Update on the Public Outreach and Questionnaire Responses	Tammy Kinsley, Planner
Review Table 8-2: Mitigation Goals and Potential Actions	All Attendees
Prioritize Mitigation Actions using the STAPLE + E (Table 8-3)	All Attendees
Finalizing the plan for DEM and FEMA	Tammy Kinsley, Planner

Thank you very much for your Participation and input to this update, It is Greatly Appreciated!

MJHMP
MEETING 5
Wednesday 18, July 2018
1:30 PM
Commissioners' Meeting Room
Lyon County Administrative Complex
27 S. Main Street
Yerington, Nevada 89447

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SECTIONEIGHT

Mitigation Strategy

Goals	County/Cities /YPT	Action	New or Existing Bldgs.	Description
Goal 1: ***Promote increased and ongoing involvement in hazard-mitigation planning and projects***		1.A		Integrate the Lyon County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)
		1.B		Add mitigation actions to each jurisdiction's website.
Goal 2: ***Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters***		2.A		Establish density incentives for future construction (to encourage less development in more hazardous areas).
Goal 3: ***Reduce the possibility of damage and losses due to dam/ or canal failure:***		3.A		Develop a public outreach program that informs property owners located in ~~the~~ a dam/or canal inundation area about voluntary flood insurance.
		3.B		Utilize the Sheep Camp Dam Emergency Plan - 2018
		3.C		Annually monitor dams and canals.
Goal 4: ***Reduce the possibility of damage and losses due to drought***		4.A		Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.
		4.B		Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.

SECTIONEIGHT

Mitigation Strategy

~~Table 8-2: Mitigation Goals and Potential Actions~~

		4.C		Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping
		4.D		Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.*
		4.E		Implement a thirsty/invasive weed public awareness and educational campaign.
		4.F		With all Water system purveyors prepare a drought mitigation plan and review and update annually.
Goal 5: ***Reduce the possibility of damage and losses due to earthquakes***		5.A		Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.
		5.B		Seismically retrofit or replace unreinforced masonry buildings, located in ~~an~~ high ground shaking areas, and/or ~~are~~ as necessary for first responders to use during and/or immediate after a disaster or emergency (as identified by the University of Nevada Reno inventory).
		5.C		~~Teach~~ Provide education to the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and ~~attractive~~ hands-on displays ("Living with Earthquakes in Nevada") ~~is~~ as good public outreach material~~)~~.
		5.D		Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).
		5.E		Develop ~~better~~ current Earthquake fault ~~s~~ maps to ensure future growth is most compatible with the hazard area.
		5.F		In coordination with the State, implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities and infrastructure, and retrofit buildings, if necessary.
Goal 6: ***Reduce the possibility of damage and losses due to extreme heat***		6.A		Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.

SECTIONEIGHT

Mitigation Strategy

~~Table 8-2: Mitigation Goals and Potential Actions~~

Goal 7: ***Reduce the possibility of damage and losses due to flooding***		7.A		Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.
		7.B		Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.
		7.C		Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.
		7.D		Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps as being in the Special Flood Hazard Areas.)
		7.E		Work with surrounding counties to develop a watershed coordination organization for Walker River.*
		7.F		Fix low points along river banks at critical areas.
		7.G		Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance). *
		7.H		Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.
		7.I		Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.
		7.K		Continue the ongoing ability to remove sediment and debris from rivers.
		7.J		Keep the current floodplain open as natural storage, the "Living River Concept" as identified in the Carson River Regional Watershed Floodplain Management Plan – 2018 and Adopted by the Lyon County Board of County Commissioners.
Goal 8: ***Reduce the possibility of damage and losses due to Hail***		8.A		Implement Warning Systems that monitor ~~Implement~~ Hail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.*

SECTIONEIGHT

Mitigation Strategy

Table 8-2: Mitigation Goals and Potential Actions

Goal 9: ***Reduce the possibility of damage and losses due to hazardous materials***		9.A		Work with NDOT to require all transport of hazardous materials to follow approved routes.
		9.B		Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.
Goal 10: ***Reduce the possibility of damage and losses due to landslide***		10.A		Establish County code which requires the stabilization of landslide-prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, drained earth buttresses, and subdrains.
Goal 11: ***Reduce the possibility of damage and losses due to Land subsidence***		11.A		Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.
Goal 12: ***Reduce the possibility of damage and losses due to severe weather***		12.A		Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).*
Goal 13: ***Reduce the possibility of damage and losses due to wildfire***		13.A		Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).
		13.B		Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.
		13.C		Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process,

SECTIONEIGHT

Mitigation Strategy

~~Table 8-2: Mitigation Goals and Potential Actions~~

				guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.
		13.D		Establish ~~a standard safety zone of 30 feet~~appropriate standards for defensible space around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.
		13.E		Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.
		13.F		Continue to have public education outreach for wildfire awareness month in May of each year.
Goal 14: ***Reduce the possibility of damage and losses due to windstorm***		14.A		Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.
		14.B		Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.
		14.C		Secure/b~~B~~olt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.
		14.D		In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.
		14.E		Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.
Goal 15: Reduce the possibility of threat to life		15.A		Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats.
		15.B		Develop public outreach regarding current community plan for medicine and plans for vaccines, utilizing the Quad-County Public Health Preparedness information.

SECTIONEIGHT

Mitigation Strategy

Table 8-2: Mitigation Goals and Potential Actions

and losses due to epidemic		15.C		Develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sheriff and Tri-County and local hospitals.
Goal 16: Reduce the possibility of damage and losses due to Terrorism/WMD		16.A		Continue planning and training staff
		16.B		Continue to communicate regionally with other/all agencies.
		16.C		Plan to address mitigation if other communities experience an event and citizens are traveling to and through Lyon County. Coordination with NDOT and hospitals in the area.
		16.D		Continue SRO with Lyon County School District
		16.E		Continue with NTAC Agreement

Below is the STAPLE+E evaluation criteria developed by FEMA. Each of the potential actions will be scored by using rankings of 1 for the lowest and 5 for the highest priority, acceptance, feasibility, etc.

Please insert your numeric ranking in the separate STAPLE+E form and calculate the priority totals.

Table 8-3: STAPLE+E Evaluation Criteria for Mitigation Actions

Evaluation Category	Discussion "It is important to consider…."	Consideration
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: Finding 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
Economic	If the action can be funded with current or future internal and external sources, if the cost 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.

STAPLE + E Evaluation Table

	S (SOCIAL)		T (TECHNICAL)			A (ADMINISTRATIVE)			P (POLITICAL)			L (LEGAL)			E (ECONOMIC)				E (ENIVRONMENTAL)					PT
Consideration → / Mitigation Action ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
1.A. Integrate the Lyon County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans. Ensure coordination with the County's 2030 Master Plan (such as the need for land use designations to direct growth to lower risk areas)																								
1.B. Add mitigation actions to each jurisdiction's website.																								
2.A. Establish density incentives for future construction (to encourage less development in more hazardous areas)																								
3.A Develop a public outreach program that informs property owners located in a dam/ or canal inundation area about voluntary flood insurance.																								
3.B. Utilize the Sheep Camp Dam Emergency Plan (2018)																								
3.C. Annually monitor dams and canals.																								

STAPLE + E Evaluation Table

	S (SOCIAL)		T (TECHNICAL)			A (ADMINISTRATIVE)			P (POLITICAL)			L (LEGAL)			E (ECONOMIC)				E (ENIVRONMENTAL)					PT
Consideration → / Mitigation Action ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
4.A. Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.																								
4.B. Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.																								
4.C. Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping.																								
4.D. Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.																								
4.E. Implement a thirsty/invasive weed public awareness and educational campaign.																								
4.F. With all Water system purveyors prepare a drought mitigation plan and review and update annually.																								

STAPLE + E Evaluation Table

	S (SOCIAL)		T (TECHNICAL)			A (ADMINISTRATIVE)			P (POLITICAL)			L (LEGAL)			E (ECONOMIC)				E (ENVIRONMENTAL)					PT
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5.A Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.																								
5.B Seismically retrofit or replace unreinforced masonry buildings, located in an high ground shaking areas, and/or are as necessary for first responders to use during and/or immediately after a disaster or emergency (as identified by the University of Nevada Reno inventory).																								
5.C Each Provide education to the general public how to prepare their households in the event of an earthquake, by presenting preparedness information and attractive hands on displays ("Living with Earthquakes in Nevada") as an good public outreach material).																								
5.D Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake Insurance (Nevada continues to participate and advertise the Great Shakeout).																								

STAPLE + E Evaluation Table

	S (SOCIAL)		T (TECHNICAL)			A (ADMINISTRATIVE)			P (POLITICAL)			L (LEGAL)			E (ECONOMIC)				E (ENVIRONMENTAL)					PT
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5.E Develop better current Earthquake fault maps to ensure future growth is most compatible with the hazard area.																								
5.F In coordination with the State, implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities and infrastructure, and retrofit buildings, if necessary.																								
6.A Initiate an extreme heat, public awareness and education campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.																								
7.A Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.																								
7.B Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(SOCIAL)		(TECHNICAL)			(ADMINISTRATIVE)			(POLITICAL)			(LEGAL)			(ECONOMIC)				(ENIVRONMENTAL)					
Consideration → / Mitigation Action ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
7.C Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.																								
7.D Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps as being in the Special Flood Hazard Areas.)																								
7.E Work with surrounding counties to develop a watershed coordination organization for Walker River																								
7.F Fix low points along river banks at critical areas																								
7.G Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance) *																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(SOCIAL)		(TECHNICAL)			(ADMINISTRATIVE)			(POLITICAL)			(LEGAL)			(ECONOMIC)				(ENIVRONMENTAL)					
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7.H Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtapping.																								
7.I Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.																								
7.K Continue the ongoing ability to remove sediment and debris from rivers.																								
7.J Keep the current floodplain open as natural storage, the "Living River Concept" as identified in the Carson River Regional Watershed Floodplain Management Plan – 2018.																								
8.A Implement Warning Systems that monitor Implement Fail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.*																								
8.A Work with NDOT to require all transport of hazardous materials to follow approved routes.																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(SOCIAL)		(TECHNICAL)			(ADMINISTRATIVE)			(POLITICAL)			(LEGAL)			(ECONOMIC)				(ENIVRONMENTAL)					
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9.B Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.																								
10.A Establish County code which requires the stabilization of landslide prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, improved earth buttresses, and substrains.																								
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12.A Improve and update an early weather/emergency notification warning system such as reverse 911 (or update and ensure integration throughout all communities).																								
13.A Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCES).																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(SOCIAL)		(TECHNICAL)			(ADMINISTRATIVE)			(POLITICAL)			(LEGAL)			(ECONOMIC)				(ENIVRONMENTAL)					
Consideration → / Mitigation Action ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
13.B Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.																								
13.C Implement a fuel modification program, which also includes residential maintenance requirements and environmental plan submittal and approval process, guidelines for planting, and a listing of acceptable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.																								
13.D Establish a standard safety zone of 30 feet around county/city-owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.																								

STAPLE + E Evaluation Table

	S		T			A			P			L			E				E					PT
	(SOCIAL)		(TECHNICAL)			(ADMINISTRATIVE)			(POLITICAL)			(LEGAL)			(ECONOMIC)				(ENIVRONMENTAL)					
Consideration → / Mitigation Action ↓	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
13.E Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.																								
13.F Continue to have public education outreach for wildfire awareness month in May of each year.																								
14.A Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.																								
14.B Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.																								
14.C Secure/bolt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.																								
14.D In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.																								

STAPLE + E Evaluation Table

Consideration → / Mitigation Action ↓	S (SOCIAL)		T (TECHNICAL)			A (ADMINISTRATIVE)			P (POLITICAL)			L (LEGAL)			E (ECONOMIC)				E (ENVIRONMENTAL)					PT
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
14.F. Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.																								
15.A. Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats.																								
15.B. Develop public outreach regarding Sunset Community plan medicine and plans for vaccines, utilizing the Tri-County information																								
15.C. Develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sheriff and Tri-County and local hospitals																								
16.A Continue planning and training staff for events if they occur.																								
16.B Continue to communicate regionally with other/all agencies.																								
16.C Plan to address mitigation of other communities exposure in an event and citizens are traveling to and through Lyon County. Coordination with NDOT and hospitals in the area																								

STAPLE + E Evaluation Table

Consideration → / Mitigation Action ↓	S (SOCIAL)		T (TECHNICAL)			A (ADMINISTRATIVE)			P (POLITICAL)			L (LEGAL)			E (ECONOMIC)				E (ENVIRONMENTAL)					PT
	Community Acceptance	Effect on Segment of Population	Technical Feasibility	Long-term Solution	Secondary Impacts	Staffing	Funding Allocated	Maintenance/Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenges	Benefit of Action	Cost of Action	Contributions to Economic Goals	Outside Funding Required	Effect on Land/Water	Effect on Endangered Species	Effect on HAZMAT/Waste Sites	Consistent with Native Habitat	Consistent with Local/Federal Lands	Priority Total
16.D. Continue SRO with Lyon County School District																								
16.E Continue with MLAC Agreement																								

Outcome of the STAPLE+E Priorities Exercise on July 18 2018

Number	Mitigation Action	Respondents a	b	c	d	e	f	g	h	Total	Total/No. responses	Priority
1.A	Integrate the Lyon County HMP, in particular the hazard analysis and mitigation strategy sections, into local planning documents, including general plans, emergency operations plans, and capital improvement plans.	79	42	69	58	67	79	75	72	541	68	high
1.B	Add mitigation actions to each jurisdiction's website.	69	42	60	56	68	69	75	72	511	64	high
2.A	Ensure coordination with the County's 2010 Master Plan (such as the need for land use designations to direct growth to lower risk areas)	80	42	74	61	76	78	67	69	547	68	high
3.A	Add mitigation actions to each jurisdiction's website.	64	42	53	61	79	78	80	82	539	67	high
3.B	Establish density incentives for future construction (to encourage less development in more hazardous areas).	54	42	57	71	80	80	51	78	513	64	high
3.C	Develop a public outreach program that informs property owners located in a dam/or canal inundation area about voluntary flood insurance.	46	42	58	53	80	66	49	92	486	61	high
4.A	Utilize the Sheep Camp Dam Emergency Plan -2018	58	41	70	79	73	65	71	64	521	65	high
4.B	Annually monitor dams and canals.	66	47	67	68	70	65	71	65	519	65	high
4.C	Develop a drought contingency plan to provide an effective and systematic means of assessing drought conditions, develop mitigation actions and programs to reduce risks in advance of drought, and develop response options that minimize hardships during drought.	62	47	65	72	70	65	59	65	505	63	high
4.D	Where appropriate, mandate the use of xeriscaping or desert landscaping at County/City facilities and projects.	57	47	61	72	71	65	46	62	481	60	high
4.E	Develop a public outreach program that educates property owners about the benefits of drought resistant landscaping	54	58	67	73	70	46	55	71	494	62	high
4.F	Work with the Carson Water Subconservancy District to apply their studies on water/aquifer recharge to Lyon County.*	68	41	65	51	77	65	43	72	482	60	high
5.A	Implement a thirsty/invasive weed public awareness and educational campaign.	67	52	56	43	72	76	52	71	489	61	high
5.B	With all Water system purveyors prepare a drought mitigation plan and review and update annually.	45	63	56	54	72	76	53	71	490	61	high
5.C	Seismically retrofit or replace critical facilities that are necessary during and/or immediately after a disaster or emergency.	48	60	65	48	70	59	38	68	456	57	med
5.D	Seismically retrofit or replace unreinforced masonry buildings, located in high ground shaking areas, and/or as necessary for first responders to use during and/or immediate after a disaster or emergency (as identified by the University of Nevada Reno inventory).	42	55	65	53	70	59	77	71	492	62	high
5.E	Provide education to the general public how to prepare their households, in the event of an earthquake, by presenting preparedness information and hands-on displays ("Living with Earthquakes in Nevada") as good public outreach material.	55	41	51	43	73	62	69	65	459	57	med
5.F	Develop a public outreach program that informs property owners of the risks of Earthquakes in their area and informs the public about State Earthquake insurance (Nevada continues to participate and advertise the Great Shakeout).	68	58	56	50	69	75	69	66	511	64	high
6.A	Develop current Earthquake fault maps to ensure future growth is most compatible with the hazard area.	48	32	65	46	72	58	73	66	460	58	med
7.A	In coordination with the State, implement an Unreinforced Masonry (URM) building program that determines the structural safety of critical facilities and infrastructure, and retrofit buildings, if necessary.	76	69	44	45	74	72	60	61	501	63	high
7.B	Initiate an extreme heat public awareness and educational campaign to discuss the dangers of extreme heat, steps each individual can personally take during periods of extreme heat and ways to reduce energy consumption during periods of extreme heat.	71	61	57	57	74	72	47	84	523	65	high
7.C	Acquire, relocate, elevate, and/or floodproof critical facilities that are located within the 100-year floodplain.	81	71	62	58	74	69	41	62	518	65	high
7.D	Reinforce County and local ramps, bridges, and roads from flooding through protection activities, including elevating the road and installing culverts beneath the road or building a higher bridge across the area that experiences regular flooding.	45	40	65	55	74	69	54	66	468	59	high
7.E	Work with the Division of Water Resources and FEMA Region IX to ensure that flood maps accurately reflect the flood history of Lyon County.	64	60	57	70	82	69	48	70	520	65	high

Outcome of the STAPLE+E Priorities Exercise on July 18 2018

7.F	Develop a public outreach program that educates property owners about voluntary flood insurance (targeted at areas that historically flood, but are not acknowledged on FEMA flood insurance rate maps as being in the Special Flood Hazard Areas.)	76	70	74	58	83	77	55	89	582	73	high
7.G	Work with surrounding counties to develop a watershed coordination organization for Walker River.	76	60	74	61	80	69	57	81	558	70	high
7.H	Fix low points along river banks at critical areas	56	46	53		73		57	43	328	41	low
7.I	Work with appropriate entities to discuss proper maintenance of the Walker River (dredging is desired by some, but there are both environmental and economic concerns regarding capacity maintenance).*	55	46	53	66	73		46	43	382	48	low
7.K	Develop a public outreach that informs the public about the hazards of contamination of domestic wells/septic tanks due to overtopping.	75	63	64		76	72	46	102	498	62	high
7.J	Partner with propane providers, communities and regulating agencies to secure tanks located in special flood hazard areas.	77	62	64		73		46	72	394	49	low
8.A	Continue the ongoing ability to remove sediment and debris from rivers.	46	59	47	61	73	52	46	58	442	55	med
9.A	Keep the current floodplain open as natural storage, the "Living River Concept" as identified in the Carson River Regional Watershed Floodplain Management Plan – 2018.	51	62	70		73	69	46	91	462	58	med
9.B	Implement Warning Systems that monitor Hail Storms for use by local emergency managers and citizens, such as NOAA Weather Radios.	59	69	63		69	46	56	75	437	55	med
10.A	Work with NDOT to require all transport of hazardous materials to follow approved routes.	49	63	57		69	73	59	81	451	56	med
11.A	Use the County's Web site to post information regarding the safe handling and disposal of household chemicals.	48	52	57		69		59	69	354	44	low
12.A	Establish County code which requires the stabilization of landslide-prone areas before new development can occur, through stability improvement measures such as the inclusion of interceptor drains, insitu soil piles, drained earth buttresses, and subdrains.	75	65			73	54	59	69	395	49	low
13.A	Develop and adopt setbacks from mapped faults to help mitigate future fissure losses.	85	59	76		69	61	59	89	498	62	high
13.B	Improve and update an early weather/community hazard warning system such as reverse 911 (or update and ensure integration throughout all communities).*	66	73	71		69	61	62	87	489	61	high
13.C	Implement fuel reduction programs, such as the collection and disposal of dead fuel, within open spaces and around critical facilities and residential structures located within a high and very high wildfire zones (work with fire districts, BLM and UCFS).	60	55	77		69	61	62	92	476	60	high
13.D	Create a vegetation management program that provides vegetation management services to elderly, disabled, or low-income property owners who lack the resources to remove flammable vegetation from around their homes.	59	66	57		69	61	62	92	466	58	med
13.E	Implement a fuel modification program, which also includes residential maintenance requirements and enforcement, plan submittal and approval process, guidelines for planting, and a listing of undesirable plant species. Require builders and developers to submit their plans, complete with proposed fuel modification zones, to the local fire department for review and approval prior to beginning construction.	60	69	76		70	62	52	92	481	60	high
13.F	Establish a standard safety zone of 30 feet around county/city owned structures that are vulnerable to the effects of wildfire. Encourage private and commercial property owners to adopt the same.	76	69	62		70	60	52	92	481	60	high
14.A	Develop community wildfire mitigation plans that identify and name areas for hazard fuel reduction treatments, and recommend the types of methods of treatments.	49	59	87		70	60	52	92	469	59	high
14.B	Continue to have public education outreach for wildfire awareness month in May of each year.	42	51	62		73		52	94	374	47	low
14.C	Manage vegetation in areas within and adjacent to rights-of-way and in close proximity to critical facilities in order to reduce the risk of tree failure and property damage and avoid creation of wind acceleration corridors within vegetated areas.	70	63	48		70		52	67	370	46	low
14.D	Develop a free annual tree chipping and tree pick-up day that encourages residents living in wind hazard areas to manage trees and shrubs at risk to falling on nearby structures.	42	43	48		70		52	69	324	41	low

14.E	Secure/bolt down the roofs of critical facilities in wind gust hazard areas in order to prevent wind damage.	38	43	46		69		52	92	340	43	low
15.A	In areas at risk to winter storms, retrofit public buildings to withstand snow loads and prevent roof collapse.	52	48	46	37	69	57	52	91	452	57	med
15.B	Develop a public outreach campaign that teaches people how to winterize a house, barn, shed or any other structure that may provide shelter for your family, neighbors, livestock or equipment.	54	64	46	35	69	57	52	69	446	56	med
15.C	Improve communication, collaboration and integration among stakeholders and promote awareness of epidemic threats.	44	61	50	47	69	55	52	92	470	59	high
16.A	Develop public outreach regarding current community plan medicine and plans for vaccines, utilizing the Tri-County information.	72	67		57	71	57	52	69	445	56	med
16.B	Develop a plan for mass morgue and casualties after a major hazard event. Coordination with Sherriff and Tri-County and local hospitals.	83	52		48	71	57	52	69	432	54	med
16.C	Continue planning and training staff for events if they occur.	52	51		59	73	57	52	92	436	55	med
16.D	Continue to communicate regionally with other/all agencies.	60	65		51	73	56	52	72	429	54	med
16.E	Plan to address mitigation if other communities experience an event and citizens are traveling to and through Lyon County. Coordination with NDOT and hospitals in the area.	58	69		26	73	56	52	69	403	50	low

high	med	low
59-70	51-58	41-50

Appendix E
Plan Maintenance Documents

Sample Press Release for

Annual Maintenance Meeting

Lyon County, Nevada is meeting to review and maintain its Multi-Jurisdictional 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 www.lyon-county.org .

Public comments and participation are welcomed. For additional information or to request to participate, or to submit comments, please contact _____, Lyon County Emergency Management, at (775)463-6531 or jpage@lyon-county.org.

Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
PLANNING PROCESS	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action?			
	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?			
HAZARD PROFILES	Has a natural and/or human-caused disaster occurred in this reporting period?			
	Are there natural and/or human-caused hazards that have not been addressed in this HMP and should be?			
	Are additional maps or new hazards studies available? If so, what have they revealed?			
VULNERABILITY ANALYSIS	Do any new critical facilities or infrastructure need to be added to the asset lists?			
	Have there been changes in development patterns that could influence the effects of hazards or create additional risks?			
MITIGATION STRATEGY	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Are the goals still applicable?			
	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 of each phase, if applicable, and the time frame for completing each phase): _____

_____

_____

Milestones	Complete	Projected Date of Completion

Plan Goal(s) Address

Goal: _____

Indicator of Success: _____

Project Status

☐ Project on schedule

☐ Project completed

☐ Project delayed*

*explain _____

☐ Project Cancelled

Project Cost Status

☐ Cost unchanged

☐ Cost overrun*

*explain_____

☐ Cost underrun*

*explain_____

Summary of progress on project for this report:

A. what was accomplished during this reporting period?

B. What obstacles, problems, or delays did you encounter, if any?

C. How was each problem resolved?

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

Other Comments:

Appendix F
Lyon County Tables
Vulnerability Analysis

Table F-1. Lyon County, Total Population and Residential Buildings

Population[1]	Residential Buildings[2]	Total Residential Building Value (2011)[3]
53,179	23,751	$2,517,177.737

[1] Nevada Demographers Office (projected 2017 population)
[2] Lyon County Assessor and Douglas County for Lyon County GIS data 2018
[3] Taxable Assessment Value from Lyon County Assessor data 2018

Table F-2. Lyon County Total Critical Facilities

Facility Category	Name	City	Asset Value
Community	Animal Shelter	Silver Springs	Unknown
Community	Central Branch Library	Yerington	Unknown
Community	Child Support	Yerington	Unknown
Community	Cooperative Extension	Yerington	Unknown
Community	County Administration Complex	Yerington	Unknown
Community	Courthouse & Annex	Yerington	Unknown
Community	Dayton Branch Library	Dayton	Unknown
Community	Dayton Community Center	Dayton	Unknown
Community	Dayton Justice Court	Dayton	Unknown
Community	Dayton Museum	Dayton	Unknown
Community	Dayton Senior Center	Dayton	Unknown
Community	Dispatch/Social Service	Yerington	Unknown
Community	Fernley Branch Library	Fernley	Unknown
Community	Fernley Senior Center	Fernley	Unknown
Community	Historic Dayton Depot	Dayton	Unknown
Community	Historic Dayton Fire Station	Dayton	Unknown
Community	Historic Silver City Fire Station	Silver City	Unknown
Community	Human Services - F2F & WIC, Dayton Office	Dayton Valley	Unknown
Community	Human Services Administration	Silver Springs	Unknown
Community	Human Services F2F/ WIC, Fernley Office	Fernley	Unknown
Community	Human Services F2F/ WIC, Silver Springs Office	Silver Springs	Unknown
Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Community	Lyon County Museum	Yerington	Unknown
Community	Lyon County Trap/Rifle Range	Mason Valley	Unknown
Community	Mason Town Hall	Mason	Unknown
Community	Silver City Community Center	Silver City	Unknown
Community	Silver Springs Airport	Silver Springs	Unknown
Community	Silver Springs Community/ Senior Center Complex	Silver Springs	Unknown
Community	Silver Stage Branch Library	Silver Springs	Unknown
Community	Smith Valley Library	Smith	Unknown
Community	Stagecoach Community Center	Stagecoach	Unknown
Community	Yerington Senior Center	Yerington	Unknown
Education	Cottonwood Elementary School	Fernley	Unknown

Table F-2. Lyon County Total Critical Facilities

Facility Category	Name	City	Asset Value
Education	Dayton Elementary School	Dayton	Unknown
Education	Dayton High School	Dayton	Unknown
Education	Dayton Intermediate School	Dayton	Unknown
Education	East Valley Elementary School	Fernley	Unknown
Education	Fernley Elementary School	Fernley	Unknown
Education	Fernley High School	Fernley	Unknown
Education	Fernley Intermediate School	Fernley	Unknown
Education	Riverpark Elementary School	Dayton	Unknown
Education	Silver Springs Elementary	Silver Springs	Unknown
Education	Silver Stage High School	Silver Springs	Unknown
Education	Silver Stage Middle School	Silver Springs	Unknown
Education	Silverland Middle School	Fernley	Unknown
Education	Smith Valley Schools	Smith	Unknown
Education	Sutro Elementary School	Dayton	Unknown
Education	Yerington Elementary School	Yerington	Unknown
Education	Yerington High School	Yerington	Unknown
Education	Yerington Intermediate School	Yerington	Unknown
Emergency Response	Canal Justice Court/Sheriff's Substation	Fernley	Unknown
Emergency Response	Central Fire Station	Smith	Unknown
Emergency Response	Fire Station 32	Silver Springs	Unknown
Emergency Response	Fire Station 34	Silver City	Unknown
Emergency Response	Fire Station 35	Dayton	Unknown
Emergency Response	Fire Station 36	Mound House	Unknown
Emergency Response	Fire Station 37	Stagecoach	Unknown
Emergency Response	Fire Station 38	Dayton	Unknown
Emergency Response	Fire Station 39	Dayton	Unknown
Emergency Response	Fire Station 40	Smith	$750,000.00
Emergency Response	Fire Station 41	Wellington	Unknown
Emergency Response	Fire Station 42	Smith	$150,000.00
Emergency Response	Fire Station 61	Fernley	Unknown
Emergency Response	Fire Station 62	Fernley	Unknown
Emergency Response	Macatee Building - Sheriff's Sub Station	Silver Springs	Unknown
Emergency Response	Sheriff Complex	Yerington	Unknown
Emergency Response	Sheriff's Sub Station	Dayton	Unknown

Table F-2. Lyon County Total Critical Facilities

Facility Category	Name	City	Asset Value
Emergency Response	Sheriff's Sub Station	Smith	Unknown
Emergency Response	Yerington/Mason Valley Fire Station 1	Yerington	Unknown
Emergency Response	Yerington/Mason Valley Fire Stations 2 & 3	Yerington	Unknown
Health	Med Direct Urgent Care	Dayton	Unknown
Health	Silver Springs Health Clinic	Silver Springs	Unknown
Health	Smith Valley Physicians Clinic	Wellington	Unknown
Health	South Lyon Medical Center	Yerington	Unknown
Incarceration	Jail Complex	Yerington	Unknown
Incarceration	Juvenile Probation/Parks	Dayton	Unknown
Public Works/Utility	Administration Office - Silver Springs	Silver Springs	Unknown
Public Works/Utility	Administration Office - Stagecoach	Stagecoach	Unknown
Public Works/Utility	Atkins Well	Silver Springs	Unknown
Public Works/Utility	Calcite Booster Station	Mound House	$665,000.00
Public Works/Utility	Cardelli Well #8	Dayton	$1,300,000.00
Public Works/Utility	Carson Highland WWTP	Mound House	$300,000.00
Public Works/Utility	Carson Highlands Lift Station	Mound House	$450,000.00
Public Works/Utility	Carson River Estates Lift Station	Dayton	$550,000.00
Public Works/Utility	Central Well	Stagecoach	Unknown
Public Works/Utility	Churchill Downs Well	Stagecoach	Unknown
Public Works/Utility	Churchill Ranchos North & South Wells	Stagecoach	Unknown
Public Works/Utility	Comstock Booster Station	Mound House	$665,000.00
Public Works/Utility	Dayton Valley Estates Booster Station	Dayton	$355,000.00
Public Works/Utility	Dayton Valley Estates Tank #1 (Water Reservoir)	Dayton	$493,000.00
Public Works/Utility	Dayton Valley Estates Tank #2 (Water Reservoir)	Dayton	$276,200.00
Public Works/Utility	Dayton Well #1	Dayton	$42,900.00
Public Works/Utility	Dayton Well #2	Dayton	$41,900.00
Public Works/Utility	Dayton Well #3	Dayton	$41,900.00
Public Works/Utility	Dayton Well #4	Dayton	$780,000.00
Public Works/Utility	Dayton Well #5	Dayton	$1,100,000.00
Public Works/Utility	Dayton Well #6	Dayton	$42,800.00
Public Works/Utility	Dayton Well #7	Dayton	$41,900.00
Public Works/Utility	Deodor Well	Silver Springs	Unknown
Public Works/Utility	DVE #10 (well)	Dayton	$780,000.00

Table F-2. Lyon County Total Critical Facilities

Facility Category	Name	City	Asset Value
Public Works/Utility	DVE #11 (well)	Dayton	$780,000.00
Public Works/Utility	DVE #9 (well)	Dayton	$780,000.00
Public Works/Utility	Eldorado Tank (Water Reservoir)	Dayton	$1,400,000.00
Public Works/Utility	Fort Churchill Well	Silver Springs	Unknown
Public Works/Utility	Grindstone Booster Station	Mound House	$95,000.00
Public Works/Utility	Grindstone Tank (Water Reservoir)	Mound House	$625,500.00
Public Works/Utility	Idaho Well	Silver Springs	Unknown
Public Works/Utility	Industrial Lift Station	Dayton	$450,000.00
Public Works/Utility	Keystone Building	Dayton	$75,000.00
Public Works/Utility	Lake Well	Silver Springs	Unknown
Public Works/Utility	Lift Station #1 (Lyon County)	Dayton	$425,000.00
Public Works/Utility	Lift Station #2 (Lyon County)	Dayton	$623,000.00
Public Works/Utility	Lift Station #3 & #3A (Lyon County)	Dayton	$790,000.00
Public Works/Utility	Lift Station #4 (Lyon County)	Dayton	$425,000.00
Public Works/Utility	Linehan Tank (Water Reservoir)	Mound House	$220,300.00
Public Works/Utility	Lower Booster Station	Dayton	$420,000.00
Public Works/Utility	Lower Dayton Town Tank (Water Reservoir)	Dayton	$50,000.00
Public Works/Utility	M H #12 (Well)	Mound House	$355,000.00
Public Works/Utility	M H #13 (Well)	Mound House	$355,000.00
Public Works/Utility	M H #14 (Well)	Mound House	$355,000.00
Public Works/Utility	Main Utility Office	Dayton	$293,400.00
Public Works/Utility	Miox Building	Dayton	$75,000.00
Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Mound House	$790,300.00
Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$532,200.00
Public Works/Utility	North Dayton WWTP	Dayton	$1,500,000.00
Public Works/Utility	Public Works Maintenance Yard - Silver Springs	Silver Springs	Unknown
Public Works/Utility	Public Works Maintenance Yard -Smith	Smith	Unknown
Public Works/Utility	Public Works Office, Facilities & Corporate Yard	Yerington	Unknown
Public Works/Utility	Rolling A Lift Station	Dayton	$950,000.00
Public Works/Utility	Rolling A Well #20	Dayton	$1,500,000.00
Public Works/Utility	Rolling A WWTP	Dayton	$12,409,300.00
Public Works/Utility	Rose Peak Lift Station	Dayton	$131,100.00
Public Works/Utility	Rose Peak Tank (Water Reservoir)	Dayton	$1,166,000.00

Table F-2. Lyon County Total Critical Facilities

Facility Category	Name	City	Asset Value
Public Works/Utility	Santa Maria Booster Station	Dayton	$455,000.00
Public Works/Utility	Santa Maria Lift Station	Dayton	$550,000.00
Public Works/Utility	Santa Maria Tank (Water Reservoir)	Dayton	$574,500.00
Public Works/Utility	Silver Springs Lift Station	Silver Springs	$450,000.00
Public Works/Utility	Silver Springs WWTP	Silver Springs	$1,661,246.00
Public Works/Utility	Six Mile Tank (Water Reservoir)	Dayton	$2,125,000.00
Public Works/Utility	South Dayton WWTP	Dayton	$3,061,200.00
Public Works/Utility	South Plant Shops (2)	Dayton	$1,750,000.00
Public Works/Utility	Sutro Lift Station	Dayton	$680,000.00
Public Works/Utility	Upper Booster Station	Dayton	$600,000.00
Public Works/Utility	Upper Dayton Town Tank (Water Reservoir)	Dayton	$790,000.00
Public Works/Utility	Water Treatment Plant - Silver Springs	Silver Springs	Unknown

Table F-3. Lyon County, Vulnerable Population and Residential Buildings

Hazard	Population	Residential buildings	Total Residential Building Value
Earthquake (Severe) ~	51,980	23,090	$2,539,900,000
Flooding	12,000	3,252	$357,720,000
Hazardous Materials*	29,000	3,519	$387,090,000
Wildfire (High)~	Unknown	Unknown	Unknown
Wildfire (Moderate)~	Unknown	Unknown	Unknown
Winter Storm – Freeze (High)~	51,980	23,090	$2,539,900,000
Winter Storm – Snow (High)~	Unknown	Unknown	Unknown
Winter Storm – Snow (Medium)~	Unknown	Unknown	Unknown

* Hazardous materials hazard represents a fixed incident.

~ Partial Vulnerability Analysis was completed – population and residential building vulnerability only known when the entire jurisdiction falls within a single hazard level.

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Earthquake (Severe)	Community	Animal Shelter	Mason Valley	Unknown
Earthquake (Severe)	Community	Calcite Booster Station	Fernley	Unknown
Earthquake (Severe)	Community	Carson Highland WWTP	Dayton	Unknown
Earthquake (Severe)	Community	Carson Highlands Lift Station	Dayton	Unknown
Earthquake (Severe)	Community	Carson River Estates Lift Station	Dayton	Unknown
Earthquake (Severe)	Community	Comstock Booster Station	Dayton	Unknown
Earthquake (Severe)	Community	Dayton Valley Estates Booster Station	Dayton	Unknown
Earthquake (Severe)	Community	Dayton Well #6	Fernley	Unknown
Earthquake (Severe)	Community	Fire Station 32	Yerington	Unknown
Earthquake (Severe)	Community	Historic Dayton Fire Station	Yerington	Unknown
Earthquake (Severe)	Community	Historic Silver City Fire Station	Yerington	Unknown
Earthquake (Severe)	Community	Human Services - F2F & WIC, Dayton Office	Yerington	Unknown
Earthquake (Severe)	Community	Human Services - F2F & WIC, Dayton Office	Dayton Valley	Unknown
Earthquake (Severe)	Community	Human Services Administration	Yerington	Unknown
Earthquake (Severe)	Community	Human Services F2F/ WIC, Fernley Office	Fernley	Unknown
Earthquake (Severe)	Community	Human Services F2F/ WIC, Fernley Office	Yerington	Unknown
Earthquake (Severe)	Community	Human Services F2F/ WIC, Silver Springs Office	Dayton	Unknown
Earthquake (Severe)	Community	Human Services F2F/ WIC, Silver Springs Office	Silver Springs	Unknown
Earthquake (Severe)	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Earthquake (Severe)	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Earthquake (Severe)	Community	Lyon County Museum	Yerington	Unknown
Earthquake (Severe)	Community	Sheriff Complex	Dayton	Unknown
Earthquake (Severe)	Community	Sheriff's Sub Station	Silver Springs	Unknown
Earthquake (Severe)	Community	Sheriff's Sub Station	Mason	Unknown
Earthquake (Severe)	Community	Silver Stage Middle School	Silver Springs	Unknown
Earthquake (Severe)	Community	Silverland Middle School	Silver City	Unknown
Earthquake (Severe)	Community	Smith Valley Physicians Clinic	Silver Springs	Unknown
Earthquake (Severe)	Community	Smith Valley Schools	Silver City	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Earthquake (Severe)	Community	South Lyon Medical Center	Smith	Unknown
Earthquake (Severe)	Community	Sutro Elementary School	Silver Springs	Unknown
Earthquake (Severe)	Community	Yerington Elementary School	Silver Springs	Unknown
Earthquake (Severe)	Community	Yerington High School	Stagecoach	Unknown
Earthquake (Severe)	Education	Dayton Valley Estates Tank #1 (Water Reservoir)	Fernley	Unknown
Earthquake (Severe)	Education	Dayton Valley Estates Tank #2 (Water Reservoir)	Dayton	Unknown
Earthquake (Severe)	Education	Dayton Well #1	Dayton	Unknown
Earthquake (Severe)	Education	Dayton Well #2	Dayton	Unknown
Earthquake (Severe)	Education	Dayton Well #3	Fernley	Unknown
Earthquake (Severe)	Education	Dayton Well #4	Fernley	Unknown
Earthquake (Severe)	Education	Dayton Well #5	Fernley	Unknown
Earthquake (Severe)	Education	Dayton Well #6	Fernley	Unknown
Earthquake (Severe)	Education	Dayton Well #7	Smith	Unknown
Earthquake (Severe)	Education	DVE #10 (Well)	Dayton	Unknown
Earthquake (Severe)	Education	Silver City Community Center	Dayton	Unknown
Earthquake (Severe)	Education	Silver Springs Airport	Yerington	Unknown
Earthquake (Severe)	Education	Silver Springs Community/ Senior Center Complex	Yerington	Unknown
Earthquake (Severe)	Education	Silver Springs Health Clinic	Silver Springs	Unknown
Earthquake (Severe)	Education	Silver Stage Branch Library	Yerington	Unknown
Earthquake (Severe)	Education	Yerington Intermediate School	Silver Springs	Unknown
Earthquake (Severe)	Education	Yerington/Mason Valley Fire Station 1	Fernley	Unknown
Earthquake (Severe)	Education	Yerington/Mason Valley Fire Stations 2 & 3	Silver Springs	Unknown
Earthquake (Severe)	Emergency Response	Administration Office - Silver Springs	Silver City	Unknown
Earthquake (Severe)	Emergency Response	Atkins Well	Stagecoach	Unknown
Earthquake (Severe)	Emergency Response	Central Branch Library	Dayton	Unknown
Earthquake (Severe)	Emergency Response	Child Support	Dayton	Unknown
Earthquake (Severe)	Emergency Response	Deodor Well	Fernley	Unknown
Earthquake (Severe)	Emergency Response	DVE #11 (Well)	Fernley	Unknown
Earthquake (Severe)	Emergency Response	DVE #9 (Well)	Silver Springs	Unknown
Earthquake (Severe)	Emergency Response	Eldorado Tank (Water Reservoir)	Dayton	Unknown
Earthquake (Severe)	Emergency Response	Fort Churchill Well	Smith	$750,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Earthquake (Severe)	Emergency Response	Grindstone Booster Station	Mound House	Unknown
Earthquake (Severe)	Emergency Response	Grindstone Tank (Water Reservoir)	Dayton	Unknown
Earthquake (Severe)	Emergency Response	Idaho Well	Smith	$150,000.00
Earthquake (Severe)	Emergency Response	Industrial Lift Station	Fernley	Unknown
Earthquake (Severe)	Emergency Response	Keystone Building	Silver Springs	Unknown
Earthquake (Severe)	Emergency Response	Lift Station #1 (Lyon County)	Smith	Unknown
Earthquake (Severe)	Emergency Response	Lift Station #2 (Lyon County)	Smith	Unknown
Earthquake (Severe)	Emergency Response	Lift Station #3 & #3A (Lyon County)	Wellington	Unknown
Earthquake (Severe)	Emergency Response	Smith Valley Library	Yerington	Unknown
Earthquake (Severe)	Emergency Response	Stagecoach Community Center	Yerington	Unknown
Earthquake (Severe)	Emergency Response	Yerington Senior Center	Yerington	Unknown
Earthquake (Severe)	Health	Canal Justice Court/Sheriff's Substation	Yerington	Unknown
Earthquake (Severe)	Health	Lift Station #4 (Lyon County)	Dayton	Unknown
Earthquake (Severe)	Health	Med Direct Urgent Care	Wellington	Unknown
Earthquake (Severe)	Health	Silver Springs WWTP	Silver Springs	Unknown
Earthquake (Severe)	Incarceration	Historic Dayton Depot	Yerington	Unknown
Earthquake (Severe)	Incarceration	Linehan Tank (Water Reservoir)	Dayton	Unknown
Earthquake (Severe)	Public Works/Utility	Administration Office - Stagecoach	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Carson Highland WWTP	Mound House	$300,000.00
Earthquake (Severe)	Public Works/Utility	Central Well	Dayton	$1,166,000.00
Earthquake (Severe)	Public Works/Utility	Central Fire Station	Stagecoach	Unknown
Earthquake (Severe)	Public Works/Utility	Churchill Downs Well	Mound House	$220,300.00
Earthquake (Severe)	Public Works/Utility	Churchill Ranchos North & South Wells	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Cooperative Extension	Dayton	$1,300,000.00
Earthquake (Severe)	Public Works/Utility	Cottonwood Elementary School	Dayton	$600,000.00
Earthquake (Severe)	Public Works/Utility	Dayton Community Center	Dayton	$355,000.00
Earthquake (Severe)	Public Works/Utility	Dayton Elementary School	Dayton	$790,000.00
Earthquake (Severe)	Public Works/Utility	Dayton High School	Mound House	$355,000.00
Earthquake (Severe)	Public Works/Utility	Dayton Intermediate School	Mound House	$355,000.00
Earthquake (Severe)	Public Works/Utility	Dayton Justice Court	Dayton	$493,000.00
Earthquake (Severe)	Public Works/Utility	Dayton Museum	Dayton	$276,200.00
Earthquake (Severe)	Public Works/Utility	Dayton Senior Center	Dayton	$75,000.00
Earthquake (Severe)	Public Works/Utility	Dispatch/Social Service	Smith	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Earthquake (Severe)	Public Works/Utility	DVE #10 (well)	Dayton	$780,000.00
Earthquake (Severe)	Public Works/Utility	DVE #11 (well)	Dayton	$780,000.00
Earthquake (Severe)	Public Works/Utility	DVE #9 (well)	Dayton	$780,000.00
Earthquake (Severe)	Public Works/Utility	East Valley Elementary School	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Fernley Branch Library	Dayton	$455,000.00
Earthquake (Severe)	Public Works/Utility	Fernley Elementary School	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Fernley High School	Mound House	$355,000.00
Earthquake (Severe)	Public Works/Utility	Fernley Intermediate School	Dayton	$293,400.00
Earthquake (Severe)	Public Works/Utility	Fernley Senior Center	Dayton	$550,000.00
Earthquake (Severe)	Public Works/Utility	Fire Station 34	Dayton	$42,900.00
Earthquake (Severe)	Public Works/Utility	Fire Station 35	Dayton	$450,000.00
Earthquake (Severe)	Public Works/Utility	Fire Station 36	Dayton	$950,000.00
Earthquake (Severe)	Public Works/Utility	Fire Station 39	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Fire Station 40	Stagecoach	Unknown
Earthquake (Severe)	Public Works/Utility	Fire Station 41	Dayton	$574,500.00
Earthquake (Severe)	Public Works/Utility	Fire Station 42	Dayton	$2,125,000.00
Earthquake (Severe)	Public Works/Utility	Fire Station 61	Silver Springs	$450,000.00
Earthquake (Severe)	Public Works/Utility	Lake Well	Stagecoach	Unknown
Earthquake (Severe)	Public Works/Utility	Lower Dayton Town Tank (Water Reservoir)	Dayton	$131,100.00
Earthquake (Severe)	Public Works/Utility	M H #12 (Well)	Dayton	$1,400,000.00
Earthquake (Severe)	Public Works/Utility	M H #13 (Well)	Dayton	$1,750,000.00
Earthquake (Severe)	Public Works/Utility	M H #14 (Well)	Dayton	$680,000.00
Earthquake (Severe)	Public Works/Utility	Main Utility Office	Dayton	$420,000.00
Earthquake (Severe)	Public Works/Utility	Macatee Building - Sheriff's Sub Station	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Miox Building	Dayton	$50,000.00
Earthquake (Severe)	Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Mound House	$790,300.00
Earthquake (Severe)	Public Works/Utility	Mound House 1 Mil Tank (Water Reservoir)	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$532,200.00
Earthquake (Severe)	Public Works/Utility	Mound House 1/2 Mil Tank (Water Reservoir)	Mound House	$665,000.00
Earthquake (Severe)	Public Works/Utility	North Dayton WWTP	Dayton	$1,500,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Earthquake (Severe)	Public Works/Utility	North Dayton WWTP	Mound House	$450,000.00
Earthquake (Severe)	Public Works/Utility	Public Works Maintenance Yard - Silver Springs	Dayton	$550,000.00
Earthquake (Severe)	Public Works/Utility	Public Works Maintenance Yard -Smith	Mound House	$665,000.00
Earthquake (Severe)	Public Works/Utility	Public Works Office, Facilities & Corporate Yard	Dayton	$41,900.00
Earthquake (Severe)	Public Works/Utility	Rolling A Lift Station	Dayton	$41,900.00
Earthquake (Severe)	Public Works/Utility	Rolling A WWTP	Dayton	$12,409,300.00
Earthquake (Severe)	Public Works/Utility	Rolling A WWTP	Dayton	$780,000.00
Earthquake (Severe)	Public Works/Utility	Rose Peak Lift Station	Dayton	$1,100,000.00
Earthquake (Severe)	Public Works/Utility	Santa Maria Booster Station	Dayton	$42,800.00
Earthquake (Severe)	Public Works/Utility	Santa Maria Lift Station	Dayton	$41,900.00
Earthquake (Severe)	Public Works/Utility	Santa Maria Tank (Water Reservoir)	Mound House	$95,000.00
Earthquake (Severe)	Public Works/Utility	Silver Springs Elementary	Dayton	$75,000.00
Earthquake (Severe)	Public Works/Utility	Silver Springs Lift Station	Stagecoach	Unknown
Earthquake (Severe)	Public Works/Utility	Silver Springs WWTP	Silver Springs	$1,661,246.00
Earthquake (Severe)	Public Works/Utility	Silver Stage High School	Yerington	Unknown
Earthquake (Severe)	Public Works/Utility	Six Mile Tank (Water Reservoir)	Mound House	$625,500.00
Earthquake (Severe)	Public Works/Utility	South Dayton WWTP	Dayton	$3,061,200.00
Earthquake (Severe)	Public Works/Utility	South Dayton WWTP	Silver Springs	Unknown
Earthquake (Severe)	Public Works/Utility	South Plant Shops (2)	Dayton	$425,000.00
Earthquake (Severe)	Public Works/Utility	Sutro Lift Station	Dayton	$790,000.00
Earthquake (Severe)	Public Works/Utility	Upper Booster Station	Dayton	$623,000.00
Earthquake (Severe)	Public Works/Utility	Upper Dayton Town Tank (Water Reservoir)	Dayton	$425,000.00
Earthquake (Severe)	Public Works/Utility	Water Treatment Plant - Silver Springs	Dayton	$1,500,000.00
Flooding	Community	Animal Shelter	Mason Valley	Unknown
Flooding	Community	Historic Dayton Depot	Yerington	Unknown
Flooding	Community	Historic Dayton Fire Station	Yerington	Unknown
Flooding	Community	Historic Silver City Fire Station	Yerington	Unknown
Flooding	Community	Human Services - F2F & WIC, Dayton Office	Yerington	Unknown
Flooding	Community	Human Services Administration	Yerington	Unknown
Flooding	Community	Human Services F2F/ WIC, Fernley Office	Yerington	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Flooding	Community	Human Services F2F/ WIC, Silver Springs Office	Dayton	Unknown
Flooding	Community	Human Services F2F/ WIC, Silver Springs Office	Silver Springs	Unknown
Flooding	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Flooding	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Flooding	Community	Lyon County Museum	Yerington	Unknown
Flooding	Education	Silver City Community Center	Dayton	Unknown
Flooding	Education	Silver Springs Airport	Yerington	Unknown
Flooding	Education	Silver Springs Community/ Senior Center Complex	Yerington	Unknown
Flooding	Education	Silver Stage Branch Library	Yerington	Unknown
Flooding	Emergency Response	Central Branch Library	Dayton	Unknown
Flooding	Emergency Response	Child Support	Dayton	Unknown
Flooding	Emergency Response	Smith Valley Library	Yerington	Unknown
Flooding	Emergency Response	Stagecoach Community Center	Yerington	Unknown
Flooding	Emergency Response	Yerington Senior Center	Yerington	Unknown
Flooding	Health	Canal Justice Court/Sheriff's Substation	Yerington	Unknown
Flooding	Incarceration	Fire Station 32	Yerington	Unknown
Flooding	Public Works/Utility	Cooperative Extension	Dayton	$1,300,000.00
Flooding	Public Works/Utility	Dayton Community Center	Dayton	$355,000.00
Flooding	Public Works/Utility	Dayton Justice Court	Dayton	$493,000.00
Flooding	Public Works/Utility	Dayton Museum	Dayton	$276,200.00
Flooding	Public Works/Utility	Dayton Senior Center	Dayton	$75,000.00
Flooding	Public Works/Utility	Dispatch/Social Service	Smith	Unknown
Flooding	Public Works/Utility	DVE #10 (well)	Dayton	$780,000.00
Flooding	Public Works/Utility	DVE #11 (well)	Dayton	$780,000.00
Flooding	Public Works/Utility	DVE #9 (well)	Dayton	$780,000.00
Flooding	Public Works/Utility	Fernley Branch Library	Dayton	$455,000.00
Flooding	Public Works/Utility	Fernley Senior Center	Dayton	$550,000.00
Flooding	Public Works/Utility	Fire Station 34	Dayton	42900
Flooding	Public Works/Utility	Fire Station 35	Dayton	450000
Flooding	Public Works/Utility	Fire Station 36	Dayton	950000
Flooding	Public Works/Utility	Fire Station 39	Silver Springs	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Flooding	Public Works/Utility	Fire Station 61	Silver Springs	450000
Flooding	Public Works/Utility	Macatee Building - Sheriff's Sub Station	Silver Springs	Unknown
Flooding	Public Works/Utility	North Dayton WWTP	Dayton	1500000
Flooding	Public Works/Utility	Rolling A WWTP	Dayton	12409300
Flooding	Public Works/Utility	Silver Springs WWTP	Silver Springs	1661246
Hazardous Materials	Community	Calcite Booster Station	Fernley	Unknown
Hazardous Materials	Community	Cardelli Well #8	Fernley	Unknown
Hazardous Materials	Community	Carson Highland WWTP	Dayton	Unknown
Hazardous Materials	Community	Carson Highlands Lift Station	Dayton	Unknown
Hazardous Materials	Community	Carson River Estates Lift Station	Dayton	Unknown
Hazardous Materials	Community	Comstock Booster Station	Dayton	Unknown
Hazardous Materials	Community	Dayton Valley Estates Booster Station	Dayton	Unknown
Hazardous Materials	Community	Historic Dayton Depot	Yerington	Unknown
Hazardous Materials	Community	Historic Dayton Fire Station	Yerington	Unknown
Hazardous Materials	Community	Historic Silver City Fire Station	Yerington	Unknown
Hazardous Materials	Community	Human Services - F2F & WIC, Dayton Office	Yerington	Unknown
Hazardous Materials	Community	Human Services - F2F & WIC, Dayton Office	Dayton Valley	Unknown
Hazardous Materials	Community	Human Services Administration	Yerington	Unknown
Hazardous Materials	Community	Human Services F2F/ WIC, Fernley Office	Yerington	Unknown
Hazardous Materials	Community	Human Services F2F/ WIC, Fernley Office	Fernley	Unknown
Hazardous Materials	Community	Human Services F2F/ WIC, Silver Springs Office	Dayton	Unknown
Hazardous Materials	Community	Human Services F2F/ WIC, Silver Springs Office	Silver Springs	Unknown
Hazardous Materials	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Hazardous Materials	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Hazardous Materials	Community	Lyon County Museum	Yerington	Unknown
Hazardous Materials	Community	Sheriff Complex	Dayton	Unknown
Hazardous Materials	Community	Sheriff's Sub Station	Silver Springs	Unknown
Hazardous Materials	Community	Sheriff's Sub Station	Mason	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Hazardous Materials	Community	Smith Valley Physicians Clinic	Silver Springs	Unknown
Hazardous Materials	Community	South Lyon Medical Center	Smith	Unknown
Hazardous Materials	Education	Dayton Valley Estates Tank #1 (Water Reservoir)	Fernley	Unknown
Hazardous Materials	Education	Dayton Valley Estates Tank #2 (Water Reservoir)	Dayton	Unknown
Hazardous Materials	Education	Dayton Well #1	Dayton	Unknown
Hazardous Materials	Education	Dayton Well #2	Dayton	Unknown
Hazardous Materials	Education	Dayton Well #3	Fernley	Unknown
Hazardous Materials	Education	Dayton Well #4	Fernley	Unknown
Hazardous Materials	Education	Dayton Well #5	Fernley	Unknown
Hazardous Materials	Education	Dayton Well #6	Fernley	Unknown
Hazardous Materials	Education	Dayton Well #7	Smith	Unknown
Hazardous Materials	Education	DVE #10 (Well)	Dayton	Unknown
Hazardous Materials	Education	Silver City Community Center	Dayton	Unknown
Hazardous Materials	Education	Silver Springs Airport	Yerington	Unknown
Hazardous Materials	Education	Silver Springs Community/ Senior Center Complex	Yerington	Unknown
Hazardous Materials	Education	Silver Stage Branch Library	Yerington	Unknown
Hazardous Materials	Emergency Response	DVE #11 (Well)	Fernley	Unknown
Hazardous Materials	Emergency Response	DVE #9 (Well)	Silver Springs	Unknown
Hazardous Materials	Emergency Response	Eldorado Tank (Water Reservoir)	Dayton	Unknown
Hazardous Materials	Emergency Response	Grindstone Booster Station	Mound House	Unknown
Hazardous Materials	Emergency Response	Grindstone Tank (Water Reservoir)	Dayton	Unknown
Hazardous Materials	Emergency Response	Industrial Lift Station	Fernley	Unknown
Hazardous Materials	Emergency Response	Keystone Building	Silver Springs	Unknown
Hazardous Materials	Emergency Response	Lift Station #1 (Lyon County)	Smith	Unknown
Hazardous Materials	Emergency Response	Lift Station #2 (Lyon County)	Smith	Unknown
Hazardous Materials	Emergency Response	Lift Station #3 & #3A (Lyon County)	Wellington	Unknown
Hazardous Materials	Emergency Response	Smith Valley Library	Yerington	Unknown
Hazardous Materials	Emergency Response	Stagecoach Community Center	Yerington	Unknown
Hazardous Materials	Emergency Response	Yerington Senior Center	Yerington	Unknown
Hazardous Materials	Health	Canal Justice Court/Sheriff's Substation	Yerington	Unknown
Hazardous Materials	Health	Lift Station #4 (Lyon County)	Dayton	Unknown
Hazardous Materials	Incarceration	Fire Station 32	Yerington	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Hazardous Materials	Incarceration	Linehan Tank (Water Reservoir)	Dayton	Unknown
Hazardous Materials	Public Works/Utility	Carson Highland WWTP	Mound House	$300,000.00
Hazardous Materials	Public Works/Utility	Cottonwood Elementary School	Dayton	$420,000.00
Hazardous Materials	Public Works/Utility	Dayton Elementary School	Dayton	$50,000.00
Hazardous Materials	Public Works/Utility	Dayton High School	Mound House	$355,000.00
Hazardous Materials	Public Works/Utility	Dayton Intermediate School	Mound House	$355,000.00
Hazardous Materials	Public Works/Utility	East Valley Elementary School	Silver Springs	Unknown
Hazardous Materials	Public Works/Utility	Fernley Elementary School	Silver Springs	Unknown
Hazardous Materials	Public Works/Utility	Fernley High School	Mound House	$355,000.00
Hazardous Materials	Public Works/Utility	Fernley Intermediate School	Dayton	$293,400.00
Hazardous Materials	Public Works/Utility	Fire Station 34	Dayton	$42,900.00
Hazardous Materials	Public Works/Utility	Fire Station 35	Dayton	$450,000.00
Hazardous Materials	Public Works/Utility	Fire Station 36	Dayton	$950,000.00
Hazardous Materials	Public Works/Utility	Fire Station 39	Silver Springs	Unknown
Hazardous Materials	Public Works/Utility	Fire Station 61	Silver Springs	$450,000.00
Hazardous Materials	Public Works/Utility	Lower Dayton Town Tank (Water Reservoir)	Dayton	$131,100.00
Hazardous Materials	Public Works/Utility	M H #12 (Well)	Dayton	$1,166,000.00
Hazardous Materials	Public Works/Utility	M H #13 (Well)	Dayton	$1,750,000.00
Hazardous Materials	Public Works/Utility	M H #14 (Well)	Dayton	$680,000.00
Hazardous Materials	Public Works/Utility	Main Utility Office	Dayton	$600,000.00
Hazardous Materials	Public Works/Utility	Macatee Building - Sheriff's Sub Station	Silver Springs	Unknown
Hazardous Materials	Public Works/Utility	Miox Building	Dayton	$790,000.00
Hazardous Materials	Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Mound House	$790,300.00
Hazardous Materials	Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Silver Springs	Unknown
Hazardous Materials	Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$532,200.00
Hazardous Materials	Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$665,000.00
Hazardous Materials	Public Works/Utility	North Dayton WWTP	Dayton	$1,500,000.00
Hazardous Materials	Public Works/Utility	North Dayton WWTP	Mound House	$450,000.00
Hazardous Materials	Public Works/Utility	Public Works Maintenance Yard - Silver Springs	Dayton	$550,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Hazardous Materials	Public Works/Utility	Public Works Maintenance Yard -Smith	Mound House	$665,000.00
Hazardous Materials	Public Works/Utility	Public Works Office, Facilities & Corporate Yard	Dayton	$41,900.00
Hazardous Materials	Public Works/Utility	Rolling A Lift Station	Dayton	$41,900.00
Hazardous Materials	Public Works/Utility	Rolling A WWTP	Dayton	$12,409,300.00
Hazardous Materials	Public Works/Utility	Rolling A WWTP	Dayton	$780,000.00
Hazardous Materials	Public Works/Utility	Rose Peak Lift Station	Dayton	$1,100,000.00
Hazardous Materials	Public Works/Utility	Santa Maria Booster Station	Dayton	$42,800.00
Hazardous Materials	Public Works/Utility	Santa Maria Lift Station	Dayton	$41,900.00
Hazardous Materials	Public Works/Utility	Santa Maria Tank (Water Reservoir)	Mound House	$95,000.00
Hazardous Materials	Public Works/Utility	Silver Springs Elementary	Dayton	$75,000.00
Hazardous Materials	Public Works/Utility	Silver Springs WWTP	Silver Springs	$1,661,246.00
Hazardous Materials	Public Works/Utility	Silver Stage High School	Yerington	Unknown
Hazardous Materials	Public Works/Utility	Six Mile Tank (Water Reservoir)	Mound House	$625,500.00
Hazardous Materials	Public Works/Utility	South Dayton WWTP	Dayton	$3,061,200.00
Hazardous Materials	Public Works/Utility	South Dayton WWTP	Silver Springs	Unknown
Hazardous Materials	Public Works/Utility	South Plant Shops (2)	Dayton	$425,000.00
Hazardous Materials	Public Works/Utility	Sutro Lift Station	Dayton	$790,000.00
Hazardous Materials	Public Works/Utility	Upper Booster Station	Dayton	$623,000.00
Hazardous Materials	Public Works/Utility	Upper Dayton Town Tank (Water Reservoir)	Dayton	$425,000.00
Wildfire (High)	Community	Silverland Middle School	Silver City	Unknown
Wildfire (High)	Community	Smith Valley Schools	Silver City	Unknown
Wildfire (High)	Emergency Response	Administration Office - Silver Springs	Silver City	Unknown
Wildfire (Moderate)	Community	Animal Shelter	Mason Valley	Unknown
Wildfire (Moderate)	Community	Carson Highland WWTP	Dayton	Unknown
Wildfire (Moderate)	Community	Carson Highlands Lift Station	Dayton	Unknown
Wildfire (Moderate)	Community	Carson River Estates Lift Station	Dayton	Unknown
Wildfire (Moderate)	Community	Comstock Booster Station	Dayton	Unknown
Wildfire (Moderate)	Community	Dayton Valley Estates Booster Station	Dayton	Unknown
Wildfire (Moderate)	Community	Human Services - F2F & WIC, Dayton Office	Dayton Valley	Unknown
Wildfire (Moderate)	Community	Human Services F2F/ WIC, Silver Springs Office	Dayton	Unknown
Wildfire (Moderate)	Community	Sheriff Complex	Dayton	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Wildfire (Moderate)	Community	Sheriff's Sub Station	Mason	Unknown
Wildfire (Moderate)	Community	South Lyon Medical Center	Smith	Unknown
Wildfire (Moderate)	Education	Dayton Valley Estates Tank #2 (Water Reservoir)	Dayton	Unknown
Wildfire (Moderate)	Education	Dayton Well #1	Dayton	Unknown
Wildfire (Moderate)	Education	Dayton Well #2	Dayton	Unknown
Wildfire (Moderate)	Education	Dayton Well #7	Smith	Unknown
Wildfire (Moderate)	Education	DVE #10 (Well)	Dayton	Unknown
Wildfire (Moderate)	Education	Silver City Community Center	Dayton	Unknown
Wildfire (Moderate)	Emergency Response	Central Branch Library	Dayton	Unknown
Wildfire (Moderate)	Emergency Response	Child Support	Dayton	Unknown
Wildfire (Moderate)	Emergency Response	Eldorado Tank (Water Reservoir)	Dayton	Unknown
Wildfire (Moderate)	Emergency Response	Fort Churchill Well	Smith	$750,000.00
Wildfire (Moderate)	Emergency Response	Grindstone Booster Station	Mound House	Unknown
Wildfire (Moderate)	Emergency Response	Grindstone Tank (Water Reservoir)	Dayton	Unknown
Wildfire (Moderate)	Emergency Response	Idaho Well	Smith	$150,000.00
Wildfire (Moderate)	Emergency Response	Lift Station #1 (Lyon County)	Smith	Unknown
Wildfire (Moderate)	Emergency Response	Lift Station #2 (Lyon County)	Smith	Unknown
Wildfire (Moderate)	Emergency Response	Lift Station #3 & #3A (Lyon County)	Wellington	Unknown
Wildfire (Moderate)	Health	Lift Station #4 (Lyon County)	Dayton	Unknown
Wildfire (Moderate)	Health	Med Direct Urgent Care	Wellington	Unknown
Wildfire (Moderate)	Incarceration	Linehan Tank (Water Reservoir)	Dayton	Unknown
Wildfire (Moderate)	Public Works/Utility	Carson Highland WWTP	Mound House	$300,000.00
Wildfire (Moderate)	Public Works/Utility	Central Well	Dayton	$1,166,000.00
Wildfire (Moderate)	Public Works/Utility	Churchill Downs Well	Mound House	$220,300.00
Wildfire (Moderate)	Public Works/Utility	Cooperative Extension	Dayton	$1,300,000.00
Wildfire (Moderate)	Public Works/Utility	Cottonwood Elementary School	Dayton	$600,000.00
Wildfire (Moderate)	Public Works/Utility	Dayton Community Center	Dayton	$355,000.00
Wildfire (Moderate)	Public Works/Utility	Dayton Elementary School	Dayton	$790,000.00
Wildfire (Moderate)	Public Works/Utility	Dayton High School	Mound House	$355,000.00
Wildfire (Moderate)	Public Works/Utility	Dayton Intermediate School	Mound House	$355,000.00
Wildfire (Moderate)	Public Works/Utility	Dayton Justice Court	Dayton	$493,000.00
Wildfire (Moderate)	Public Works/Utility	Dayton Museum	Dayton	$276,200.00
Wildfire (Moderate)	Public Works/Utility	Dayton Senior Center	Dayton	$75,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Wildfire (Moderate)	Public Works/Utility	Dispatch/Social Service	Smith	Unknown
Wildfire (Moderate)	Public Works/Utility	DVE #10 (well)	Dayton	$780,000.00
Wildfire (Moderate)	Public Works/Utility	DVE #11 (well)	Dayton	$780,000.00
Wildfire (Moderate)	Public Works/Utility	DVE #9 (well)	Dayton	$780,000.00
Wildfire (Moderate)	Public Works/Utility	Fernley Branch Library	Dayton	$455,000.00
Wildfire (Moderate)	Public Works/Utility	Fernley High School	Mound House	$355,000.00
Wildfire (Moderate)	Public Works/Utility	Fernley Intermediate School	Dayton	$293,400.00
Wildfire (Moderate)	Public Works/Utility	Fernley Senior Center	Dayton	$550,000.00
Wildfire (Moderate)	Public Works/Utility	Fire Station 34	Dayton	$42,900.00
Wildfire (Moderate)	Public Works/Utility	Fire Station 35	Dayton	$450,000.00
Wildfire (Moderate)	Public Works/Utility	Fire Station 36	Dayton	$950,000.00
Wildfire (Moderate)	Public Works/Utility	Fire Station 41	Dayton	$574,500.00
Wildfire (Moderate)	Public Works/Utility	Fire Station 42	Dayton	$2,125,000.00
Wildfire (Moderate)	Public Works/Utility	Lower Dayton Town Tank (Water Reservoir)	Dayton	$131,100.00
Wildfire (Moderate)	Public Works/Utility	M H #12 (Well)	Dayton	$1,400,000.00
Wildfire (Moderate)	Public Works/Utility	M H #13 (Well)	Dayton	$1,750,000.00
Wildfire (Moderate)	Public Works/Utility	M H #14 (Well)	Dayton	$680,000.00
Wildfire (Moderate)	Public Works/Utility	Main Utility Office	Dayton	$420,000.00
Wildfire (Moderate)	Public Works/Utility	Miox Building	Dayton	$50,000.00
Wildfire (Moderate)	Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Mound House	$790,300.00
Wildfire (Moderate)	Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$532,200.00
Wildfire (Moderate)	Public Works/Utility	Mound House 1/2 Mil Tank (Water Reservoir)	Mound House	$665,000.00
Wildfire (Moderate)	Public Works/Utility	North Dayton WWTP	Dayton	$1,500,000.00
Wildfire (Moderate)	Public Works/Utility	North Dayton WWTP	Mound House	$450,000.00
Wildfire (Moderate)	Public Works/Utility	Public Works Maintenance Yard - Silver Springs	Dayton	$550,000.00
Wildfire (Moderate)	Public Works/Utility	Public Works Maintenance Yard -Smith	Mound House	$665,000.00
Wildfire (Moderate)	Public Works/Utility	Public Works Office, Facilities & Corporate Yard	Dayton	$41,900.00
Wildfire (Moderate)	Public Works/Utility	Rolling A Lift Station	Dayton	$41,900.00
Wildfire (Moderate)	Public Works/Utility	Rolling A WWTP	Dayton	$12,409,300.00
Wildfire (Moderate)	Public Works/Utility	Rolling A WWTP	Dayton	$780,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Wildfire (Moderate)	Public Works/Utility	Rose Peak Lift Station	Dayton	$1,100,000.00
Wildfire (Moderate)	Public Works/Utility	Santa Maria Booster Station	Dayton	$42,800.00
Wildfire (Moderate)	Public Works/Utility	Santa Maria Lift Station	Dayton	$41,900.00
Wildfire (Moderate)	Public Works/Utility	Santa Maria Tank (Water Reservoir)	Mound House	$95,000.00
Wildfire (Moderate)	Public Works/Utility	Silver Springs Elementary	Dayton	$75,000.00
Wildfire (Moderate)	Public Works/Utility	Six Mile Tank (Water Reservoir)	Mound House	$625,500.00
Wildfire (Moderate)	Public Works/Utility	South Dayton WWTP	Dayton	$3,061,200.00
Wildfire (Moderate)	Public Works/Utility	South Plant Shops (2)	Dayton	$425,000.00
Wildfire (Moderate)	Public Works/Utility	Sutro Lift Station	Dayton	$790,000.00
Wildfire (Moderate)	Public Works/Utility	Upper Booster Station	Dayton	$623,000.00
Wildfire (Moderate)	Public Works/Utility	Upper Dayton Town Tank (Water Reservoir)	Dayton	$425,000.00
Wildfire (Moderate)	Public Works/Utility	Water Treatment Plant - Silver Springs	Dayton	$1,500,000.00
Winter Storm - Freeze (High)	Community	Animal Shelter	Mason Valley	Unknown
Winter Storm – Freeze (High)	Community	Calcite Booster Station	Fernley	Unknown
Winter Storm – Freeze (High)	Community	Carson Highland WWTP	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Carson Highlands Lift Station	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Carson River Estates Lift Station	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Comstock Booster Station	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Dayton Valley Estates Booster Station	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Dayton Well #6	Fernley	Unknown
Winter Storm – Freeze (High)	Community	Fire Station 32	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Historic Dayton Fire Station	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Historic Silver City Fire Station	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Human Services - F2F & WIC, Dayton Office	Yerington	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Community	Human Services - F2F & WIC, Dayton Office	Dayton Valley	Unknown
Winter Storm – Freeze (High)	Community	Human Services Administration	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Human Services F2F/ WIC, Fernley Office	Fernley	Unknown
Winter Storm – Freeze (High)	Community	Human Services F2F/ WIC, Fernley Office	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Human Services F2F/ WIC, Silver Springs Office	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Human Services F2F/ WIC, Silver Springs Office	Silver Springs	Unknown
Winter Storm – Freeze (High)	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Lyon County Museum	Yerington	Unknown
Winter Storm – Freeze (High)	Community	Sheriff Complex	Dayton	Unknown
Winter Storm – Freeze (High)	Community	Sheriff's Sub Station	Silver Springs	Unknown
Winter Storm – Freeze (High)	Community	Sheriff's Sub Station	Mason	Unknown
Winter Storm – Freeze (High)	Community	Silver Stage Middle School	Silver Springs	Unknown
Winter Storm – Freeze (High)	Community	Silverland Middle School	Silver City	Unknown
Winter Storm – Freeze (High)	Community	Smith Valley Physicians Clinic	Silver Springs	Unknown
Winter Storm – Freeze (High)	Community	Smith Valley Schools	Silver City	Unknown
Winter Storm – Freeze (High)	Community	South Lyon Medical Center	Smith	Unknown
Winter Storm – Freeze (High)	Community	Sutro Elementary School	Silver Springs	Unknown
Winter Storm – Freeze (High)	Community	Yerington Elementary School	Silver Springs	Unknown
Winter Storm – Freeze (High)	Community	Yerington High School	Stagecoach	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Education	Dayton Valley Estates Tank #1 (Water Reservoir)	Fernley	Unknown
Winter Storm – Freeze (High)	Education	Dayton Valley Estates Tank #2 (Water Reservoir)	Dayton	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #1	Dayton	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #2	Dayton	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #3	Fernley	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #4	Fernley	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #5	Fernley	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #6	Fernley	Unknown
Winter Storm – Freeze (High)	Education	Dayton Well #7	Smith	Unknown
Winter Storm – Freeze (High)	Education	DVE #10 (Well)	Dayton	Unknown
Winter Storm – Freeze (High)	Education	Silver City Community Center	Dayton	Unknown
Winter Storm – Freeze (High)	Education	Silver Springs Airport	Yerington	Unknown
Winter Storm – Freeze (High)	Education	Silver Springs Community/ Senior Center Complex	Yerington	Unknown
Winter Storm – Freeze (High)	Education	Silver Springs Health Clinic	Silver Springs	Unknown
Winter Storm – Freeze (High)	Education	Silver Stage Branch Library	Yerington	Unknown
Winter Storm – Freeze (High)	Education	Yerington Intermediate School	Silver Springs	Unknown
Winter Storm – Freeze (High)	Education	Yerington/Mason Valley Fire Station 1	Fernley	Unknown
Winter Storm – Freeze (High)	Education	Yerington/Mason Valley Fire Stations 2 & 3	Silver Springs	Unknown
Winter Storm – Freeze (High)	Emergency Response	Administration Office - Silver Springs	Silver City	Unknown
Winter Storm – Freeze (High)	Emergency Response	Atkins Well	Stagecoach	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Emergency Response	Central Branch Library	Dayton	Unknown
Winter Storm – Freeze (High)	Emergency Response	Child Support	Dayton	Unknown
Winter Storm – Freeze (High)	Emergency Response	Deodor Well	Fernley	Unknown
Winter Storm – Freeze (High)	Emergency Response	DVE #11 (Well)	Fernley	Unknown
Winter Storm – Freeze (High)	Emergency Response	DVE #9 (Well)	Silver Springs	Unknown
Winter Storm – Freeze (High)	Emergency Response	Eldorado Tank (Water Reservoir)	Dayton	Unknown
Winter Storm – Freeze (High)	Emergency Response	Fort Churchill Well	Smith	$750,000.00
Winter Storm – Freeze (High)	Emergency Response	Grindstone Booster Station	Mound House	Unknown
Winter Storm – Freeze (High)	Emergency Response	Grindstone Tank (Water Reservoir)	Dayton	Unknown
Winter Storm – Freeze (High)	Emergency Response	Idaho Well	Smith	$150,000.00
Winter Storm – Freeze (High)	Emergency Response	Industrial Lift Station	Fernley	Unknown
Winter Storm – Freeze (High)	Emergency Response	Keystone Building	Silver Springs	Unknown
Winter Storm – Freeze (High)	Emergency Response	Lift Station #1 (Lyon County)	Smith	Unknown
Winter Storm – Freeze (High)	Emergency Response	Lift Station #2 (Lyon County)	Smith	Unknown
Winter Storm – Freeze (High)	Emergency Response	Lift Station #3 & #3A (Lyon County)	Wellington	Unknown
Winter Storm – Freeze (High)	Emergency Response	Smith Valley Library	Yerington	Unknown
Winter Storm – Freeze (High)	Emergency Response	Stagecoach Community Center	Yerington	Unknown
Winter Storm – Freeze (High)	Emergency Response	Yerington Senior Center	Yerington	Unknown
Winter Storm – Freeze (High)	Health	Canal Justice Court/Sheriff's Substation	Yerington	Unknown
Winter Storm – Freeze (High)	Health	Lift Station #4 (Lyon County)	Dayton	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Health	Med Direct Urgent Care	Wellington	Unknown
Winter Storm – Freeze (High)	Health	Silver Springs WWTP	Silver Springs	Unknown
Winter Storm – Freeze (High)	Incarceration	Historic Dayton Depot	Yerington	Unknown
Winter Storm – Freeze (High)	Incarceration	Linehan Tank (Water Reservoir)	Dayton	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Administration Office - Stagecoach	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Carson Highland WWTP	Mound House	$300,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Central Well	Dayton	$1,166,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Central Fire Station	Stagecoach	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Churchill Downs Well	Mound House	$220,300.00
Winter Storm – Freeze (High)	Public Works/Utility	Churchill Ranchos North & South Wells	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Cooperative Extension	Dayton	$1,300,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Cottonwood Elementary School	Dayton	$600,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton Community Center	Dayton	$355,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton Elementary School	Dayton	$790,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton High School	Mound House	$355,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton Intermediate School	Mound House	$355,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton Justice Court	Dayton	$493,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton Museum	Dayton	$276,200.00
Winter Storm – Freeze (High)	Public Works/Utility	Dayton Senior Center	Dayton	$75,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Dispatch/Social Service	Smith	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Public Works/Utility	DVE #10 (well)	Dayton	$780,000.00
Winter Storm – Freeze (High)	Public Works/Utility	DVE #11 (well)	Dayton	$780,000.00
Winter Storm – Freeze (High)	Public Works/Utility	DVE #9 (well)	Dayton	$780,000.00
Winter Storm – Freeze (High)	Public Works/Utility	East Valley Elementary School	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Fernley Branch Library	Dayton	$455,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Fernley Elementary School	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Fernley High School	Mound House	$355,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Fernley Intermediate School	Dayton	$293,400.00
Winter Storm – Freeze (High)	Public Works/Utility	Fernley Senior Center	Dayton	$550,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 34	Dayton	$42,900.00
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 35	Dayton	$450,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 36	Dayton	$950,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 39	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 40	Stagecoach	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 41	Dayton	$574,500.00
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 42	Dayton	$2,125,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Fire Station 61	Silver Springs	$450,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Lake Well	Stagecoach	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Lower Dayton Town Tank (Water Reservoir)	Dayton	$131,100.00
Winter Storm – Freeze (High)	Public Works/Utility	M H #12 (Well)	Dayton	$1,400,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Public Works/Utility	M H #13 (Well)	Dayton	$1,750,000.00
Winter Storm – Freeze (High)	Public Works/Utility	M H #14 (Well)	Dayton	$680,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Main Utility Office	Dayton	$420,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Macatee Building - Sheriff's Sub Station	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Miox Building	Dayton	$50,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Mound House	$790,300.00
Winter Storm – Freeze (High)	Public Works/Utility	Mound House 1 Mil Tank (Water Reservoir)	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$532,200.00
Winter Storm – Freeze (High)	Public Works/Utility	Mound House 1/2 Mil Tank (Water Reservoir)	Mound House	$665,000.00
Winter Storm – Freeze (High)	Public Works/Utility	North Dayton WWTP	Dayton	$1,500,000.00
Winter Storm – Freeze (High)	Public Works/Utility	North Dayton WWTP	Mound House	$450,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Public Works Maintenance Yard - Silver Springs	Dayton	$550,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Public Works Maintenance Yard -Smith	Mound House	$665,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Public Works Office, Facilities & Corporate Yard	Dayton	$41,900.00
Winter Storm – Freeze (High)	Public Works/Utility	Rolling A Lift Station	Dayton	$41,900.00
Winter Storm – Freeze (High)	Public Works/Utility	Rolling A WWTP	Dayton	$12,409,300.00
Winter Storm – Freeze (High)	Public Works/Utility	Rolling A WWTP	Dayton	$780,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Rose Peak Lift Station	Dayton	$1,100,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Santa Maria Booster Station	Dayton	$42,800.00
Winter Storm – Freeze (High)	Public Works/Utility	Santa Maria Lift Station	Dayton	$41,900.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Freeze (High)	Public Works/Utility	Santa Maria Tank (Water Reservoir)	Mound House	$95,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Silver Springs Elementary	Dayton	$75,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Silver Springs Lift Station	Stagecoach	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Silver Springs WWTP	Silver Springs	$1,661,246.00
Winter Storm – Freeze (High)	Public Works/Utility	Silver Stage High School	Yerington	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Six Mile Tank (Water Reservoir)	Mound House	$625,500.00
Winter Storm – Freeze (High)	Public Works/Utility	South Dayton WWTP	Dayton	$3,061,200.00
Winter Storm – Freeze (High)	Public Works/Utility	South Dayton WWTP	Silver Springs	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	South Plant Shops (2)	Dayton	$425,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Sutro Lift Station	Dayton	$790,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Upper Booster Station	Dayton	$623,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Upper Dayton Town Tank (Water Reservoir)	Dayton	$425,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Water Treatment Plant - Silver Springs	Dayton	$1,500,000.00
Winter Storm – Snow (High)	Community	South Lyon Medical Center	Smith	Unknown
Winter Storm – Snow (High)	Education	Dayton Well #7	Smith	Unknown
Winter Storm – Snow (High)	Emergency Response	Fort Churchill Well	Smith	$750,000.00
Winter Storm – Snow (High)	Emergency Response	Idaho Well	Smith	$150,000.00
Winter Storm – Snow (High)	Emergency Response	Lift Station #1 (Lyon County)	Smith	Unknown
Winter Storm – Snow (High)	Emergency Response	Lift Station #2 (Lyon County)	Smith	Unknown
Winter Storm – Snow (High)	Emergency Response	Lift Station #3 & #3A (Lyon County)	Wellington	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (High)	Health	Med Direct Urgent Care	Wellington	Unknown
Winter Storm – Snow (High)	Public Works/Utility	Dispatch/Social Service	Smith	Unknown
Winter Storm – Snow (Medium)	Community	Animal Shelter	Mason Valley	Unknown
Winter Storm – Snow (Medium)	Community	Calcite Booster Station	Fernley	Unknown
Winter Storm – Snow (Medium)	Community	Carson Highland WWTP	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Carson Highlands Lift Station	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Carson River Estates Lift Station	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Comstock Booster Station	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Dayton Valley Estates Booster Station	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Dayton Well #6	Fernley	Unknown
Winter Storm – Snow (Medium)	Community	Fire Station 32	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Historic Dayton Fire Station	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Historic Silver City Fire Station	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Human Services - F2F & WIC, Dayton Office	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Human Services - F2F & WIC, Dayton Office	Dayton Valley	Unknown
Winter Storm – Snow (Medium)	Community	Human Services Administration	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Human Services F2F/ WIC, Fernley Office	Fernley	Unknown
Winter Storm – Snow (Medium)	Community	Human Services F2F/ WIC, Fernley Office	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Human Services F2F/ WIC, Silver Springs Office	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Human Services F2F/ WIC, Silver Springs Office	Silver Springs	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (Medium)	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Human Services F2F/ WIC, Yerington Offices	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Lyon County Museum	Yerington	Unknown
Winter Storm – Snow (Medium)	Community	Sheriff Complex	Dayton	Unknown
Winter Storm – Snow (Medium)	Community	Sheriff's Sub Station	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Community	Sheriff's Sub Station	Mason	Unknown
Winter Storm – Snow (Medium)	Community	Silver Stage Middle School	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Community	Silverland Middle School	Silver City	Unknown
Winter Storm – Snow (Medium)	Community	Smith Valley Physicians Clinic	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Community	Smith Valley Schools	Silver City	Unknown
Winter Storm – Snow (Medium)	Community	Sutro Elementary School	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Community	Yerington Elementary School	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Community	Yerington High School	Stagecoach	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Valley Estates Tank #1 (Water Reservoir)	Fernley	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Valley Estates Tank #2 (Water Reservoir)	Dayton	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Well #1	Dayton	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Well #2	Dayton	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Well #3	Fernley	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Well #4	Fernley	Unknown
Winter Storm – Snow (Medium)	Education	Dayton Well #5	Fernley	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (Medium)	Education	Dayton Well #6	Fernley	Unknown
Winter Storm – Snow (Medium)	Education	DVE #10 (Well)	Dayton	Unknown
Winter Storm – Snow (Medium)	Education	Silver City Community Center	Dayton	Unknown
Winter Storm – Snow (Medium)	Education	Silver Springs Airport	Yerington	Unknown
Winter Storm – Snow (Medium)	Education	Silver Springs Community/ Senior Center Complex	Yerington	Unknown
Winter Storm – Snow (Medium)	Education	Silver Springs Health Clinic	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Education	Silver Stage Branch Library	Yerington	Unknown
Winter Storm – Snow (Medium)	Education	Yerington Intermediate School	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Education	Yerington/Mason Valley Fire Station 1	Fernley	Unknown
Winter Storm – Snow (Medium)	Education	Yerington/Mason Valley Fire Stations 2 & 3	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Administration Office - Silver Springs	Silver City	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Atkins Well	Stagecoach	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Central Branch Library	Dayton	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Child Support	Dayton	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Deodor Well	Fernley	Unknown
Winter Storm – Snow (Medium)	Emergency Response	DVE #11 (Well)	Fernley	Unknown
Winter Storm – Snow (Medium)	Emergency Response	DVE #9 (Well)	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Eldorado Tank (Water Reservoir)	Dayton	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Grindstone Booster Station	Mound House	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Grindstone Tank (Water Reservoir)	Dayton	Unknown

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (Medium)	Emergency Response	Industrial Lift Station	Fernley	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Keystone Building	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Smith Valley Library	Yerington	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Stagecoach Community Center	Yerington	Unknown
Winter Storm – Snow (Medium)	Emergency Response	Yerington Senior Center	Yerington	Unknown
Winter Storm – Snow (Medium)	Health	Canal Justice Court/Sheriff's Substation	Yerington	Unknown
Winter Storm – Snow (Medium)	Health	Lift Station #4 (Lyon County)	Dayton	Unknown
Winter Storm – Snow (Medium)	Health	Silver Springs WWTP	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Incarceration	Historic Dayton Depot	Yerington	Unknown
Winter Storm – Snow (Medium)	Incarceration	Linehan Tank (Water Reservoir)	Dayton	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Administration Office - Stagecoach	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Carson Highland WWTP	Mound House	$300,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Central Well	Dayton	$1,166,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Central Fire Station	Stagecoach	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Churchill Downs Well	Mound House	$220,300.00
Winter Storm – Snow (Medium)	Public Works/Utility	Churchill Ranchos North & South Wells	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Cooperative Extension	Dayton	$1,300,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Cottonwood Elementary School	Dayton	$600,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton Community Center	Dayton	$355,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton Elementary School	Dayton	$790,000.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

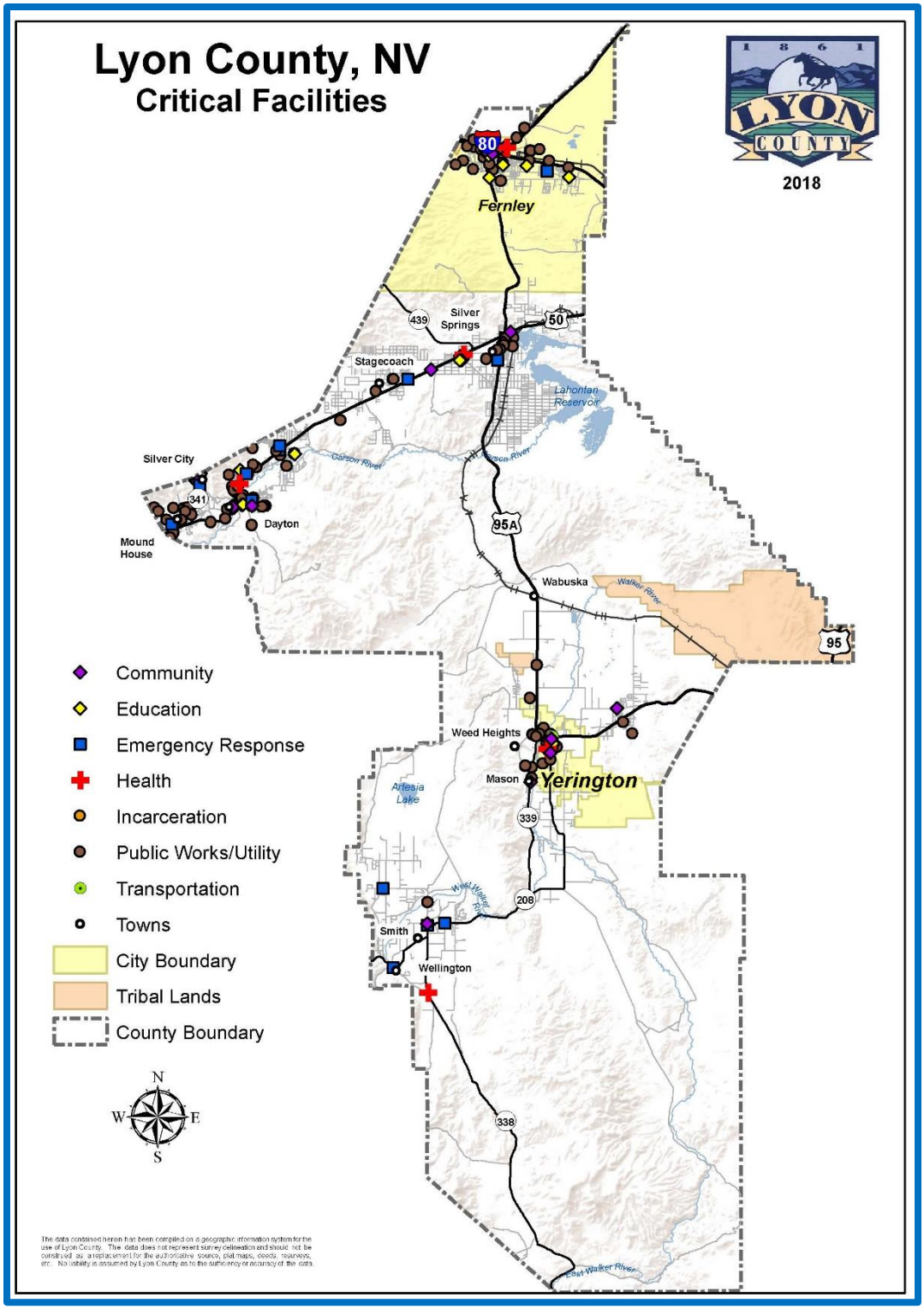
Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton High School	Mound House	$355,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton Intermediate School	Mound House	$355,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton Justice Court	Dayton	$493,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton Museum	Dayton	$276,200.00
Winter Storm – Snow (Medium)	Public Works/Utility	Dayton Senior Center	Dayton	$75,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	DVE #10 (well)	Dayton	$780,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	DVE #11 (well)	Dayton	$780,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	DVE #9 (well)	Dayton	$780,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	East Valley Elementary School	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Fernley Branch Library	Dayton	$455,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fernley Elementary School	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Fernley High School	Mound House	$355,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fernley Intermediate School	Dayton	$293,400.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fernley Senior Center	Dayton	$550,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 34	Dayton	$42,900.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 35	Dayton	$450,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 36	Dayton	$950,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 39	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 40	Stagecoach	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 41	Dayton	$574,500.00

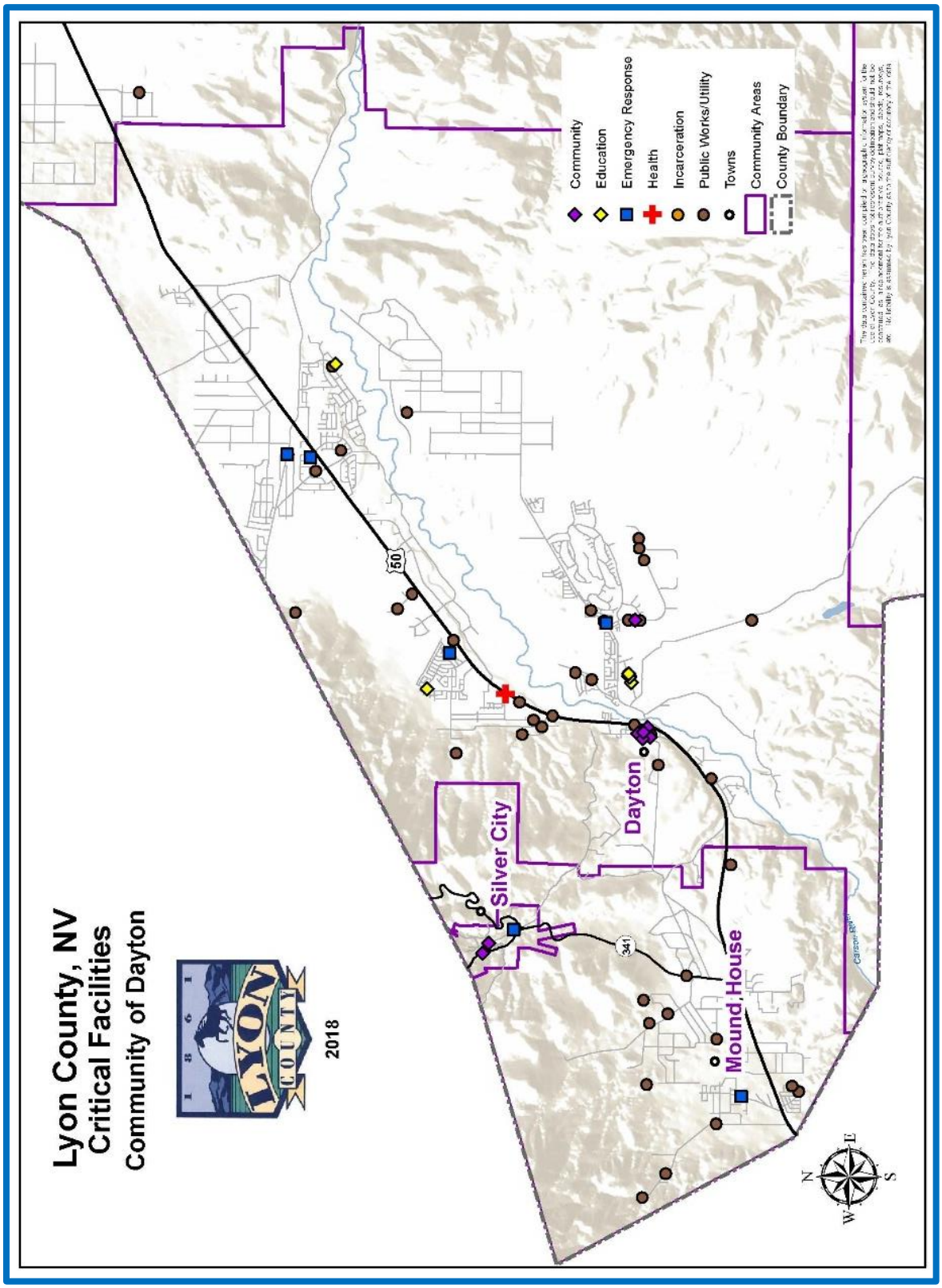
Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

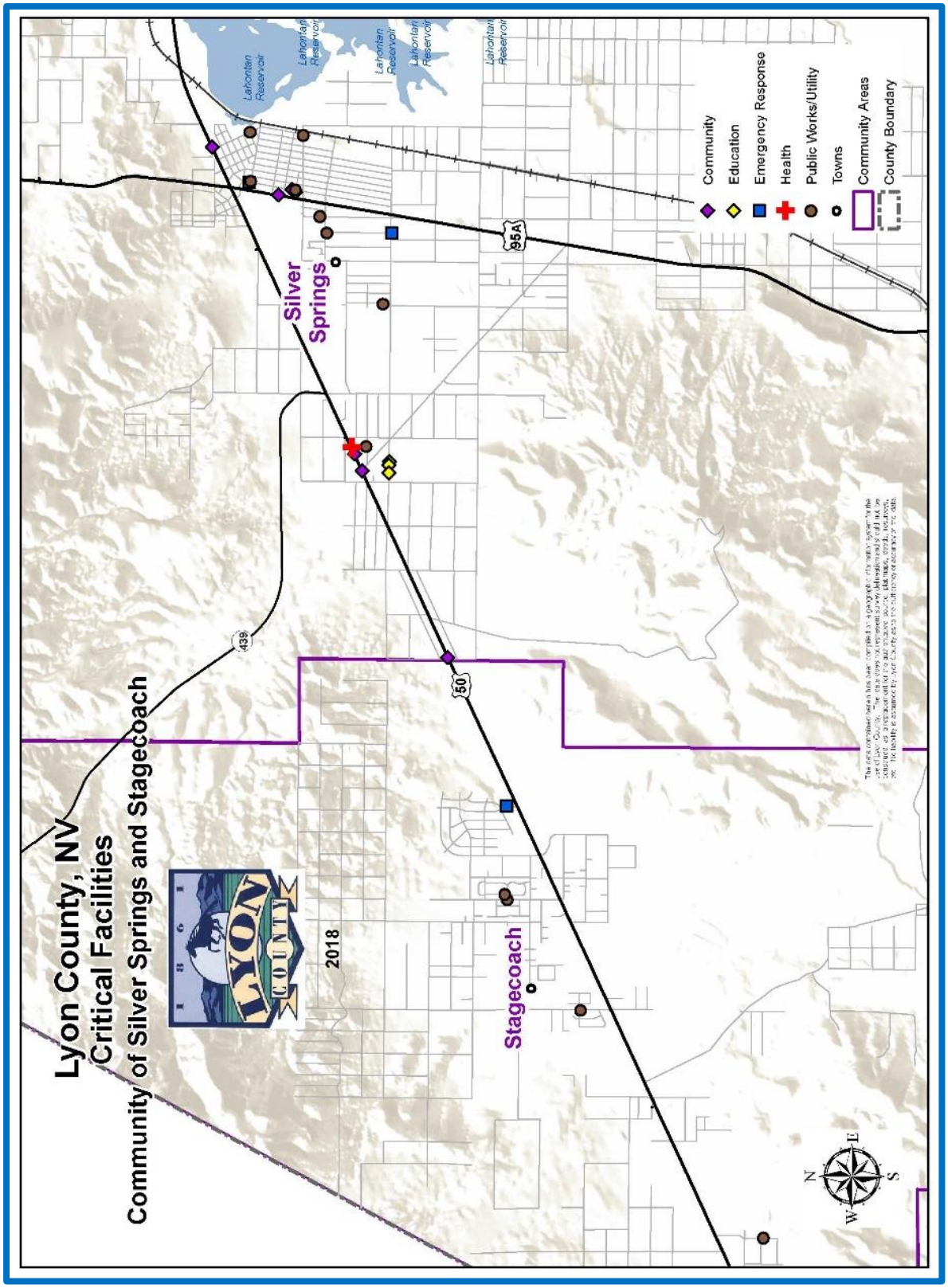
Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 42	Dayton	$2,125,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fire Station 61	Silver Springs	$450,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Lake Well	Stagecoach	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Lower Dayton Town Tank (Water Reservoir)	Dayton	$131,100.00
Winter Storm – Snow (Medium)	Public Works/Utility	M H #12 (Well)	Dayton	$1,400,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	M H #13 (Well)	Dayton	$1,750,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	M H #14 (Well)	Dayton	$680,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Main Utility Office	Dayton	$420,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Macatee Building - Sheriff's Sub Station	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Miox Building	Dayton	$50,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Mound House 1 mil Tank (water reservoir)	Mound House	$790,300.00
Winter Storm – Snow (Medium)	Public Works/Utility	Mound House 1 Mil Tank (Water Reservoir)	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Mound House 1/2 mil Tank (water reservoir)	Mound House	$532,200.00
Winter Storm – Snow (Medium)	Public Works/Utility	Mound House 1/2 Mil Tank (Water Reservoir)	Mound House	$665,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	North Dayton WWTP	Dayton	$1,500,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	North Dayton WWTP	Mound House	$450,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Public Works Maintenance Yard - Silver Springs	Dayton	$550,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Public Works Maintenance Yard -Smith	Mound House	$665,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Public Works Office, Facilities & Corporate Yard	Dayton	$41,900.00
Winter Storm – Snow (Medium)	Public Works/Utility	Rolling A Lift Station	Dayton	$41,900.00

Table F-4. Lyon County, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	City	Asset Value
Winter Storm – Snow (Medium)	Public Works/Utility	Rolling A WWTP	Dayton	$12,409,300.00
Winter Storm – Snow (Medium)	Public Works/Utility	Rolling A WWTP	Dayton	$780,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Rose Peak Lift Station	Dayton	$1,100,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Santa Maria Booster Station	Dayton	$42,800.00
Winter Storm – Snow (Medium)	Public Works/Utility	Santa Maria Lift Station	Dayton	$41,900.00
Winter Storm – Snow (Medium)	Public Works/Utility	Santa Maria Tank (Water Reservoir)	Mound House	$95,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Silver Springs Elementary	Dayton	$75,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Silver Springs Lift Station	Stagecoach	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Silver Springs WWTP	Silver Springs	$1,661,246.00
Winter Storm – Snow (Medium)	Public Works/Utility	Silver Stage High School	Yerington	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Six Mile Tank (Water Reservoir)	Mound House	$625,500.00
Winter Storm – Snow (Medium)	Public Works/Utility	South Dayton WWTP	Dayton	$3,061,200.00
Winter Storm – Snow (Medium)	Public Works/Utility	South Dayton WWTP	Silver Springs	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	South Plant Shops (2)	Dayton	$425,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Sutro Lift Station	Dayton	$790,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Upper Booster Station	Dayton	$623,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Upper Dayton Town Tank (Water Reservoir)	Dayton	$425,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Water Treatment Plant - Silver Springs	Dayton	$1,500,000.00


Lyon County, NV
Critical Facilities
1861
LYON COUNTY
2018
Fernley
Silver Springs
Stagecoach
Lahontan Reservoir
Carson River
Silver City
Dayton
Mound House
Wabuska
Walker River
Weed Heights
Mason
Yerington
Artesia Lake
West Walker River
Smith
Wellington
East Walker River
80
50
439
341
95A
95
339
208
338
Community
Education
Emergency Response
Health
Incarceration
Public Works/Utility
Transportation
Towns
City Boundary
Tribal Lands
County Boundary
N
W
E
S
The data contained herein has been compiled on a geographic information system for the use of Lyon County. The data does not represent survey delineation and should not be construed as a replacement for the authoritative source, plat maps, deeds, surveys, etc. No liability is assumed by Lyon County as to the sufficiency or accuracy of the data.


Lyon County, NV
Critical Facilities
Community of Dayton
2018
Silver City
Dayton
Mound House
50
341
Community
Education
Emergency Response
Health
Incarceration
Public Works/Utility
Towns
Community Areas
County Boundary
N
E
S
W


Lyon County, NV
Critical Facilities
Community of Silver Springs and Stagecoach
2018
Silver Springs
Stagecoach
Lahontan Reservoir
Lahontan Reservoir
Lahontan Reservoir
Lahontan Reservoir
Lahontan Reservoir
95A
50
439
Community
Education
Emergency Response
Health
Public Works/Utility
Towns
Community Areas
County Boundary
N
E
S
W

Appendix G
City of Fernley Tables
Vulnerability Analysis

Table G-1. City of Fernley, Total Population and Residential Buildings

Population[1]	Residential Buildings[2]	Total Residential Building Value (2010)[3]
19,588	8,166	$978,356,911

[1] Nevada Demographers Office (projected 2017 population)
[2] Lyon County Assessor and Douglas County for Lyon County GIS data 2018
[3] Taxable Assessment Value from Lyon County Assessor data 2018

Table G-2. City of Fernley, Total Critical Facilities and Infrastructure

Facility Category	Name	Asset Value
Community	City Hall - Fernley	$11,898,900.00
Health	Renown Urgent Care	Unknown
Public Works/Utility	Cottonwood Shop/Well 11	$1,425,000.00
Public Works/Utility	Desert Lakes Lift Station	$313,400.00
Public Works/Utility	Donner Trails Lift Station	$165,200.00
Public Works/Utility	East Plant Lift Station	$1,268,500.00
Public Works/Utility	Farm District Lift Station	$238,500.00
Public Works/Utility	Fernley WWTP	Unknown
Public Works/Utility	Highway 50 Lift Station	$1,259,000.00
Public Works/Utility	Loves Lift Station	$82,000.00
Public Works/Utility	Meadows Lift Station	$81,900.00
Public Works/Utility	Mesa Drive PRV Station	$124,000.00
Public Works/Utility	Mull Lane PRV Station	$134,000.00
Public Works/Utility	NE Booster Pump Station	$529,700.00
Public Works/Utility	Northeast Tank	$1,571,000.00
Public Works/Utility	Raw Water Tank	Unknown
Public Works/Utility	Ricci Tank	$1,103,000.00
Public Works/Utility	Rolling Meadows Lift	Unknown
Public Works/Utility	Sage Ranch Booster/PRV	$153,500.00
Public Works/Utility	Sage Ranch Tank	$532,000.00
Public Works/Utility	Sage Tank	$1,571,000.00
Public Works/Utility	Water and Wastewater Canal Crossings	Unknown
Public Works/Utility	Water Treatment Plant - Fernley	$67,787,890.00
Public Works/Utility	Well 13	$395,600.00
Public Works/Utility	Well 14	$99,800.00
Public Works/Utility	Well 4	$585,400.00

Table G-2. City of Fernley, Total Critical Facilities and Infrastructure

Facility Category	Name	Asset Value
Public Works/Utility	Well 5	Unknown
Public Works/Utility	Well 8 (non-critical)	Unknown
Public Works/Utility	Well 9 And 9A	$204,600.00
Public Works/Utility	West Plant Lift Station	$598,600.00

Table G-3. City of Fernley, Vulnerable Population and Residential Buildings

Hazard	Population	Residential buildings	Total Residential Building Value
Earthquake (Severe) ~	19,368	7,975	$837,375,000
Flooding	250	120	$12,600,000
Hazardous Materials*+	10,005	1,214	$127,470,000
Winter Storm – Freeze (High)~	19,368	7,975	$837,375,000
Winter Storm – Snow (Medium) ~	19,368	7,975	$837,375,000

* Hazardous materials hazard represents a fixed incident.

+ For hazardous materials impacts were completed at the County level only, therefore City numbers have been derived by applying the City of Fernley's population and residential building percentage (of the County's total) to the County's hazardous material impacts.

~ Partial Vulnerability Analysis was completed – population and residential building vulnerability only known when the entire jurisdiction falls within a single hazard level.

Table G-4. City of Fernley, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	Asset Value
Flooding	Public Works/Utility	Well 5	Unknown
Hazardous Materials	Public Works/Utility	Well 5	Unknown
Hazardous Materials	Community	City Hall - Fernley	$11,898,900.00
Hazardous Materials	Public Works/Utility	Cottonwood Shop/Well 11	$1,425,000.00
Hazardous Materials	Public Works/Utility	Donner Trails Lift Station	$165,200.00
Hazardous Materials	Public Works/Utility	East Plant Lift Station	$1,268,500.00
Hazardous Materials	Public Works/Utility	Farm District Lift Station	$238,500.00
Hazardous Materials	Public Works/Utility	Fernley WWTP	unknown
Hazardous Materials	Public Works/Utility	Loves Lift Station	$82,000.00
Hazardous Materials	Public Works/Utility	Meadows Lift Station	$81,900.00
Hazardous Materials	Public Works/Utility	Mesa Drive PRV Station	$124,000.00
Hazardous Materials	Public Works/Utility	Mull Lane PRV Station	$134,000.00
Hazardous Materials	Public Works/Utility	NE Booster Pump Station	$529,700.00
Hazardous Materials	Public Works/Utility	Northeast Tank	$1,571,000.00
Hazardous Materials	Health	Renown Urgent Care	Unknown
Hazardous Materials	Public Works/Utility	Rolling Meadows Lift	Unknown
Hazardous Materials	Public Works/Utility	Sage Ranch Booster/PRV	$153,500.00
Hazardous Materials	Public Works/Utility	Sage Ranch Tank	$532,000.00
Hazardous Materials	Public Works/Utility	Sage Tank	$1,571,000.00
Hazardous Materials	Public Works/Utility	Water Treatment Plant - Fernley	$67,787,890.00
Hazardous Materials	Public Works/Utility	Well 13	$395,600.00
Hazardous Materials	Public Works/Utility	Well 14	$99,800.00
Hazardous Materials	Public Works/Utility	Well 4	$585,400.00
Hazardous Materials	Public Works/Utility	Well 8 (non-critical)	Unknown
Hazardous Materials	Public Works/Utility	Well 9 And 9A	$204,600.00
Hazardous Materials	Public Works/Utility	West Plant Lift Station	$598,600.00
Earthquake (Severe)	Public Works/Utility	Well 5	Unknown
Earthquake (Severe)	Community	City Hall - Fernley	$11,898,900.00
Earthquake (Severe)	Public Works/Utility	Cottonwood Shop/Well 11	$1,425,000.00
Earthquake (Severe)	Public Works/Utility	Donner Trails Lift Station	$165,200.00
Earthquake (Severe)	Public Works/Utility	East Plant Lift Station	$1,268,500.00
Earthquake (Severe)	Public Works/Utility	Farm District Lift Station	$238,500.00
Earthquake (Severe)	Public Works/Utility	Fernley WWTP	unknown
Earthquake (Severe)	Public Works/Utility	Loves Lift Station	$82,000.00

Table G-4. City of Fernley, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	Asset Value
Earthquake (Severe)	Public Works/Utility	Meadows Lift Station	$81,900.00
Earthquake (Severe)	Public Works/Utility	Mesa Drive PRV Station	$124,000.00
Earthquake (Severe)	Public Works/Utility	Mull Lane PRV Station	$134,000.00
Earthquake (Severe)	Public Works/Utility	NE Booster Pump Station	$529,700.00
Earthquake (Severe)	Public Works/Utility	Northeast Tank	$1,571,000.00
Earthquake (Severe)	Health	Renown Urgent Care	Unknown
Earthquake (Severe)	Public Works/Utility	Rolling Meadows Lift	Unknown
Earthquake (Severe)	Public Works/Utility	Sage Ranch Booster/PRV	$153,500.00
Earthquake (Severe)	Public Works/Utility	Sage Ranch Tank	$532,000.00
Earthquake (Severe)	Public Works/Utility	Sage Tank	$1,571,000.00
Earthquake (Severe)	Public Works/Utility	Water Treatment Plant - Fernley	$67,787,890.00
Earthquake (Severe)	Public Works/Utility	Well 13	$395,600.00
Earthquake (Severe)	Public Works/Utility	Well 14	$99,800.00
Earthquake (Severe)	Public Works/Utility	Well 4	$585,400.00
Earthquake (Severe)	Public Works/Utility	Well 8 (non-critical)	Unknown
Earthquake (Severe)	Public Works/Utility	Well 9 And 9A	$204,600.00
Earthquake (Severe)	Public Works/Utility	West Plant Lift Station	$598,600.00
Earthquake (Severe)	Public Works/Utility	Desert Lakes Lift Station	$313,400.00
Earthquake (Severe)	Public Works/Utility	Highway 50 Lift Station	$1,259,000.00
Earthquake (Severe)	Public Works/Utility	Ricci Tank	$1,103,000.00
Earthquake (Severe)	Public Works/Utility	Raw Water Tank	Unknown
Earthquake (Severe)	Public Works/Utility	Water and Wastewater Canal Crossings	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Well 5	Unknown
Winter Storm – Freeze (High)	Community	City Hall - Fernley	$11,898,900.00
Winter Storm – Freeze (High)	Public Works/Utility	Cottonwood Shop/Well 11	$1,425,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Donner Trails Lift Station	$165,200.00
Winter Storm – Freeze (High)	Public Works/Utility	East Plant Lift Station	$1,268,500.00
Winter Storm – Freeze (High)	Public Works/Utility	Farm District Lift Station	$238,500.00

Table G-4. City of Fernley, Vulnerable Critical Facilities and Infrastructure

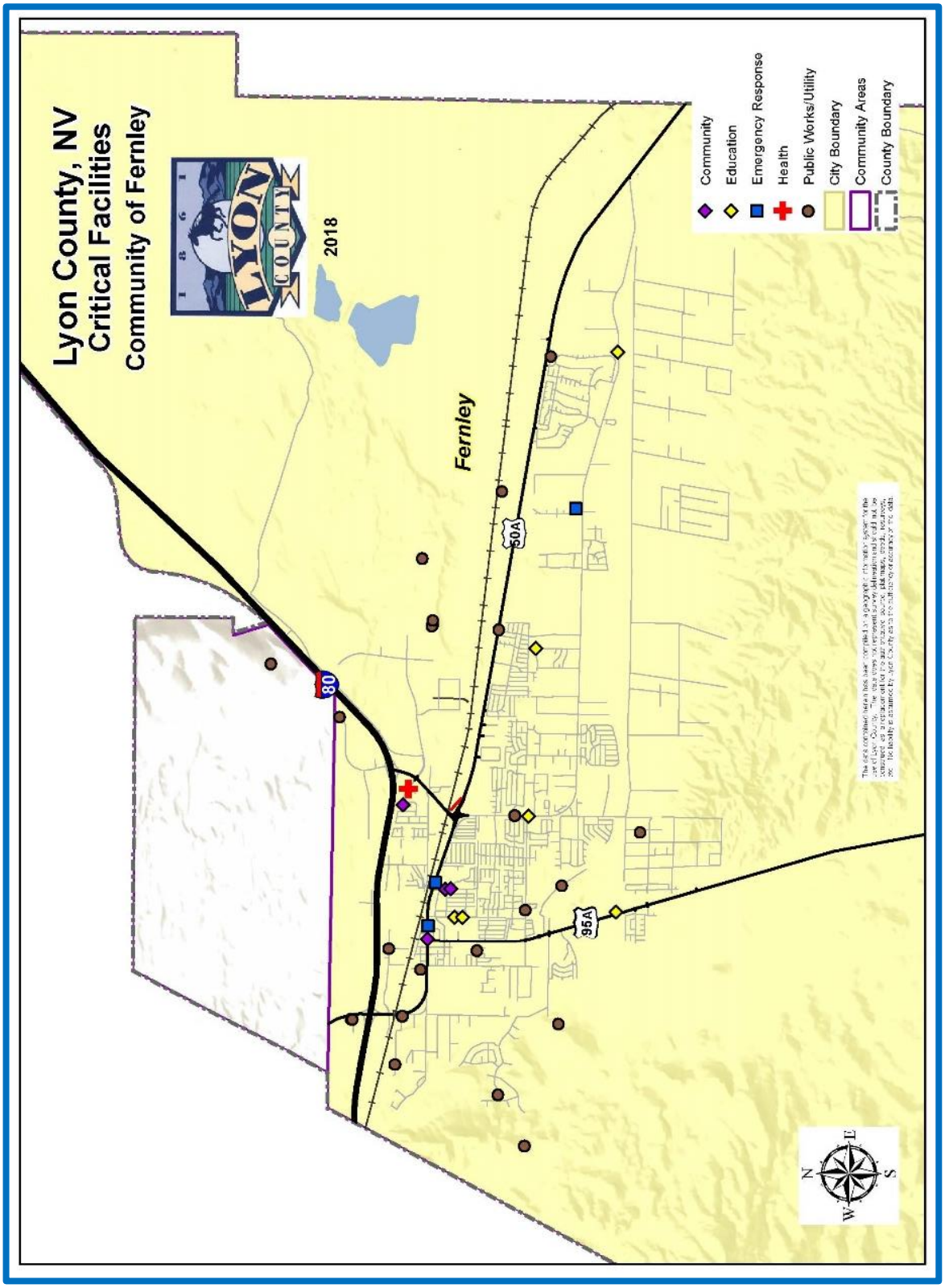
Hazard Type	Facility Category	Name	Asset Value
Winter Storm – Freeze (High)	Public Works/Utility	Fernley WWTP	unknown
Winter Storm – Freeze (High)	Public Works/Utility	Loves Lift Station	$82,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Meadows Lift Station	$81,900.00
Winter Storm – Freeze (High)	Public Works/Utility	Mesa Drive PRV Station	$124,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Mull Lane PRV Station	$134,000.00
Winter Storm – Freeze (High)	Public Works/Utility	NE Booster Pump Station	$529,700.00
Winter Storm – Freeze (High)	Public Works/Utility	Northeast Tank	$1,571,000.00
Winter Storm – Freeze (High)	Health	Renown Urgent Care	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Rolling Meadows Lift	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Sage Ranch Booster/PRV	$153,500.00
Winter Storm – Freeze (High)	Public Works/Utility	Sage Ranch Tank	$532,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Sage Tank	$1,571,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Water Treatment Plant - Fernley	$67,787,890.00
Winter Storm – Freeze (High)	Public Works/Utility	Well 13	$395,600.00
Winter Storm – Freeze (High)	Public Works/Utility	Well 14	$99,800.00
Winter Storm – Freeze (High)	Public Works/Utility	Well 4	$585,400.00
Winter Storm – Freeze (High)	Public Works/Utility	Well 8 (non-critical)	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Well 9 And 9A	$204,600.00
Winter Storm – Freeze (High)	Public Works/Utility	West Plant Lift Station	$598,600.00
Winter Storm – Freeze (High)	Public Works/Utility	Desert Lakes Lift Station	$313,400.00

Table G-4. City of Fernley, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	Asset Value
Winter Storm – Freeze (High)	Public Works/Utility	Highway 50 Lift Station	$1,259,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Ricci Tank	$1,103,000.00
Winter Storm – Freeze (High)	Public Works/Utility	Raw Water Tank	Unknown
Winter Storm – Freeze (High)	Public Works/Utility	Water and Wastewater Canal Crossings	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Well 5	Unknown
Winter Storm – Snow (Medium)	Community	City Hall - Fernley	$11,898,900.00
Winter Storm – Snow (Medium)	Public Works/Utility	Cottonwood Shop/Well 11	$1,425,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Donner Trails Lift Station	$165,200.00
Winter Storm – Snow (Medium)	Public Works/Utility	East Plant Lift Station	$1,268,500.00
Winter Storm – Snow (Medium)	Public Works/Utility	Farm District Lift Station	$238,500.00
Winter Storm – Snow (Medium)	Public Works/Utility	Fernley WWTP	unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Loves Lift Station	$82,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Meadows Lift Station	$81,900.00
Winter Storm – Snow (Medium)	Public Works/Utility	Mesa Drive PRV Station	$124,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Mull Lane PRV Station	$134,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	NE Booster Pump Station	$529,700.00
Winter Storm – Snow (Medium)	Public Works/Utility	Northeast Tank	$1,571,000.00
Winter Storm – Snow (Medium)	Health	Renown Urgent Care	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Rolling Meadows Lift	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Sage Ranch Booster/PRV	$153,500.00

Table G-4. City of Fernley, Vulnerable Critical Facilities and Infrastructure

Hazard Type	Facility Category	Name	Asset Value
Winter Storm – Snow (Medium)	Public Works/Utility	Sage Ranch Tank	$532,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Sage Tank	$1,571,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Water Treatment Plant - Fernley	$67,787,890.00
Winter Storm – Snow (Medium)	Public Works/Utility	Well 13	$395,600.00
Winter Storm – Snow (Medium)	Public Works/Utility	Well 14	$99,800.00
Winter Storm – Snow (Medium)	Public Works/Utility	Well 4	$585,400.00
Winter Storm – Snow (Medium)	Public Works/Utility	Well 8 (non-critical)	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Well 9 And 9A	$204,600.00
Winter Storm – Snow (Medium)	Public Works/Utility	West Plant Lift Station	$598,600.00
Winter Storm – Snow (Medium)	Public Works/Utility	Desert Lakes Lift Station	$313,400.00
Winter Storm – Snow (Medium)	Public Works/Utility	Highway 50 Lift Station	$1,259,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Ricci Tank	$1,103,000.00
Winter Storm – Snow (Medium)	Public Works/Utility	Raw Water Tank	Unknown
Winter Storm – Snow (Medium)	Public Works/Utility	Water and Wastewater Canal Crossings	Unknown


Lyon County, NV
Critical Facilities
Community of Fernley
LYON
COUNTY
2018
Fernley
80
50A
95A
Community
Education
Emergency Response
Health
Public Works/Utility
City Boundary
Community Areas
County Boundary
N
E
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Appendix H
City of Yerington Tables
Vulnerability Analysis

Table H-1. City of Yerington, Total Population and Residential Buildings

Population[1]	Residential Buildings[2]	Total Residential Building Value[3]
3,142	1,631	$80,883,591

[1] Nevada Demographers Office (projected 2017 population)
[2] Lyon County Assessor and Douglas County for Lyon County GIS data 2018
[3] Taxable Assessment Value from Lyon County Assessor data 2018

Table H-2. City of Yerington, Total Critical Facilities and Infrastructure

Facility Type	Name	Value
Community	City Hall - Yerington	$657,600.00
Public Works/Utility	Arsenic Treatment Facility	Unknown
Public Works/Utility	Birch Tank #1 (water reservoir)	$542,000.00
Public Works/Utility	Birch Tank #2 (water reservoir)	$1,030,100.00
Public Works/Utility	Booster/Relief Station	Unknown
Public Works/Utility	Broadway Well #2	Unknown
Public Works/Utility	California Water Tower/Bldg (water reservoir)	$16,800.00
Public Works/Utility	California Well #1	Unknown
Public Works/Utility	Crystal Clear (water reservoir)	$573,038.00
Public Works/Utility	Crystal Clear (well)	Unknown
Public Works/Utility	Franklin Well #4	$19,200.00
Public Works/Utility	Lift Station #1 (Yerington)	Unknown
Public Works/Utility	Lift Station #2 (Yerington)	Unknown
Public Works/Utility	Lift Station #3 (Yerington)	$68,100.00
Public Works/Utility	Lift Station #4 (Yerington)	Unknown
Public Works/Utility	Maintenance Yard (4)	$719,100.00
Public Works/Utility	Mason Rd Well #5	$75,900.00
Public Works/Utility	Mason Tank #1 (water reservoir)	$606,400.00
Public Works/Utility	Mason Tank #2 (water reservoir)	Unknown
Public Works/Utility	Mountain View Well #3	$41,500.00
Public Works/Utility	Public Works Office	$623,500.00
Public Works/Utility	Relief Valve (water booster station)	Unknown
Public Works/Utility	Willow Creek Lift Station	Unknown
Public Works/Utility	Willow Creek Wastewater Treatment Ponds	Unknown
Public Works/Utility	Yerington WWTP	$195,600.00
Transportation	City of Yerington Airport	Unknown

Table H-3. City of Yerington, Vulnerable Population and Residential Buildings

Hazard	Population	Residential buildings	Total Residential Building Value
Earthquake (Severe) ~	3,048	1,507	$177,826,000
Flooding	3,048	997	$117,646,000
Hazardous Materials*+	1699	230	$27,140,000
Winter Storm - Freeze (High)~	3,048	1,507	$177,826,000
Winter Storm - Snow (Medium)~	3,048	1,507	$177,826,000

* Hazardous materials hazard represents a fixed incident.

+ For hazardous materials impacts were completed the County level only, therefore City numbers have been derived by applying the City of Yerington's population and residential building percentage (of the County's total) to the County's hazardous material impacts.

~ Partial Vulnerability Analysis was completed – population and residential building vulnerability only known when the entire jurisdiction falls within a single hazard level.

Table H-4. City of Yerington, Vulnerable Critical Facilities and Infrastructure

Hazard	Facility Type	Name	Value
Earthquake (Severe)	Community	City Hall - Yerington	$657,600.00
Earthquake (Severe)	Public Works/Utility	Arsenic Treatment Facility	Unknown
Earthquake (Severe)	Public Works/Utility	Birch Tank #1 (water reservoir)	$542,000.00
Earthquake (Severe)	Public Works/Utility	Birch Tank #2 (water reservoir)	$1,030,100.00
Earthquake (Severe)	Public Works/Utility	Booster/Relief Station	Unknown
Earthquake (Severe)	Public Works/Utility	Broadway Well #2	Unknown
Earthquake (Severe)	Public Works/Utility	California Water Tower/Bldg (water reservoir)	$16,800.00
Earthquake (Severe)	Public Works/Utility	California Well #1	Unknown
Earthquake (Severe)	Public Works/Utility	Crystal Clear (water reservoir)	$573,038.00
Earthquake (Severe)	Public Works/Utility	Crystal Clear (well)	Unknown
Earthquake (Severe)	Public Works/Utility	Franklin Well #4	$19,200.00
Earthquake (Severe)	Public Works/Utility	Lift Station #1 (Yerington)	Unknown
Earthquake (Severe)	Public Works/Utility	Lift Station #2 (Yerington)	Unknown
Earthquake (Severe)	Public Works/Utility	Lift Station #3 (Yerington)	$68,100.00

Table H-4. City of Yerington, Vulnerable Critical Facilities and Infrastructure

Hazard	Facility Type	Name	Value
Earthquake (Severe)	Public Works/Utility	Lift Station #4 (Yerington)	Unknown
Earthquake (Severe)	Public Works/Utility	Maintenance Yard (4)	$719,100.00
Earthquake (Severe)	Public Works/Utility	Mason Rd Well #5	$75,900.00
Earthquake (Severe)	Public Works/Utility	Mason Tank #1 (water reservoir)	$606,400.00
Earthquake (Severe)	Public Works/Utility	Mason Tank #2 (water reservoir)	Unknown
Earthquake (Severe)	Public Works/Utility	Mountain View Well #3	$41,500.00
Earthquake (Severe)	Public Works/Utility	Public Works Office	$623,500.00
Earthquake (Severe)	Public Works/Utility	Relief Valve (water booster station)	Unknown
Earthquake (Severe)	Public Works/Utility	Willow Creek Lift Station	Unknown
Earthquake (Severe)	Public Works/Utility	Willow Creek Wastewater Treatment Ponds	Unknown
Earthquake (Severe)	Public Works/Utility	Yerington WWTP	$195,600.00
Earthquake (Severe)	Transportation	City of Yerington Airport	Unknown
Flooding	Community	City Hall - Yerington	$657,600.00
Flooding	Public Works/Utility	Arsenic Treatment Facility	Unknown
Flooding	Public Works/Utility	Booster/Relief Station	Unknown
Flooding	Public Works/Utility	Broadway Well #2	Unknown
Flooding	Public Works/Utility	California Water Tower/Bldg (water reservoir)	$16,800.00
Flooding	Public Works/Utility	California Well #1	Unknown
Flooding	Public Works/Utility	Franklin Well #4	$19,200.00
Flooding	Public Works/Utility	Lift Station #1 (Yerington)	Unknown
Flooding	Public Works/Utility	Lift Station #2 (Yerington)	Unknown
Flooding	Public Works/Utility	Lift Station #4 (Yerington)	Unknown
Flooding	Public Works/Utility	Maintenance Yard (4)	$719,100.00
Flooding	Public Works/Utility	Mountain View Well #3	$41,500.00
Flooding	Public Works/Utility	Public Works Office	$623,500.00
Flooding	Public Works/Utility	Relief Valve (water booster station)	Unknown
Flooding	Public Works/Utility	Yerington WWTP	$195,600.00
Flooding	Transportation	City of Yerington Airport	Unknown
Hazardous Materials	Community	City Hall - Yerington	$657,600.00
Hazardous Materials	Public Works/Utility	Arsenic Treatment Facility	Unknown
Hazardous Materials	Public Works/Utility	Birch Tank #1 (water reservoir)	$542,000.00
Hazardous Materials	Public Works/Utility	Birch Tank #2 (water reservoir)	$1,030,100.00
Hazardous Materials	Public Works/Utility	Broadway Well #2	Unknown

Table H-4. City of Yerington, Vulnerable Critical Facilities and Infrastructure

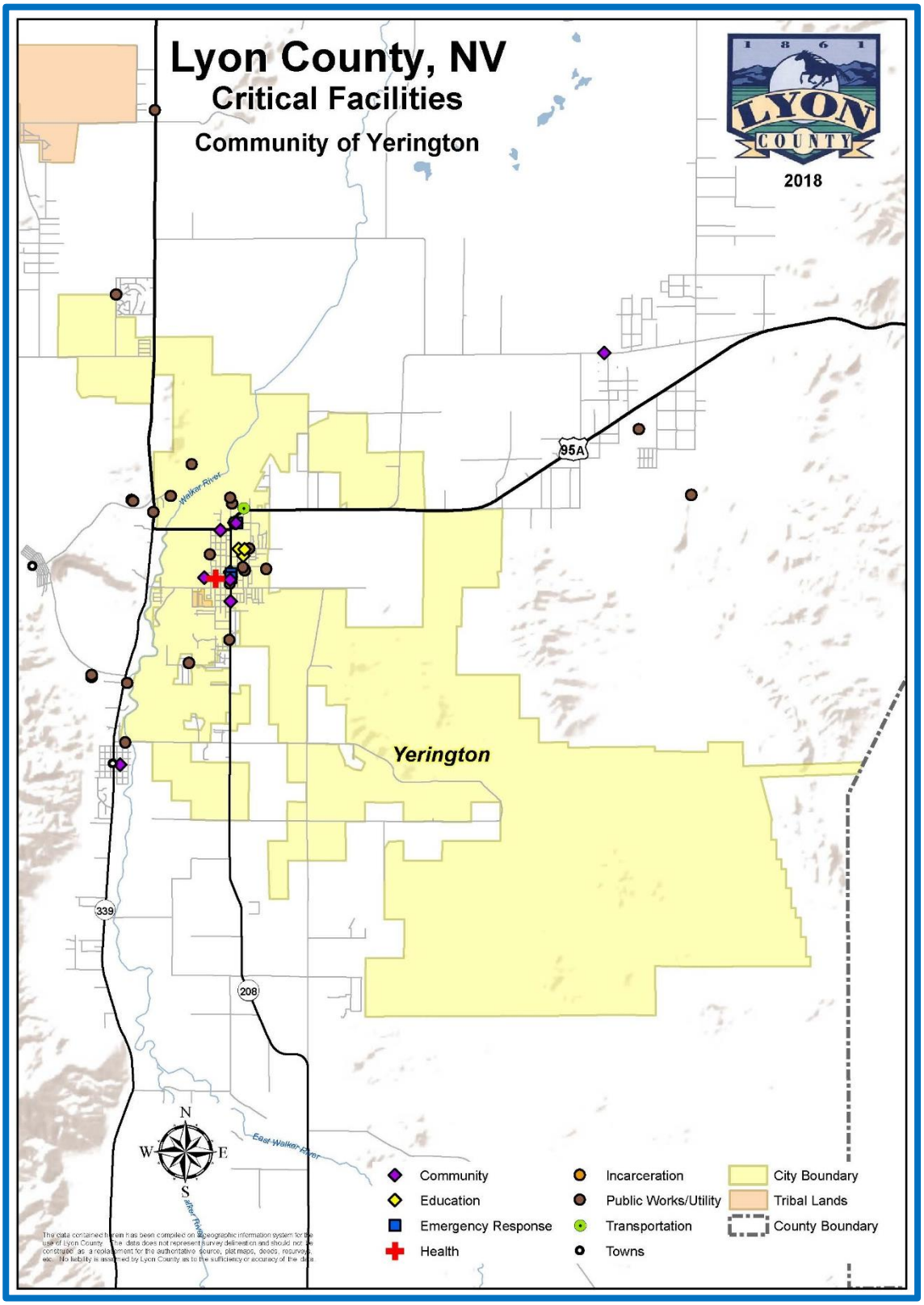
Hazard	Facility Type	Name	Value
Hazardous Materials	Public Works/Utility	California Water Tower/Bldg (water reservoir)	$16,800.00
Hazardous Materials	Public Works/Utility	California Well #1	Unknown
Hazardous Materials	Public Works/Utility	Lift Station #1 (Yerington)	Unknown
Hazardous Materials	Public Works/Utility	Lift Station #3 (Yerington)	$68,100.00
Hazardous Materials	Public Works/Utility	Lift Station #4 (Yerington)	Unknown
Hazardous Materials	Public Works/Utility	Maintenance Yard (4)	$719,100.00
Hazardous Materials	Public Works/Utility	Mountain View Well #3	$41,500.00
Hazardous Materials	Public Works/Utility	Public Works Office	$623,500.00
Hazardous Materials	Public Works/Utility	Relief Valve (water booster station)	Unknown
Hazardous Materials	Public Works/Utility	Yerington WWTP	$195,600.00
Hazardous Materials	Transportation	City of Yerington Airport	Unknown
Winter Storm - Freeze (High)	Community	City Hall - Yerington	$657,600.00
Winter Storm - Freeze (High)	Public Works/Utility	Arsenic Treatment Facility	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Birch Tank #1 (water reservoir)	$542,000.00
Winter Storm - Freeze (High)	Public Works/Utility	Birch Tank #2 (water reservoir)	$1,030,100.00
Winter Storm - Freeze (High)	Public Works/Utility	Booster/Relief Station	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Broadway Well #2	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	California Water Tower/Bldg (water reservoir)	$16,800.00
Winter Storm - Freeze (High)	Public Works/Utility	California Well #1	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Crystal Clear (water reservoir)	$573,038.00
Winter Storm - Freeze (High)	Public Works/Utility	Crystal Clear (well)	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Franklin Well #4	$19,200.00
Winter Storm - Freeze (High)	Public Works/Utility	Lift Station #1 (Yerington)	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Lift Station #2 (Yerington)	Unknown

Table H-4. City of Yerington, Vulnerable Critical Facilities and Infrastructure

Hazard	Facility Type	Name	Value
Winter Storm - Freeze (High)	Public Works/Utility	Lift Station #3 (Yerington)	$68,100.00
Winter Storm - Freeze (High)	Public Works/Utility	Lift Station #4 (Yerington)	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Maintenance Yard (4)	$719,100.00
Winter Storm - Freeze (High)	Public Works/Utility	Mason Rd Well #5	$75,900.00
Winter Storm - Freeze (High)	Public Works/Utility	Mason Tank #1 (water reservoir)	$606,400.00
Winter Storm - Freeze (High)	Public Works/Utility	Mason Tank #2 (water reservoir)	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Mountain View Well #3	$41,500.00
Winter Storm - Freeze (High)	Public Works/Utility	Public Works Office	$623,500.00
Winter Storm - Freeze (High)	Public Works/Utility	Relief Valve (water booster station)	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Willow Creek Lift Station	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Willow Creek Wastewater Treatment Ponds	Unknown
Winter Storm - Freeze (High)	Public Works/Utility	Yerington WWTP	$195,600.00
Winter Storm - Freeze (High)	Transportation	City of Yerington Airport	Unknown
Winter Storm - Snow (Medium)	Community	City Hall - Yerington	$657,600.00
Winter Storm - Snow (Medium)	Public Works/Utility	Arsenic Treatment Facility	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Birch Tank #1 (water reservoir)	$542,000.00
Winter Storm - Snow (Medium)	Public Works/Utility	Birch Tank #2 (water reservoir)	$1,030,100.00
Winter Storm - Snow (Medium)	Public Works/Utility	Booster/Relief Station	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Broadway Well #2	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	California Water Tower/Bldg (water reservoir)	$16,800.00

Table H-4. City of Yerington, Vulnerable Critical Facilities and Infrastructure

Hazard	Facility Type	Name	Value
Winter Storm - Snow (Medium)	Public Works/Utility	California Well #1	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Crystal Clear (water reservoir)	$573,038.00
Winter Storm - Snow (Medium)	Public Works/Utility	Crystal Clear (well)	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Franklin Well #4	$19,200.00
Winter Storm - Snow (Medium)	Public Works/Utility	Lift Station #1 (Yerington)	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Lift Station #2 (Yerington)	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Lift Station #3 (Yerington)	$68,100.00
Winter Storm - Snow (Medium)	Public Works/Utility	Lift Station #4 (Yerington)	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Maintenance Yard (4)	$719,100.00
Winter Storm - Snow (Medium)	Public Works/Utility	Mason Rd Well #5	$75,900.00
Winter Storm - Snow (Medium)	Public Works/Utility	Mason Tank #1 (water reservoir)	$606,400.00
Winter Storm - Snow (Medium)	Public Works/Utility	Mason Tank #2 (water reservoir)	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Mountain View Well #3	$41,500.00
Winter Storm - Snow (Medium)	Public Works/Utility	Public Works Office	$623,500.00
Winter Storm - Snow (Medium)	Public Works/Utility	Relief Valve (water booster station)	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Willow Creek Lift Station	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Willow Creek Wastewater Treatment Ponds	Unknown
Winter Storm - Snow (Medium)	Public Works/Utility	Yerington WWTP	$195,600.00
Winter Storm - Snow (Medium)	Transportation	City of Yerington Airport	Unknown


Lyon County, NV
Critical Facilities
Community of Yerington
1861
LYON
COUNTY
2018
95A
Walker River
Yerington
339
208
East Walker River
N
W
E
S
Community
Education
Emergency Response
Health
Incarceration
Public Works/Utility
Transportation
Towns
City Boundary
Tribal Lands
County Boundary