

Elmore County, Idaho

Multi-Hazard Mitigation Plan 2020 Update

Community Wildfire Protection Plan 2021 Update



Elmore County Emergency Management

2340 American Legion Blvd.

Mountain Home, ID 83647

(208) 590-0967



Prepared By

Northwest Management, Inc.

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Foreword

“Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. Mitigation activities may be implemented prior to, during, or after an incident. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.”¹

The **Elmore County, Idaho Multi-Hazard Mitigation Plan** and the **Community Wildfire Protection Plan** were updated in 2020 by the Elmore County MHMP planning team in cooperation with Northwest Management, Inc. of Moscow, Idaho. The MHMP was approved by FEMA in August 2020 and the CWPP was approved by the IDL in February 2021.

This Plan satisfies the requirements for a local multi-hazard mitigation plan under 44 CFR Part 201.6.

¹ Federal Emergency Management Agency. “Local Multi-Hazard Mitigation Planning Guidance.” July 1, 2008.

FEMA Approval Letter

U.S. Department of Homeland Security
 FEMA Region 10
 130 – 228th Street, SW
 Bothell, Washington 98021



FEMA

August 18, 2020

The Honorable Al Hofer
 Chair, Elmore County Commissioners
 150 South 4 East
 Mountain Home, Idaho 83647

Dear Chair Hofer:

On August 18, 2020, the U.S. Department of Homeland Security’s Federal Emergency Management Agency (FEMA) Region 10, approved the Elmore County Hazard Mitigation Plan as a multi-jurisdictional local plan as outlined in Code of Federal Regulations Title 44 Part 201. This approval provides the below jurisdictions eligibility to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act’s, Hazard Mitigation Assistance (HMA) grants projects through August 17, 2025, through your state:

Elmore County	City of Glens Ferry	City of Mountain Home
	Oasis Fire Protection District	

FEMA individually evaluates all application requests for funding according to the specific eligibility requirements of the applicable program. Though a specific mitigation activity or project identified in the plan may meet the eligibility requirements, it may not automatically receive approval for FEMA funding under any of the aforementioned programs. Approved mitigation plans may be eligible for points under the National Flood Insurance Program’s Community Rating System (CRS). For additional information regarding the CRS, please visit: www.fema.gov/national-flood-insurance-program-community-rating-system or contact your local floodplain manager.

Over the next five years, we encourage your communities to follow the plan’s schedule for monitoring and updating, and to develop further mitigation actions. To continue eligibility, jurisdictions must review, revise as appropriate and resubmit the plan within five years of the original approval date.

If you have questions regarding your plan’s approval or FEMA’s mitigation grant programs, please contact Lorrie Pahl, Senior Mitigation Planner with Idaho Office of Emergency Management, at (208) 258-6508, who coordinates and administers these efforts for local entities.

Sincerely,

JOHN A GRAVES Digitally signed by JOHN A GRAVES
Date: 2020.08.18 12:01:14 -0700 for

Kristen Meyers, Director
 Mitigation Division

cc: Susan Cleverley, Idaho Office of Emergency Management



HMP Adoption Resolutions

Elmore County

RESOLUTION NO. 766-20

**RESOLUTION OF THE ELMORE COUNTY BOARD OF COMMISSIONERS ("BOARD")
DECLARING SUPPORT FOR, AND ADOPTION OF, THE ELMORE COUNTY MULTI-
HAZARD MITIGATION PLAN AND COMMUNITY WILDFIRE PROTECTION PLAN.**

**ON THIS 17TH DAY OF JULY, 2020, THE BOARD HEREBY MAKES THE FOLLOWING
RESOLUTION:**

WHEREAS, the Board supports the Elmore County Multi-Hazard Mitigation Plan and
Community Wildfire Protection Plan;

WHEREAS, the Board has participated in the development of the Elmore County Multi-
Hazard Mitigation Plan and Community Wildfire Protection Plan;

WHEREAS, the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire
Protection Plan will be utilized as a guide for planning as related to the FEMA Pre-Disaster
Mitigation program as well as other purposes as deemed appropriate by the Board;

WHEREAS, Elmore County, acting through its Board, pursuant to Idaho Code §§ 31-601
and 31-604 has the authority to effectively carry out the duties imposed by the provisions of the
Idaho Code and Constitution; and

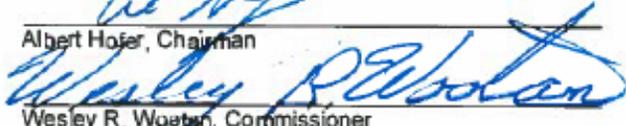
WHEREAS, the Board has the power and authority to perform the duties of the chief
executive of the County pursuant to Idaho Code § 31-828.

NOW, THEREFORE, IT IS HEREBY RESOLVED: that the Board does hereby adopt
and support and will facilitate the implementation of the Elmore County Multi-Hazard Mitigation
Plan and Community Wildfire Protection Plan as deemed appropriate.

This resolution is approved and dated effective as of the date set forth above and is
approved by a 2/3 vote of the Board.

ELMORE COUNTY BOARD OF COMMISSIONERS


Albert Hofer, Chairman


Wesley R. Woeten, Commissioner


Franklin L. Corbus, Commissioner

ATTEST:


Shelley Essl,
Elmore County Clerk



City of Glenns Ferry

RESOLUTION NO. 20-08

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GLENN'S FERRY, ELMORE COUNTY, IDAHO, DECLARING SUPPORT AND ADOPTION OF THE ELMORE COUNTY MULTI-HAZARD MITIGATION PLAN AND COMMUNITY WILDFIRE PROTECTION PLAN; AND AUTHORIZING THE MAYOR TO SIGN THE STATEMENT OF ACCEPTANCE AND THE CLERK TO ATTEST.

WHEREAS, the City Council of the City of Glenns Ferry, Idaho supports the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan; and

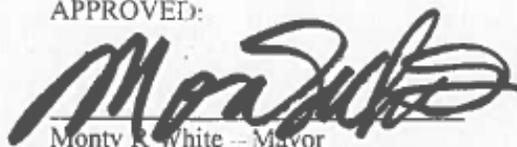
WHEREAS, the City Council of Glenns Ferry, Idaho has participated in the development of the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan; and

WHEREAS, the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan will be utilized as a guide for planning as related to the FEMA Pre-Disaster Mitigation program as well as other purposes as deemed appropriate by the City Council of Glenns Ferry, Idaho,

NOW, THEREFORE, be it resolved by the Mayor and City Council of the City of Glenns Ferry, Elmore County, Idaho, does hereby adopt and support and will facilitate the implementation of the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan as deemed appropriate.

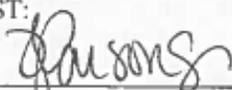
PASSED by the City Council and APPROVED by the Mayor this 28th day of July 2020.

APPROVED:



Monty K. White -- Mayor

ATTEST:



Teresa Parsons -- City Clerk/Treasurer



City of Mountain Home

RESOLUTION NO. 19-20

A RESOLUTION OF THE MAYOR AND COUNCIL OF THE CITY OF MOUNTAIN HOME, IDAHO, DECLARING SUPPORT AND ADOPTION OF THE ELMORE COUNTY MULTI-HAZARD MITIGATION PLAN AND COMMUNITY WILDFIRE PROTECTION PLAN.

WHEREAS, the City Council of Mountain Home, Idaho supports the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan, and,

WHEREAS, the City Council of Mountain Home, Idaho has participated in the development of the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan, and,

WHEREAS, the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan will be utilized as a guide for planning as related to the FEMA Pre-Disaster Mitigation program as well as other purposes as deemed appropriate by the City Council of Mountain Home, Idaho,

NOW THEREFORE, be it hereby resolved, that the City Council of Mountain Home, Idaho, does hereby adopt and support and will facilitate the implementation of the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan as deemed appropriate.

PASSED by the City Council of Mountain Home, located in Elmore County, Idaho, and approved by the Mayor this 27th day of July, 2020.


Rich Sykes, Mayor

ATTEST:


Nina Patterson, City Clerk



Oasis Fire Protection District



Oasis Fire Protection District

"Working Together To Protect Our Community"

11825 Tilli Road Oasis Idaho



Sub District 1
Judy Johnson
(208) 796-2116

Sub District 2
Kathy Figueredo
(208) 880-4211

Sub District 3
Jennifer Sirani
(208) 866-1871

RESOLUTION

A RESOLUTION OF THE OASIS FIRE PROTECTION DISTRICT COMMISSIONERS AND OFFICERS OF THE OASIS VOLUNTEER FIRE DEPARTMENT OF OASIS, IDAHO, DECLARING SUPPORT AND ADOPTION OF THE ELMORE COUNTY MULTI-HAZARD MITIGATION PLAN AND COMMUNITY WILDFIRE PROTECTION PLAN.

WHEREAS, the Commissioners of the Oasis Fire Protection District and the Officers of the Oasis Volunteer Fire Department of Oasis, Idaho, support the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan, and,

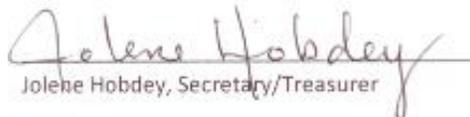
WHEREAS, the Commissioners of the Oasis Fire Protection District and the Officers of the Oasis Volunteer Fire Department of Oasis, Idaho, have participated in the development of Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan, and,

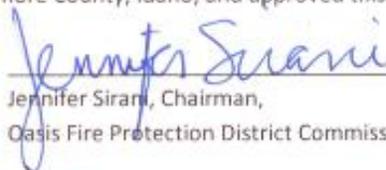
WHEREAS, the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan will be utilized as a guide for planning as related to the FEMA Pre-Disaster Mitigation program as well as other purposes as deemed appropriate by the Commissioners of the Oasis Fire Protection District and the Officers of the Oasis Volunteer Fire Department of Oasis, Idaho,

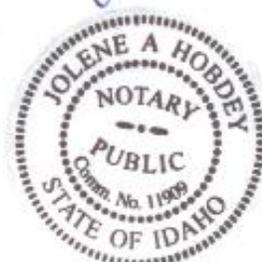
NOW THEREFORE, be it hereby resolved, that the Commissioners of the Oasis Fire Protection District and the Officers of the Oasis Volunteer Fire Department of Oasis, Idaho, do hereby adopt and support and will facilitate the implementation of the Elmore County Multi-Hazard Mitigation Plan and Community Wildfire Protection Plan as deemed appropriate.

PASSED by the Commissioners of the Oasis Fire Protection District and the Officers of the Oasis Volunteer Fire Department located in Oasis, Idaho, Elmore County, Idaho, and approved this 24th day of July, 2020.

ATTEST:


Jolene Hobdey, Secretary/Treasurer


Jennifer Sirani, Chairman,
Oasis Fire Protection District Commission



CWPP Adoption

Adoption by the Elmore County Commissioners



Bud Corbus
 Elmore County Commissioner, District 1

2/25/21

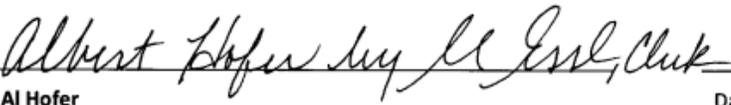
 Date



Crystal Rodgers
 Elmore County Commissioner, District 2

25 Feb 2021

 Date



Al Hofer
 Elmore County Commissioner, District 3

2/25/21

 Date

Approval by Emergency Management



Carol Killian
 Emergency Management Coordinator

3/1/21

 Date

Approval by Local Emergency Planning Committee Chair

The Chair of the Local Emergency Planning Committee approves this document on behalf of all Elmore County fire protection districts and departments.



Carol Killian
 Local Emergency Planning Committee Chair

3/1/21

 Date

Approval by Idaho Department of Lands



Tyre Holfeltz
 Wildfire Risk Mitigation Program Manager

3-1-2021

 Date



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Chapter 1:

Plan Overview & Development

IN THIS SECTION:

- Plan Overview
- Phase 1 Hazard Assessment
- Jurisdictional Goals and Guiding Principles
- Integration with Other Planning Mechanisms

Chapter 1 – Plan Overview and Development

Plan Overview

This regional Multi-Hazard Mitigation Plan is the result of analyses, professional cooperation and collaboration, assessments of hazard risks and other factors considered with the intent to reduce the potential for hazards to threaten people, structures, infrastructure, and unique ecosystems in Elmore County, Idaho. The Elmore County Multi-Hazard Mitigation Plan was originally approved by Idaho Office of Emergency Management and the Federal Emergency Management Agency in October 2006. This document serves as the required 5-year update of the Multi-Hazard Mitigation Plan under the Pre-Disaster Mitigation program and will be in effect until 2025. This document assists with the identification and assessment of various potential hazards and helps maintain the county’s eligibility for grants and other funding.

The planning team responsible for implementing this project was led by Elmore County Emergency Management. Agencies and organizations that participated in the planning process included:

- Atlanta Rural Fire District
- Bureau of Land Management
- Central District Health Department
- City of Glenns Ferry
- City of Mountain Home
- Elmore County Commissioners
- Elmore County Departments
- Elmore County Sheriff’s Office
- Grand View Fire District
- Idaho Office of Emergency Management
- King Hill Rural Fire District
- Mountain Home Air Force Base
- Mountain Home Highway District
- Mountain Home Irrigation District
- Mountain Home Rural Fire District
- Northwest Management, Inc.
- Oasis Volunteer Fire Department
- Prairie QRU and Fire District
- St. Luke’s
- U.S. Forest Service

In January 2019, Elmore County Emergency Management contracted services to update the Elmore County Multi-Hazard Mitigation Plan in conjunction with the Community Wildfire Protection Plan to Northwest Management, Inc. of Moscow, Idaho. The 2020 update of the Elmore County Multi-Hazard Mitigation Plan began in February of 2019 and concluded in August 2020 with final approval from FEMA. The Elmore County Community Wildfire Protection Plan was finalized and approved in February 2021.



Phase 1 Hazard Assessment

The Multi - Hazard Mitigation Plan is developed in accordance with the requirements of the Federal Emergency Management Agency (FEMA) and Idaho Office of Emergency Management (IOEM) for a county-level pre-disaster mitigation plan. The planning team determined that the following hazards will be formally addressed in this plan:

- **Flood**
- **Earthquake**
- **Landslide**
- **Severe Weather**
- **Wildland Fire**

The previous version of the plan (2011) included profiles and risk assessments for the following non-natural or economic sector-specific hazards:

- **Crop Failure**
- **Extended Power Outage**
- **Terrorism and Civil Unrest**

Crop Failure and Extended Power Outage are not FEMA-recognized natural hazards and will not be covered as individual hazards in the document as of the 2020 update. However, both disasters could be the result of a natural disaster; which, in Elmore County, is most likely to be severe weather. Therefore, Crop Failure and Extended Power Outage will be given significant attention in this plan within the context of severe weather.

The Terrorism and Civil Unrest Supplement is provided in a separately bound document. The Supplement is available to the public by request to Elmore County Emergency Management.

Additional hazard annexes may be added to this plan as funding allows (it should be noted that other forms of funding will be required to profile and assess non-natural hazards in this plan as FEMA funding will only cover natural hazards). The highest priority hazards to be considered for future evaluation and plan updates are:

- **Hazardous Material Transport and Storage**
- **Dam Failure**
- **Pandemic**

A Phase 1 Hazard Assessment was initially completed by the planning team for the original plan and then the exercise was conducted again for the 2011 update. The assessment attempted to determine the relative frequency of a hazard's occurrence and the potential impact of a hazard event will have on people, property, infrastructure, and the economy based on local knowledge of past occurrences. A matrix system with hazard magnitude on the x-axis and frequency on the y-axis was used to score each hazard. Table 1 summarizes the results of the Phase I Hazard Assessments for Elmore County. Excluding wildland fire and landslides, the 2011 planning committee rated hazards as having a higher frequency of occurrence as well as a higher potential impact to communities than they did in 2006.



Table 1) The hazard rating matrix utilized for the Phase I Hazard Assessment in the 2011 and earlier versions of the Elmore County Multi-Hazard Mitigation Plan.

		Magnitude		
		Low	Medium	High
Frequency	Low			Earthquake
	Medium			Terrorism/Civil Unrest Crop Failure
	High		Landslide	Severe Weather Wildland Fire Flood Extended Power Outages

During the 2020 plan update, the planning team was asked to assess each hazard using the Hazards Summary Worksheet provided by FEMA. This tool was used in place of the hazard matrix as additional aspects of natural hazards are considered and the numerical output adds more nuance to the rating process. This hazard assessment will be used as the guiding tool for the Hazard Mitigation Plan moving forward; Table 2 is an example of the hazard summary worksheet as it was adapted to the content of the Elmore County Hazard Mitigation Plan.

Table 2) Natural hazard rating table that was developed for the 2020 update of the Elmore County Hazard Mitigation Plan. (This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.)

Elmore County				
Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Flood				
Landslide				
Earthquake				
Severe Weather				
Wildland Fire				
Terrorism/Civil Unrest				
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High



Goals and Guiding Principles

Federal Emergency Management Agency Philosophy

Effective November 1, 2004, a Multi - Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM programs provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The new local Multi - Hazard Mitigation Plan requirements for HMGP and PDM eligibility is based on the Disaster Mitigation Act of 2000, which amended the Stafford Disaster Relief Act to promote an integrated, cost effective approach to mitigation. Local Multi - Hazard Mitigation Plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria cover the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

In order to be eligible for project funds under the Flood Mitigation Assistance (FMA) program, communities are required under 44 CFR Part 79.6(d)(1) to have a mitigation plan that addresses flood hazards. On October 31st, 2007, FEMA published amendments to the 44 CFR Part 201 at 72 Federal Reg. 61720 to incorporate mitigation planning requirements for the FMA program (44 CFR Part 201.6). The revised Local Mitigation Plan Review Crosswalk (July 2008) used by FEMA to evaluate local hazard mitigation plans is consistent with the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended by Section 322 of the Disaster Mitigation Act of 2000, the National Flood Insurance Act of 1968, as amended by the National Flood Insurance Reform Act of 2004 and 44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning, inclusive of all amendments through October 31, 2007, was used as the official guide for development of a FEMA-compatible Elmore County, Idaho Multi-Hazard Mitigation Plan².

FEMA will only review a local Multi-Hazard Mitigation Plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). Draft versions of local Multi - Hazard Mitigation Plans will not be reviewed by FEMA. FEMA will review the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will be unable to approve it prior to adoption.

In Idaho the State Hazard Mitigation Officer is:

Idaho Office of Emergency Management

**4040 Guard Street, Bldg 600
Boise, ID 83705**



² Federal Emergency Management Agency. "Local Multi-Hazard Mitigation Planning Guidance." July 1, 2008.

A FEMA designed, multi-jurisdictional hazard mitigation plan will be evaluated on its adherence to a variety of criteria, including:

- Adoption by the Local Governing Body
- Multi-jurisdictional Plan Adoption
- Multi-jurisdictional Planning Participation
- Documentation of Planning Process
- Identifying Hazards
- Profiling Hazard Events
- Assessing Vulnerability:
 - Identifying Assets
 - Estimating Potential Losses
 - Analyzing Development Trends
- Multi-jurisdictional Risk Assessment
- Local Hazard Mitigation Goals
- Identification and Analysis of Mitigation Measures
- Implementation of Mitigation Measures
- Multi-jurisdictional Mitigation Strategy
- Monitoring, Evaluating, and Updating the Plan
- Implementation Through Existing Programs
- Continued Public Involvement

Planning Philosophy

This effort will utilize the best and most appropriate science from all partners and will integrate local and regional knowledge about natural hazards while meeting the needs of local citizens and the regional economy.

Mission Statement

To make residents, communities, state agencies, local governments, and businesses less vulnerable to the effects of hazards through the effective administration of hazard mitigation grant programs, hazard risk assessments, wise and efficient infrastructure hardening, and a coordinated approach to mitigation policy through federal, state, regional, and local planning efforts. Our combined priorities will be the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.

Planning and Mitigation Goals

As part of the 2020 revision process, each participating jurisdiction in Elmore County was asked to review its own set of planning and mitigation goals in the previous version of the plan to help reflect and keep track of individual priorities and changes in hazard vulnerability since the last update. During the first planning team meeting for the initial HMP, the group discussed several overall short-term and long-term mitigation goals as well as goals for the planning process itself. Members of the planning team were given a list of example goals statements and a blank goals worksheet to fill out and return. The following section outlines the planning and mitigation goals submitted by each jurisdiction.

Elmore County:



1. *Planning* - Prioritize the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy
2. *Planning* - To provide a plan that will not diminish the private property rights of landowners in Elmore County
3. *Planning* - Educate communities about the unique challenges of natural hazard preparedness in the county.
4. *Mitigation* - Establish mitigation priorities and develop mitigation strategies in Elmore County
5. *Mitigation* - Strategically locate and plan infrastructure projects that take into consideration the impacts of natural hazards.
6. *Planning* - Meet or exceed the requirements of a FEMA All Hazard Mitigation Plan.

City of Mountain Home:

1. *Planning* – Support the goals and objectives of the State Hazard Mitigation Plan.
2. *Planning* – Protect lives and reduce public risk by preparing for disasters and developing mitigation strategies.
3. *Mitigation* - Protect lives and property by reducing hazard vulnerability.
4. *Mitigation* - Reduce negative financial impacts of all hazards.
5. *Mitigation* - Support emergency services and first responders.
6. *Planning* – Continue to search for funding through FEMA and other funding sources to reduce flooding by improving stormwater response systems.
7. *Mitigation* - Develop and implement long-term, cost-effective, and environmentally sound mitigation projects.
8. *Planning* – Provide public readiness and education through various resources including building codes, city ordinances, newspaper articles, annual mailings, and website postings.
9. *Planning* – Encourage and support partnering opportunities with county, state, and federal administration.
10. *Planning* – Continue to work with the International Code Council to meet the detailed requirements of the 2009 International Building Code.

City of Glenns Ferry:

1. *Mitigation* – Support Elmore County Local Emergency Planning Committee and State Hazard Mitigation Plan.
2. *Planning* – Provide public education of hazards and local emergency plans.
3. *Planning* – Continue to improve and update city infrastructure.



4. *Planning* – Develop comprehensive emergency and evacuation plans and procedures.
5. *Planning* – Seek opportunities to protect, enhance, and integrate emergency services with land use planning and natural resource management.

Oasis Fire Protection District:

1. *Mitigation* – Support Elmore County Local Emergency Planning Committee and State Hazard Mitigation Plan.
2. *Planning* – Provide public education of hazards and local emergency plans.
3. *Planning* – Continue to improve and update city infrastructure.
4. *Planning* – Develop comprehensive emergency and evacuation plans and procedures.
5. *Planning* – Seek opportunities to protect, enhance, and integrate emergency services with land use planning and natural resource management.

Other Planning Mechanisms

This section describes the process of integrating the Elmore County Hazard Mitigation Plan with other local planning mechanisms and vice versa:

- Other relevant plans from adopting jurisdictions were integrated into the 2020 HMP update when appropriate.
- After the 2013 HMP update was complete it was incorporated into other county and city plans, when appropriate, as they were reviewed and updated.

Integrating into 2020 HMP Update

During the development of this Multi-Hazard Mitigation Plan several planning and management documents were reviewed to avoid conflicting goals and objectives. Existing programs and policies were reviewed to identify those that may weaken or enhance the hazard mitigation objectives outlined in this document. For a more exhaustive list of jurisdictional capabilities refer to Appendix D; each adopting jurisdiction filled out a Capability Assessment form (an adaptation of FEMA worksheet 4.1) in order to provide a more complete picture of the resources that are already available for the purposes of natural hazard planning and mitigation. ***It should also be noted that all adopting jurisdictions have the ability and access to resources that are necessary to expand upon and improve existing policies and programs as needed.***

Local Plans and Resources

The following narratives help identify and briefly describe some of the existing planning documents and ordinances considered during the development of this plan. These resources were referenced and incorporated in the hazard mitigation plan to ensure the HMP does not create conflicts with existing planning documents and ordinances already in force. These resources were also consulted and incorporated because they might contain information or address topics directly applicable to the plan and



could be useful when conducting the hazard risk analysis. This list does not necessarily reflect every plan, ordinance, or other guidance document within each jurisdiction; however, this is a summary of the guidance documents known to and recommended for review by members of the planning committee. **No RiskMAP data was used for this plan update.**

Elmore County Comprehensive Growth and Development Plan³

The Elmore County Comprehensive Growth and Development Plan (2014) is a “guide that establishes goals and objectives to help the County grow and develop.” The plan was adopted in 2004, amended in 2007 and 2011, and most recently updated in 2014. “The updated Elmore County Comprehensive Plan includes a forecast of conditions that are anticipated to occur within the next ten-year period, 2014 to 2024. The Plan addresses and includes all 16 comprehensive planning components of the ‘Idaho Local Planning Act of 1975’ as supplemented and amended, Idaho Code 67-6508.”

“Planning is an ongoing process. Conditions and priorities change; consequently, the plan will be reviewed regularly and revised when necessary.” There are 17 “planning components” included in the 2014 plan (Table 3).

Table 3) The 17 planning components included in the Elmore County 2014 Comprehensive Plan.

1. Private Property Rights	10. Recreation
2. Population	11. Special Areas or Sites
3. School Facilities and Transportation	12. Housing
4. Economic Development	13. Community Design
5. Land Use	14. Agriculture
6. Natural Resources	15. National Electric Corridors
7. Hazardous Areas	16. Implementation
8. Public Services, Facilities, and Utilities	17. Glossary
9. Transportation	

“Within each chapter of the comprehensive plan are goals and objectives, which help establish development guidelines and public policy. Goals are defined as statements, which indicate a general aim or purpose to be achieved. Goals reflect county-wide values. Objectives are defined as guidelines, which establish a definite course to guide present and future decisions. The Elmore County Comprehensive Plan is directed toward all land within the county including federal, state, public, and private lands.”

³ Elmore County, Idaho. February 2019. “Elmore County 2014 Comprehensive Plan.” Available online at <http://elmorecounty.org/wp-content/uploads/2018/05/comp-plan-2014.pdf>



This HMP will “dove-tail” with the county’s Comprehensive Plan during its development and implementation to ensure that the goals and objectives of each are integrated. This planning effort fully adopts the goals and objectives of the county’s Comprehensive Plan.

Portions of this plan were reviewed and used to develop some of the content in Chapter 3 – Community Profiles. It was also checked for information related to development trends.

Elmore County Zoning and Development Ordinance (2018)⁴

The Elmore County Zoning and Development Ordinance was adopted in May 2018. The ordinance “was enacted for the purpose of guiding the use and development of land within Elmore County while promoting public health, safety, and general welfare.” This ordinance has specific provisions dedicated to the prevention of wildfire and mitigation of the negative effects of wildland fires, and flooding hazard reduction.

Mountain Home Flood Hazard Protection and Floodplain Ordinances⁵

Mountain Home will continue to participate in the NFIP by regularly reviewing the Floodplain Ordinance and updating it when necessary. It is through the ordinance that the city recognizes flood zones identified by FEMA FIRM maps and through the requirements of the ordinance that the city administers the NFIP. A description of the ordinance is as follows:

Code for Mountain Home, Idaho is current through: Ord. 1685, passed 12-23-2019

The Mountain Home Flood Hazard Protection (Chapter 5) and Flood Plain (Chapter 16) Ordinances establish that certain flood hazard areas are subject to periodic inundation, which results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base. It is the purpose of the ordinances to promote public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. Within designated special flood hazard areas, a flood plain building permit fee and written flood plain determinate fee is required. This pair of ordinances outlines all provisions and requirements for the establishment of the flood plain area and conditions for construction within the designated flood hazard area.

The purpose of the Flood Hazard Protection chapter is to promote public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

⁴ Elmore County, Idaho. February 2019. “Amended Zoning and Development Ordinance.” Available online at <https://elmorecounty.org/land-use-and-building-department/zoning-dev-ordinance/>

⁵ Mountain Home, Idaho. February 2019. “City Code.” Available online at https://codelibrary.amlegal.com/codes/mountainhomeid/latest/mountainhome_id/0-0-0-1231#rid-0-0-0-1394



1. Protect human life, health, and property;
2. Minimize damage to public facilities and utilities such as water purification and sewage treatment plants, water and gas mains, electric, telephone and sewer lines, streets, and bridges located in floodplains;
3. Help maintain a stable tax base by providing for the sound use and development of flood prone areas;
4. Minimize expenditure of public money for costly flood control projects;
5. Minimize the need for rescue and emergency services associated with flooding, generally undertaken at the expense of the general public;
6. Minimize prolonged business interruptions;
7. Ensure potential buyers are notified the property is in an area of special flood hazard; and
8. Ensure those who occupy the areas of special flood hazard assume responsibility for their actions.

It is through the Flood Hazard Protection Building Regulations (the floodplain ordinance) that the City of Mountain Home will maintain NFIP compliance. Administration of the floodplain is outlined in section **5-5-4: Administration** of Title 5: Building Regulations; it is in this section that descriptions of how FEMA requirements, FIRM maps, flood zones, etc. are incorporated into the administration of the floodplain in Mountain Home.

Elmore County Floodplain Ordinance (2018)

Elmore County just updated the county Floodplain Ordinance in May of 2018. Elmore County will continue to participate in the NFIP by regularly reviewing the Floodplain Ordinance and updating it when necessary. It is through the ordinance that the county recognizes flood zones identified by FEMA FIRM maps and through the requirements of the ordinance that the county administers the NFIP. The purpose of the ordinance is as follows:

1. Protect human life, health, and property;
2. Minimize damage to public facilities and utilities such as water purification and sewage treatment plants, water and gas mains, electric, telephone lines, sewer lines, streets, and bridges located in floodplains;
3. Help maintain a stable tax base by providing for the sound use and development of flood prone areas;
4. Minimize expenditure of public money for costly flood control projects;
5. Minimize the need for rescue and emergency services associated with flooding and generally undertaken at the expense of the general public;
6. Minimize prolonged business interruptions;
7. Ensure potential buyers are notified the property is in an area of special flood hazard; and
8. Ensure those who occupy the areas of special flood hazard assume responsibility for their actions.



Glenns Ferry Flood Hazard Areas Ordinance

Glenns Ferry will continue to participate in the NFIP by regularly reviewing the Flood Hazard Areas Ordinance and updating it when necessary. It is through the ordinance that the city recognizes flood zones identified by FEMA FIRM maps and through the requirements of the ordinance that the city administers and remains in compliance with the NFIP.

Administration of the floodplain is outlined in section **9-4-4: Administration** of Chapter 4: Flood Hazard Areas; it is in this section that descriptions of how flood data are incorporated into the administration of the floodplain in Glenns Ferry.

Federal, State, and Other Sources

In addition to local planning mechanisms, a variety of other sources were also referenced during the development of this plan. Most of the information that was used from these sources either came from a database or was taken from a report. There were, however, other sources that did not fall into these categories such as newspaper articles, various agency or peer reviewed studies, or were some other type of publication. Relevant information was incorporated into the plan in several ways that are noted within the description in bold for each source category. The following is a list of sources that were used to develop this plan:

- **Databases and Maps -Pre-made maps and datasets, which were used to make maps and summary tables were sourced from the following entities:**
 - USDA National Agricultural Statistics Service 2017 Census
 - Idaho Geological Survey: Historical Earthquakes in Idaho
 - NOAA National Centers for Environmental Information
 - Federal Emergency Management Agency: Hazus Level 1 Analysis
 - NOAA Severe Weather Database
 - U.S. Drought Monitor
 - Idaho Department of Lands: Relative Risk to Communities and Ecosystems from Uncharacteristic Wildland Fire
 - Idaho Department of Water Resources
 - WINDEXchange: Wind speed maps
 - Idaho Power: maps and statistics
 - 2018 State of Idaho Hazard Mitigation Plan
 - Natural Resources Conservation Service
 - LANDFIRE: Vegetative Cover
 - U.S. Census Bureau (2010): Population data
 - American Community Survey (2017):
 - FEMA National Flood Insurance Program
 - Idaho State University Geology
 - Idaho Department of Environmental Quality
 - United States Geological Survey



- **Reports/Guidebooks/Publications** -Statistics, facts, and excerpts presented in this plan were used to provide details and background information regarding hazards, resources at risk, conditions in the county, and other items that needed supporting information. These were sourced from the following entities and publications:
 - USDA National Agricultural Statistics Service 2017 Census
 - 2015 Economic Impact of Agriculture in Elmore County
 - Environmental Working Group: 2011 Farm Subsidy Database
 - University of Idaho Crop Profile for Potatoes in Idaho
 - Idaho Geological Survey
 - Idaho Department of Water Resources
 - Idaho Farm Bureau Federation
 - Idaho Office of Emergency Management: 2018 State of Idaho Hazard Mitigation Plan
 - Washington Department of Ecology
 - Washington Division of Geology and Earth Resources
 - FEMA Local Mitigation Planning Handbook
 - United States Forest Service
 - Montana/Idaho Airshed Management Group

- **Miscellaneous Sources** -The following types of sources were referenced for definitions and descriptions, information about local impacts, accounts of historical events, and information about preparedness as it relates to natural hazards:
 - Newspaper Articles
 - Federal and State Publications
 - Various Studies
 - Books and other publications

Integration of HMP into Local Planning Mechanisms

2012 HMP Update

After the 2012 HMP update was complete, the plan was reviewed by the adopting jurisdictions and, in some cases, incorporated into other local planning mechanisms when appropriate. However, the HMP was only incorporated into other *relevant* plans that were being updated *after* the HMP was adopted; the HMP was not incorporated into other plans once it “expired” in 2017. The following are brief descriptions of the planning mechanisms into which the 2012 HMP update was incorporated:

Elmore County

Elmore County completed an update of their Comprehensive Plan in 2020. The Comprehensive Plan contains specific language regarding growth and development in hazardous areas.



Glenns Ferry

Glenns Ferry was included in the 2014 update of the Elmore County Comprehensive Plan. The Comprehensive Plan contains specific language regarding growth and development in hazardous areas.

Mountain Home

Given that the HMP was out of date at the time of adoption, the following plans do not contain references to the HMP but they will be integrated, or at least crossed referenced, the next time they are reviewed.

- 2020 Mountain Home Comprehensive Plan
- 2018 Downtown Master Plan

Oasis Fire Protection District

This is the first update of the Elmore County Hazard Mitigation Plan in which the Oasis Fire Protection District has been adopting jurisdiction. Now that OFPD is an adopting jurisdiction, the information in this plan will be referenced when developing and updating other plans and performing mitigation work in the district.

2020 HMP Update

Upon its adoption, the 2020 Elmore County Hazard Mitigation Plan will be reviewed by adopting jurisdictions as other planning mechanisms are updated or reviewed. This includes all plans, ordinances, FIRM maps, and any other mechanisms that are relevant to the mitigation of natural hazards in the county. This will be important in ensuring that opportunities to identify and accomplish mitigation projects through the HMP or other plans are not lost. Making a point to do this this will also aid in the coordination of goals and objectives across planning mechanisms.

As each adopting jurisdiction will complete this process independently from other jurisdictions, it will be up to Elmore County Emergency Management or the local planning department to ensure that the HMP is, at the very least, reviewed and integrated, where appropriate, when other plans are written or updated.



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Chapter 2:

The Planning Process

IN THIS SECTION:

- The Planning Team
- Description of the Planning Process
- Multi-Jurisdiction Participation
- Public Involvement
- Documented Review Process
- Plan Maintenance and Updates

Chapter 2 – The Planning Process

Documenting the Planning Process

Documentation of the planning process, including public involvement, is required to meet FEMA’s DMA 2000 (44CFR§201.6(b) and §201.6(c)(1)) for an updated local mitigation plan. This section includes a description of the planning process used to update this plan, including how it was prepared, who was involved in the process, and how all involved agencies participated.

The Planning Team

Elmore County Emergency Management Coordinator, Carol Killian, led the planning team efforts. The project manager for Northwest Management, Inc. (NMI) was Brad Tucker. These individuals led a team of resource professionals that included county and city elected officials and staff, fire protection districts, law enforcement, hospital and school district representatives, public health districts, and local interest groups (Table 4). Planning team members met monthly from February through July 2019 to discuss components of the plan, provide information requested by NMI, and to review information presented by NMI. Several members of the planning team also met with residents of Elmore County and further performed public outreach by participating in the public meetings.

Table 4) Personnel who participated in the 2020 update of the Elmore County Hazard Mitigation Plan.

Name	Title	Organization	Participate?
Carol Killian	Emergency Manager	Elmore Co. Emergency Management	Yes
Stan Winings	Assistant Emergency Mgr.	Elmore Co. Emergency Management	Yes
Beth Bresnahan	Director	Elmore Co. Land Use & Building Dept.	Yes
Alan Roberts	Chief	Elmore Rescue	Yes
Gene Palmer	Street Superintendent	Mountain Home	Yes
Mark Moore	Fire Chief	Mountain Home Fire Department	Yes
Mike Hollinshead	Sheriff	Elmore County Sheriff’s Office	Yes
Farrell Ramsey	Staff Lieutenant	Elmore County Sheriff’s Office	Yes
Bob Ruth	Fire Chief	Oasis Volunteer Fire Department	Yes
Jolene Hobdey	Secretary/Treasurer	Oasis Volunteer Fire Department	Yes
Jim R. Hobdey	Fire	Oasis Volunteer Fire Department	Yes
Terri Ryan	Firefighter	Oasis Volunteer Fire Department	Yes
Penny Meyers	District Administrator	Mountain Home Highway District	Yes
Brian Chevalier	Supervisor	Pine Featherville EMS	Yes
Luis Lasuen	Foreman	Mountain Home Highway District	Yes
Gene Haught	Chief	Atlanta Fire	Yes
Rich Urquidi	Director	Mountain Home Public Works	Yes
Jesse Cobos	Lieutenant	Mountain Home Police Department	Yes
Derik Janousek	Fire Chief	Glenns Ferry Fire Department	Yes
Monty White	Mayor	Glenns Ferry	Yes
Alan Lawler	Fire Captain	Mountain Home Fire	Yes

Tyre Holfeltz	Wildfire Risk Mitigation Program Manager	Idaho Department of Lands	Yes
Eric Nelson	Planning Associate	Northwest Management Inc.	Yes
Adam Herrenbruck	Planning Associate	Northwest Management Inc.	Yes
Brad Tucker	Env. Planning Dept. Mgr.	Northwest Management Inc.	Yes
Rich Sykes	Mayor	Mountain Home	No
Scott Conner	Chief	Mountain Home Police Department	No
Al Hofer	Commissioner	Elmore County	No
Bud Corbus	Commissioner	Elmore County	No
Wes Wootan	Commissioner	Elmore County	No

The planning philosophy employed in this project included open and free sharing of information with interested parties. Information from federal and state agencies was integrated into the database of knowledge used in this project. Meetings with the planning team were held throughout the planning process to facilitate a sharing of information between cooperators.

Stakeholder Involvement

Stakeholders were invited via email to participate in the plan update from the inception of the project. Stakeholders were able to attend each planning meeting and participate in and provide feedback during each plan review period. Table 5 lists all stakeholders that were invited to participate and whether or not they attended at least one meeting.

Table 5) Stakeholders invited to participate in the 2020 update of the Elmore County Hazard Mitigation Plan.

Name	Title	Organization	Participate?
Lorrie Pahl	Mitigation Planner	Idaho Office of Emergency Management	Yes
Heidi Novich	SC/SW AFO	Idaho Office of Emergency Management	Yes
Michael Brady	DFMO	United States Forest Service	Yes
Ryan Erne	DAFMO	United States Forest Service	Yes
Stephaney Kerley	District Ranger	United States Forest Service	No
Lisa Bisterfeldt	Emergency Manager	St. Lukes	Yes
Randy Mcleland	Senior Planner	Central District Health Department	Yes
Jared Jablonski	Engine Module Leader	BLM Fire Boise District	Yes
Josh Renz	Prevention	BLM Fire Boise District	No
Jason Nettleton	Representative	Rangeland Fire Protection Association	No

Planning Team Meetings

Elmore County Emergency Management solicited participation from each jurisdiction and State and Federal Agencies throughout the county as well as local hazard experts for the 2020 HMP update. With the full integration of the Community Wildfire Protection Plan and the HMP processes, local fire districts were also asked to participate in the planning team meetings (refer to *Record of Planning Team Participation* in Appendix A: Documentation of Participation). Throughout the meetings, the planning team reviewed the updated plan, aided in the risk and vulnerability analysis, developed public outreach

efforts, and determined the best mitigation strategies for each jurisdiction. The planning kickoff meeting was held in February of 2019 with periodic meetings through July 2019.

Primary Points of Contact

The following (Table 6) is a list of individuals who served as the primary points of contact for each adopting jurisdiction in the planning process. Some jurisdictions had multiple representatives who served slightly different roles in reaching out to other individuals in their jurisdictions.

Table 6) Primary points of contact for the 2020 Elmore County Hazard Mitigation Plan update.

Adopting Jurisdiction	Primary Contact(s)	Title	Agency
Elmore County	Carol Killian 208-590-0967	Emergency Management Coordinator	Elmore County Emergency Management
Elmore County	Mike Hollinshead 208-587-3370	Sheriff	Elmore County Sheriff
City of Mountain Home	Mark Moore 208-861-1461	Fire Chief	Mountain Home Fire Department
City of Glenns Ferry	Monty White 208-366-7418	Mayor	City of Glenns Ferry
Oasis Fire Protection District	Bob Ruth 208-796-2236	Fire Chief	Oasis Volunteer Fire Department
Oasis Fire Protection District	Jolene Hobdey 208-796-2236	Secretary/Treasurer	Oasis Volunteer Fire Department

Description of the Planning Process

The Elmore County Multi-Hazard Mitigation Plan update was developed through a collaborative process involving all organizations and agencies detailed in Table 4. The planning effort began by organizing and convening a county-wide planning team.

Elmore County Emergency Management Coordinator began organizing the planning team in the fall of 2018 by sending out a project invitation letter to a wide variety of local officials, experts, specialists, and citizen groups. Many of these individuals attended the first planning team meeting personally or sent a representative from their office or organization.

The initial planning process included seven distinct phases, most of which occurred either simultaneously or overlapped throughout the process:

1. **Organization of Resources** – Elmore County and NMI worked together to develop a comprehensive list of potential participants as well as a project timeline and work plan. The 2011 planning committee served as the basis for identifying stakeholders; however, that list was expanded in order to provide a comprehensive review and update of the risk assessments and mitigation strategies during the update process.



2. **Collection of Data** – NMI coordinated with the planning team to gather any new data and information about the extent and periodicity of hazards in Elmore County to ensure a robust dataset for making inferences about hazards.
3. **Field Observations and Estimations** – NMI and the planning team utilized risk models and identified problem areas in order to better understand risks, juxtaposition of structures and infrastructure to risk areas, access, and potential mitigation projects. Many of the analyses used in the 2011 plan were reviewed and updated to incorporate new hazard vulnerabilities or changes in development. Additionally, several new risk models and analyses were included in the 2020 update process to better represent actual conditions in Elmore County.
4. **Mapping** – NMI developed a comprehensive database and map files relevant to pre-disaster mitigation control and mitigation, structures, resource values, infrastructure, risk assessments, and other related data. All maps and databases were updated as part of the 2019 plan update.
5. **Public Involvement** – NMI and Elmore County developed a plan to involve the public from the formation of the planning committee to news releases, public meetings, public review of draft documents, and acknowledgement of the final updated plan by the signatory representatives.
6. **Strategies and Prioritization** – NMI and the planning team representatives worked together to review the risk analyses and develop realistic mitigation strategies. As part of the 2020 plan update, a record of completed action items as well as a “2020 status” report of projects was included in the revised mitigation strategies for each jurisdiction.
7. **Drafting of the Report** – NMI drafted a final update report and worked with members of the planning team to review each section, incorporate public comments, proceed with the state and federal review processes, and adopt the final document.

Multi-Jurisdiction Participation

CFR requirement §201.6(a)(4) calls for multi-jurisdictional planning in the development of Hazard Mitigation Plans that impact multiple jurisdictions. To be included as an adopting jurisdiction in the Elmore County Multi-Hazard Mitigation Plan, jurisdictions were required to participate in at least one planning advisory meeting or meet with planning team leadership individually, provide a goals statement, submit at least one mitigation strategy, and adopt the final plan by resolution.

The following is a list of jurisdictions that have met the requirements for an adopting jurisdiction and are thereby included in the Multi - Hazard Mitigation Plan:

- **Elmore County**
- **City of Mountain Home**
- **City of Glens Ferry**
- **Oasis Fire Protection District**

Elmore County, the City of Mountain Home, and the City of Glens Ferry participated in the 2011 Elmore County Multi-Hazard Mitigation Plan. These jurisdictions were represented on the planning committee and at public meetings and participated in the development of hazard profiles, risk assessments, and mitigation measures. Oasis Fire Protection District is a new adopting jurisdiction for the 2019 plan update.

The monthly planning team meetings were the primary venue for authenticating the planning record. However, additional input was gathered from each jurisdiction in a combination of the following ways:

- Planning team leadership attended local government meetings where planning updates were delivered, and information was exchanged. Additionally, representatives on the planning team periodically attended city council meetings to provide municipality leadership with updates on the project and to request reviews of draft material.
- Planning team leadership and the representatives of the municipalities and special districts was facilitated as needed to ensure understanding of the process, collect data and other information, and develop specific mitigation strategies.
- Public meetings were hosted by the communities of Mountain Home, Glenns Ferry, Pine, and the Oasis Fire Protection District. Each meeting involved representatives of Elmore County Emergency Management, NMI, and several other representatives from the jurisdiction in which the meeting was held.
- Written correspondence was provided at least monthly between the planning committee leadership and the contractor to provide updates to the cooperators on the document's progress, making requests for information, and facilitating feedback from participating jurisdictions. Elmore County Department of Emergency Management representatives used an email distribution list of all the stakeholders to announce meetings, distribute meeting agendas, provide draft sections for review, and request information. All the participating jurisdictions provided comments to the draft document during the data gathering phase as well as during the various planning team and public review processes.

Public Involvement

Public involvement with this plan was made a priority from the inception of the project. There were several ways that public involvement was sought and facilitated. Public meetings served as the primary means of public outreach for the project while the final draft of the plan was also made available for public review and comment.

Under the auspices of Elmore County Emergency Management, periodic press releases were submitted to local papers and posted on the ECEM website. Additional press releases and flyers provided information regarding the public meetings and public comment period including how to find electronic versions of the draft on the ECEM website for review and instructions on how to submit comments to ECEM. A record of published articles regarding the HMP is included in Appendix D.

No comments were submitted by the general public.

Public Meetings

Public meetings were held on September 24th in Pine and Glenns Ferry and on September 25th in Mountain Home and Oasis. Representatives from NMI presented a PowerPoint overview of the purpose of the plan, risk assessments for each hazard, and examples of mitigation activities that may benefit Elmore County.



There were map displays to help facilitate open discussion and give community members an opportunity to identify specific concerns in their communities. At each meeting that hosted members of the public, two representatives from NMI, the Elmore County Emergency Manager, and several planning team members from the jurisdiction were in attendance. Refer to Table 7 for approximate attendance at each public meeting.

Table 7) Public meeting record for 2020 update of the Elmore County Hazard Mitigation Plan.

Jurisdiction	Location	Community Members
Community of Pine	Senior Center	38
City of Glenns Ferry	City Hall	12
City of Mountain Home	Search and Rescue Meeting Room	0
Oasis Fire Protection District	Tilli Fire Station	19
TOTAL		69

Documented Review Process

Opportunities to review and comment on this plan were provided on multiple occasions for the planning team members as well as for members of the general public. A record of the document review process has been established through email correspondence, press releases, meeting agendas, and meeting sign-in sheets. Proof of these activities is recorded in Chapter 7 – Appendices.

During regularly scheduled planning team meetings in 2019, members met to discuss findings, review mapping and analysis, and provide written comments on draft sections of the document. During the public meetings attendees observed map analyses, photographic collections, discussed general findings from the community assessments, and made recommendations on potential project areas.

Sections of the draft plan were delivered to the planning committee members during the regularly scheduled committee meetings and emailed to the committee the following day. The completed first draft of the document was sent out to the planning group in December for full review. The planning team spent several weeks proofreading and editing sections of the draft. Many jurisdictions met individually to review and revise their specific risk assessment and mitigation strategy including the prioritization of action items. Once the planning team review was completed, the draft document was released for public review and comment. The public review period remained open from December 2nd through December 16th, 2019.

Plan Maintenance and Updates

As part of the policy of Elmore County in relation to this planning document, this entire Multi - Hazard Mitigation Plan should be reviewed annually (from date of adoption) at a special meeting of the planning team. This meeting will be open to the public and involving all jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. Elmore County Emergency Management will initiate the annual reviews. The Emergency Manager (or an official designee of the planning team) is responsible for the scheduling, publicizing, and leadership of the annual review meeting. During this

meeting, all participating jurisdictions, at the lead of the individuals designated as the points of contact at the beginning of this chapter, will report on their respective projects, identify needed changes and updates to the existing plan, and identify what about the plan is working and not working and which goals are being achieved or need to be modified. Maintenance to the plan should be detailed at this meeting, documented, and attached to the formal plan as an amendment to the Multi - Hazard Mitigation Plan.

The five-year plan updates will occur on the fifth anniversary of the plan's acceptance, and every five-year period following. These updates will be initiated by the Elmore County Emergency Manager, who will also reassemble the entire planning team. During this time new planning partners and stakeholders can be added to the planning team if necessary. Elmore County Emergency Management will take a leadership role during the five-year update planning process where the planning team will examine how well the plan is working, if goals are being achieved, and if needs are being addressed.

More details about the annual and five-year review processes are as follows:

Annual Plan Review

The focus of the joint planning team at the annual review meeting should include at least the following topics:

- Evaluate whether or not the plan is following the planning philosophy and mission statement expressed in Chapter 1 as well as all actionable components of the plan
- Assess the plan's effectiveness and evaluate whether or not the plan is achieving its stated goals. Make notes of any changes or improvements that can be made during the next full update.
- Update historical events record based on any events in the past year.
- Review county profile and individual community assessments for each hazard and note any major changes or mitigation projects that have altered the vulnerability of each entity.
- Add a section to note accomplishments or current mitigation projects.
- All action items in Chapter 6 will need to be updated as projects are completed, and as new needs or issues are identified.
- Address Emergency Operations Plans – how can we dovetail the two plans to make them work for each other? Specifically, how do we incorporate the County's EOP into the action items for the regional MHMP?
- Address Updated County Comprehensive Land Use Plans – how can we dovetail the two plans to make them work for each other?
- Incorporate additional hazard chapters as funding allows.
- **CWPP:** Invite the IDL to participate in the annual review of the CWPP. At the time this plan was updated Tyre Holfeltz was the point of contact for the IDL.
- **CWPP:** The IDL would like to review the wildfire hazard map and wildland urban interface definitions that were used in this plan. The current hazard mapping methodology and wildland urban interface terms should be incorporated into this plan.

All meeting minutes, press releases, and other documentation of revisions should be kept on record by Elmore County Emergency Management.



Five-Year Plan Update

The focus of the planning committee at the five-year re-evaluation should include all topics suggested for the annual review in addition to the following items:

- Update County demographic and socioeconomic data.
- Address any new planning documents, ordinances, codes, etc. that have been developed by the county or cities.
- Review listed communication sites.
- Review municipal water sources, particularly those in the floodplain or landslide impact areas.
- Redo all risk analysis models incorporating new information such as an updated county parcel master database, new construction projects, development trends, population vulnerabilities, changing risk potential, etc.
- Update county risk profiles and individual community assessments based on new information reflected in the updated models.
- Improve the “Mechanisms to Incorporate Mitigation Strategies” section in Chapter 6 to include a full capability assessment describing each jurisdiction’s authorities, policies, programs, and resources available to accomplish hazard mitigation.
- Identify and address how changes in development have impacted each jurisdiction’s vulnerability.
- Discuss how planning and mitigation priorities have changed to reflect current financial, legal, and political realities or post-incident conditions. Document this in the updated Plan.
- **CWPP:** Invite IDL to participate in the update of all information identified as being a part of the Community Wildfire Protection Plan.

All meeting minutes, press releases, and other documentation of revisions should be kept on record by Elmore County Emergency Management.

Continued Public Involvement

Elmore County is dedicated to involving the public directly in review and updates of this Multi - Hazard Mitigation Plan. The County Emergency Management Coordinator, through the planning committee, is responsible for the annual review and update of the plan as recommended in the “Plan Monitoring and Maintenance” section above.

The public will have the opportunity to provide feedback about the plan annually on the anniversary of the adoption at a meeting of the County Board of Commissioners. Copies of the Plan will be kept at the County Courthouse. The plan also includes contact information for the Emergency Management Coordinator, who is responsible for keeping track of public comments.

A public meeting will also be held as part of each annual evaluation or when deemed necessary by the planning committee. The meetings will provide the public a forum for which they can express concerns, opinions, or ideas about the plan. The County Commissioner’s Office will be responsible for using county resources to publicize the annual meetings and maintain public involvement through the county’s webpage and local newspapers.



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Chapter 3:

Community Profile

IN THIS SECTION:

- Description of the Region
- Geography and Climate
- Demographics and Socioeconomics
- Land Ownership
- Development Trends
- Natural Resources
- Hazard Management Capabilities

Chapter 3 – Community Profiles

Elmore County Characteristics

The following section has been summarized from information available at Elmore County's website.⁶

Elmore County was established February 7, 1889, with its county seat at Rocky Bar. A station on the overland stage route, originally named Rattlesnake Station, was moved to the railroad line and became Mountain Home. On February 4, 1891 the county seat was moved to Mountain Home.

One hundred and fifty years before the appearance of white explorers this majestic land belonged to the American Indians. The Shoshoni and Bannock Indians roamed Elmore County, winter camping on the bank of the Snake River, returning to the Camas Prairies in late spring.

In 1803 Thomas Jefferson arranged for the United States to buy the Oregon Country from Napoleon Bonaparte. The first trappers in Southern Idaho were with John Jacob Astor's Pacific Fur Company. The relationship between the Indians and the white men during the fur trapping era was generally peaceful. The trappers lived in a lifestyle similar to that of the Indian, and white exploration and trade did not seriously disrupt Indian social or cultural institutions. The conflict between cultures arose during the next era, when wave after wave of emigrants arrived and settled the west.

Between 1840 and 1862, more than 250,000 emigrants traveled through Elmore County on their way "west". They traveled the historic Oregon Trail, a grueling 2,000-mile trail that was referred to as the "longest cemetery in the nation". One of the more hazardous parts of the journey involved crossing the Snake River. A popular ford was in Elmore County at Three Island Crossing above Glens Ferry.

Many farm and ranch families came to Elmore County because of land schemes promoted by the railroad and land developers. The land was rich, producing 3 to 5 times as many bushels per acre as land in Illinois, Virginia, or Tennessee. The land was also capable of producing a variety of crops, and prosperous farmers invested in cherries, plums, apples, grain, cattle, horses, and sheep. Cattle, horse, and sheep rearing became important industries in Elmore County. By 1888 the county had 35,000 cows, 60,000 sheep, and 8,000 horses. Wool and mutton production rivaled the cattle and horse industry.

As the communities of Mountain Home, Glens Ferry, Rocky Bar, and Atlanta grew, residents began to push for a new county with a centrally located county seat. The creation of Elmore County was hotly debated. Finally, as its last act, the last Territorial Legislature created Elmore County on February 7, 1889. The county seat changed location several times, but in 1891 it settled permanently in Mountain Home.

⁶ Elmore County, Idaho. Available at <http://www.elmorecounty.org/>.



Description of the Region

Elmore County is in southwestern Idaho. It is bounded on the north by Boise County, on the east by Custer, Blaine, Camas, Gooding, and Twin Falls counties, on the south by Owyhee County, and on the west by Ada County.

Elmore County covers more than 3,100 square miles. Approximately 60% of the county is mountainous. The remaining 40% slopes gently down into the Snake River Plain. Elmore County has altitudes ranging from 2,500 feet to over 9,700 feet. Approximately 70% of the county is owned by varying departments of the federal government including the U.S. Forest Service, the U.S. Department of Defense, and the Bureau of Land Management. Approximately 22% of Elmore County's lands are designated farmlands.

The main highways weaving through the county are U.S. 30 and Interstate 84. Interstate 84 transverses the southern part of the county from northwest to southeast, by passing the two incorporated towns of Mountain Home and Glenns Ferry. I-84 provides adequate on-off ramps for easy access to both cities. I-84 provides the main transportation route for the trucking industry in the northwestern section of the United States and provides good connections eastward to Salt Lake City and points beyond.

State highways 51, 67, and 20 converge in Mountain Home, providing a direct link to southwestern Idaho. Highway 67 is a four-lane, ten-mile road that provides access to Mountain Home Air Force Base.

Geography and Climate

The topography of Elmore County is extremely varied, from low elevation plains to high, steep mountainous terrain. The county is divided into two district provinces, the Northern Rocky Mountain Province-Idaho Batholith and the Columbia Plateau Province-Snake River Plain in the southern third of the county.

High-glaciated mountains in the northern province, especially the area north of Atlanta, are dotted with several hundred glacial lakes. The terrain is very steep, rocky, and rugged, and much is granite rock covered with alpine vegetation.

The Snake River Plain supports both irrigated agriculture and spring-fall grazing for cattle and sheep. The major limitation to further expansion of agriculture in this area is water. Soils also are a limiting factor in a few sections of the Snake River Plain.

The two major rivers in the county are the Snake River and the Boise River. The Snake River serves as the county's natural boundary to the south, while the Boise River creates the northern boundary. Other important bodies of water in the county are the C.J. Strike Reservoir, which is fed by the Snake River, and the Anderson Ranch Reservoir, which is fed by the South Fork of the Boise River.

There is a wide range of climate in Elmore County due to the variances in altitude--2,300 feet in the south along the Snake River to nearly 10,000 feet to the north in the Sawtooth Mountains. Precipitation along the Snake River is less than eight inches per year. Temperatures climb to over 100° F in the summer. The



other extreme of climate is in the northern mountains where precipitation reaches more than 50 inches per year and temperatures can drop to lower than minus 50° F.

The highest temperature on record in Atlanta was 101 degrees (F). The lowest temperature was minus 19 degrees (F). Typically, Atlanta has only 6 days a year with temperatures above 90 degrees (F) and 232 days a year with temperatures below 32 degrees (F). Mountain Home temperature extremes have varied between 111 degrees (F) to minus 36 degrees (F). The town has temperatures above 90 degrees (F) on the average 55 days annually. For 146 days each year, the temperature falls to 32 degrees (F) or below.

Wind speeds average 6 miles per hour or less 39% of the time, and 7 to 15 miles per hour 41% of the time. Damaging winds are rare. Wind directions are quite variable. Predominantly they blow from the northwest, but occasionally blow from the east to east-southeast. Strong winds are generally from the west to northwest. February, March, and April are the windiest months with wind speeds of 22 mph or greater occurring 4% of the time. Thunderstorms accompanied by strong winds occur most frequently in June and July. Tornadoes are very rare in Elmore County with only three on record since 1950 (F1 in 1961; F1 in 1988; EF0 in 2013).

Demographics and Socioeconomics

The 2017 population estimate for Elmore County was 26,823, a decline from the 2010 Census count which established the Elmore County population at 27,038. The estimated population of Mountain Home in 2017 was 14,224 and 1,278 for Glens Ferry. The most recent population data for the Air Force Base is from the 2010 Census which reported the population as 3,238. Table 8 shows historical changes in population among the various communities within Elmore County.

Table 8) Populations of adopting jurisdictions in Elmore County, ID. Data is from the U.S. Census Bureau.

Jurisdiction	1980	1990	2000	2004	2010	2017*
Elmore County	21,565	21,205	29,725	30,700	27,038	26,823
Mountain Home	7,540	7,913	11,143	12,000	14,206	14,224
Glens Ferry	1,374	1,404	1,611	1,640	1,319	1,278
Oasis Fire Protection District	Population Estimate for 2019: 192 Residents**					

*Population estimate by U.S. Census Bureau

**Population estimate provided by planning team representatives from the Oasis FPD

In 1950, Mountain Home and Glens Ferry were similarly sized communities. When the Mountain Home Air Force Base became a strategic Aerospace Wing Base in the late 1950's, the population of Mountain Home and Elmore County increased significantly. Economists and military planners estimate that at least fifty percent of growth and development in Elmore County can be attributed to Mountain Home Air Force Base. Because of this symbiotic relationship, any change in the Base staffing or mission has a direct input to growth or decline in Elmore County, particularly in the City of Mountain Home.

The information presented in Table 9 was taken directly from the Elmore County Comprehensive Plan (2014). This information was used to forecast how populations would change over a ten-year period for the county, the cities, Mountain Home AFB, and the unincorporated communities. The 2013 U.S. Census

Bureau estimates were the most current population numbers available at the time and the forecast was made for the year 2024, assuming an annual population growth of 3%. This table is still useful to review the historic populations of the unincorporated parts of Elmore County. It is also useful to understand how county planning efforts are made in attempt to account for growth and expansion. Based on the 2017 population estimates expressed in Table 8, it appears the annual growth expectations projected in the Comprehensive Plan have not been realized.

Table 9) Elmore County Comprehensive Plan: Population Forecast by Community.¹

Community	1980	1990	2000	2004	2010	2013 ⁽¹⁾	2024 ⁽²⁾
Elmore County	21,565	21,205	29,725	30,700	27,038	26,170	36,114
Mountain Home	7,540	7,913	11,143	12,000	14,206	13,739	18,959
Glenns Ferry	1,374	1,404	1,611	1,640	1,319	1,274	1,758
Mountain Home AFB	*	*	8,894	*	3,238	3,132	4,322
Hammett	500	500	720	760	654	633	873
Pine / Featherville	150	170	370	420	335	321	442
King Hill	250	200	220	240	200	191	263
Prairie	60	80	120	150	108	102	140
Mayfield / Simco	65	75	105	120	94	91	125
Tipanuk	20	60	130	150	119	115	158
Oasis	12	30	80	115	73	70	96
Atlanta	35	40	60	70	54	52	71
Chattin Flats	20	22	40	40	35	34	46
Other Areas	*	*	6,232	*	6,603	6,416	8,861

Source: U.S. Census Records, 2004 Comprehensive Plan & Land Use and Building Department Projections – *data not available

⁽¹⁾ Estimates from U.S. Census Bureau

⁽²⁾ Estimates based on 3% annual population growth

Basic demographic information from the 2017 American Community Survey (ACS) and the 2010 US Census Bureau is displayed in Table 10. Changes in housing occupancy is also displayed; the 2017 estimate of 10,062 comprises 80% of all available housing in the county.⁷

Table 10) Demographic information for Elmore County, ID. Information is from the US Census Bureau 2010 Census and the 2017 American Community Survey.

Category	2010 Census	2017 ACS Estimate
White	82.0%	87.5%
American Indian	1.0%	1.5%
Black	3.0%	3.4%
Asian	3.0%	3.4%
Other Race	11.0%	4.2%
Male	55.0%	52.2%
Female	45.0%	47.8%
Occupied Housing Units	9,092	10,062

⁷ US Census Bureau. Quickfacts. Available online at <http://www.census.gov>. Accessed March 2019.

Land Ownership

There are two U.S. National Forest systems in the county, the Boise National Forest and the Sawtooth National Forest. Three Island State Park at historical Three Island Crossing Ford, stands as a modern monument to the courage and foresight of the Oregon pioneers who used the natural islands and sand bars to cross the Snake River on their way to the Pacific Northwest. The park is in Glens Ferry.

Twenty miles south of Mountain Home, the two largest sand dunes in North America can be found. The dunes have formed in the Eagle Cove Depression, a former part of the Snake River Canyon which remained after the river changed its course during the Great Bonneville Flood. Land ownership in the county is broken down in Table 11 by acreage and percentage of total land area in the county.

Table 11) Land Ownership Categories in Elmore County

Entity	Acres	% of Total Land Area
Bureau of Land Management	589,827	29.8%
Bureau of Reclamation	42	< 0.1%
City	328	< 0.1%
County	2	< 0.1%
Department of Defense	8,522	0.4%
Idaho Fish and Game	5,844	0.3%
Private	493,433	24.9%
Sawtooth National Recreation Area	61,780	3.1%
State of Idaho	115,426	5.8%
US Forest Service	704,485	35.6%
Total	1,979,689	100.0%

Development Trends

Since 1950, Elmore County has become more urban and less rural. The late 1980's proved this statement as Elmore County incomes increased, agriculture began to consolidate, and service industries developed in the County. The term "Economic Development" is important in Idaho but particularly critical in Elmore County where the officials of Elmore County, the City of Mountain Home, the City of Glens Ferry, as well as many citizens, have funded economic development actions in order to help diversify the County's economy. In addition to meeting economic development goals the County may also need to stress the importance of sustainable economic development to ensure further diversity and stability of the County.

Agriculture, mining, and timber processing have historically been important to Elmore County and the State, but in order to create additional jobs for existing and future citizens these industries must be enhanced and other means of economic development will be needed. Agriculture is the major contributor to the economic stability of the County. In the 1960's, more water became available for irrigation through pumping from the Snake River and drilling ground water wells. This brought about an increase in irrigated cropland. Potatoes, sugar beets, and beans are crops that are highly productive. Mint became a good alternate crop, and watermelon and cantaloupe have become major fruit crops in the southeastern part of the County. Due to the recent wildfires it has become apparent that increased timber processing is

necessary from federal, state and private lands. County residents believe there is a great deal of economic development potential with the sustainable management of federal lands.

The status of development trends in and around hazardous areas in Elmore County is very similar to what it was at the time of the 2011 plan update. The most recent development within the county has been residential but the expansion of these areas has been guided by ordinances that regulate construction and minimize the potential impacts from natural hazards. Urban development has largely remained steady in the county, but when expansion does occur natural hazard mitigation will be a priority. The Elmore County Comprehensive Plan includes a list of economic objectives that describe various types of development that the county will be focusing on in the future:

1. Support existing business and industry in the County.
2. Encourage broad-based economic development programs that include:
 - a. Natural resources such as mining, timber, and agriculture from both federal and private lands.
 - b. Commercial Development
 - c. Industrial Development
 - d. Tourism Expansion and Development
 - e. Military Expansion and Development
3. Encourage effective use of tax funds so that established areas are not burdened while providing services and facilities for new growth.
4. Maintain policies and ordinances that will not impair the mission of Mountain Home Air Force Base.
5. Set aside suitable sites for economic growth and expansion that is compatible with the surrounding area.
6. Encourage and support heavy industrial development to locate in the vicinity of the Simco Road District.
7. Encourage and support improvement of Simco Road as a connector between Interstate 84 and State Highway 67.
8. Continue good coordination, cooperation, and support among economic development entities within Elmore County, plus those at the regional and state levels.
9. Establish appropriate industrial zones to further increase business and economic development in various communities and areas of Elmore County, particularly at appropriate locations near areas of city impact.
10. Call upon all federal agencies to better manage public lands to reduce fuel loads and in turn promote economic development.
11. Recognize the need for electric utility facilities that are sufficient to support economic development.
12. Encourage Idaho Power to make additions to and improvements of electric utility facilities that provide adequate capacity for projected growth.



Some improvements have been made in rural parts of the county which have reduced the overall vulnerability of the county to flooding. These efforts have largely been focused on the replacement of aging bridges that were either narrow or were of a design that did not perform adequately during high flow conditions. During high waters typically carry significant debris loads that accumulate on abutments, increasing the risk of flooding (refer to Appendix C for an inventory of bridges in rural parts of the county). The following bridges were replaced since the last update:

- Mayfield Road: Crosses Canyon Creek, constructed in 2011, in good condition.
- NFD RD 113; Prairie: Crosses Pierce Creek, constructed in 2012, in good condition
- Fall Creek. – Rocky Bar: Crosses the East Fork of Fall Creek, constructed in 2013, in good condition
- Anderson Dam Rd.: Crosses Castle Creek, constructed in 2014, in good condition
- Trinity Mountain Road: Crosses Fall Creek, Constructed in 2014, in good condition

All residential and commercial development and infrastructure in the county will be exposed to at least one natural hazard annually; however, county and city governments are mitigating the potential impacts of hazards to the best of their abilities through land use planning.

Glenns Ferry

No new major development has occurred in Glenns Ferry. Efforts have largely been focused on making improvements to existing structures and infrastructure in the city. Any and all improvements have been made in compliance with building codes and ordinances which do serve to mitigation impacts from natural hazards.

Mountain Home

Outside of Mountain Home new construction has been occurring in the form of single-family homes and recreational development. There have been new housing developments in and surrounding Mountain Home since 2005; however, these developments are guided by zoning and specific hazard-related ordinances. Even with building codes and ordinances, more homes will increase Mountain Home's exposure to natural hazards.

Oasis Fire Protection District

As the community of Oasis is functionally a bedroom community, expansion and development within the Oasis Fire Protection District is primarily in the form of single-family home residential development. Since the 2011 plan update, more homes have been built within the district and more should be expected to be built in the future. In addition to the expansion of the fire station on Tili road, which now accommodates more vehicles, other facilities related to emergency response and other services will likely be built in and around the community. Even with building codes and ordinances, more homes will increase the exposure of the Oasis Fire Protection District to natural hazards.



Natural Resources

Elmore County is a diverse ecosystem with a complex array of vegetation, wildlife, and fisheries that have developed with, and adapted to fire as a natural disturbance process. Nearly a century of wildland fire suppression coupled with past land-use practices (primarily timber harvesting, agriculture, and mining) has altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition. As a result, some forests in Elmore County have become more susceptible to large-scale, high-intensity fires posing a threat to life, property, and natural resources including wildlife and plant populations. High-intensity, stand-replacing fires have the potential to seriously damage soils, native vegetation, and fish and wildlife populations. In addition, an increase in the number of large, high-intensity fires throughout the nation's forest and rangelands has resulted in significant safety risks to firefighters and higher costs for fire suppression.

Biota

Fish and Wildlife – Elmore County is home to a diverse array of fish and wildlife species. Elmore County streams provide habitat for native trout and char, including populations that are listed as threatened under the federal Endangered Species Act. Forestlands and interface areas are important habitat for many species of birds and mammals.

Vegetation – Vegetation in Elmore County is a mix of forestland, riparian, rangeland, and agricultural ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. Most of the county (48%) is characterized by grass and herbaceous vegetation cover-types with shrub dominated species mixes covering an additional 29% of the total land area. Only about 17% of Elmore County is timbered; timber cover types are primarily found in the northern portion of the county. General existing vegetative cover types are displayed in Table 12; Table 13 displays the same information but cover-types are broken down with a greater level of specificity.

Table 12) General Existing Vegetative Cover Types in Elmore County, ID.

Land Cover-Type	Acres	% of Total Land Area
Herbaceous / Nonvascular-dominated	943,891	48%
No Dominant Lifeform	94,266	5%
Non-vegetated	18,040	1%
Shrub-dominated	582,131	29%
Tree-dominated	346,041	17%
Total	1,984,369	100%

Most of the timber in the county is on federal land. There are less than 20,000 acres of private lands that could be classified as timberlands. Within the Boise National Forest, there are visible signs of tree damage due to disease and insect invasions. Federal and state land management agencies are taking action to reduce disease and insect related tree kill, which will also reduce dead fuel for wildfire. Much of Elmore County's forested area is being used under a multiple use concept such as timber production, livestock

grazing, wildlife habitat, recreation, and watershed protection. Certain areas are classified as critical, have been set aside for a specific use, and should continue to be managed for that use.

Rangeland is generally divided into winter, spring/fall, and summer range depending upon elevation and location. Over 65% of the land in Elmore County is classified as rangeland. The Bureau of Land Management (BLM) and Forest Service administer most of the public lands in the county. Range fires occur frequently in the Snake River Plains during summer. When this happens, the land is usually seeded to select grasses in the fall for better forage cover.

Table 13) Specific Existing Vegetative Cover Types in Elmore County, ID.

Land Cover-Type	Acres	% of Total Land Area
Annual Graminoid/Forb	512,830	25.8%
Deciduous open tree canopy	18,757	0.9%
Deciduous shrubland	8,880	0.4%
Developed	25,407	1.3%
Evergreen closed tree canopy	98,962	5.0%
Evergreen open tree canopy	212,108	10.7%
Evergreen shrubland	154,022	7.8%
Evergreen sparse tree canopy	19	0.0%
Herbaceous - grassland	25,358	1.3%
Mixed evergreen-deciduous open tree canopy	15,797	0.8%
Mixed evergreen-deciduous shrubland	56,035	2.8%
Non-vegetated	18,040	0.9%
Perennial graminoid grassland	405,703	20.4%
Perennial graminoid steppe	363,591	18.3%
Sparsely vegetated	68,859	3.5%
Total	1,984,369	100.0%

Hydrology

One of the more important watersheds in the State of Idaho lies in Elmore County, furnishing irrigation water to the Boise Valley. There are three major reservoirs, and associated dams, on the Boise River are entirely or partially within the county. They are Anderson Ranch, containing 432,178 acre-feet; Arrowrock, 286,600 feet; and Lucky Peak, 278,276 acre-feet; with a total capacity of 998,154 acre-feet of water. The water is stored for irrigation, power generation, and flood control as well as for recreational use.

North of Atlanta between the Middle and North Forks of the Boise River is an area of high mountainous country that is part of the Sawtooth National Recreation Area. It is estimated that there are 500 glacially formed lakes that provide fishing and other forms of recreation to those that walk or pack into this area of awesome beauty. The Trinity Mountain area also contains glaciated lakes, some of which are accessible by road.

Reservoirs belonging to the Mountain Home Irrigation District supply water to about 4,400 acres and provide some of the finest fishing in the County. They are Little Camas Reservoir, 24,000 acre-feet; Long



Tom Reservoir, 3,700 acre-feet; and Mountain Home Reservoir, 5,400 acre-feet. Private reservoirs that have been built for irrigation purposes are the Blair/Trail Diversion Dam and Reservoir, the Morrow Reservoir, three reservoirs on Hot Creek, two reservoirs on Bennett Creek, and Walker Reservoir. Some of these are also used for recreational purposes.

The Snake River provides over half of the water for irrigation in the county and is a source of power generated at Bliss Dam and C.J. Strike Dam. It provides boating, fishing, and hunting as well as being a scenic attraction. The middle portion of the Snake River is a working river and it is the prime source of water for irrigated agriculture in the county. The county has a few hot water artesian wells and springs. Several geothermal wells are being used for irrigation in the Snake River Plains area. Hot water springs can be found along the Front Range and on the Boise River.

In the late 1970's the Central District Health Department recommended that no development or building be allowed northeast of Mountain Home without an U.S. Geological Survey of the soils because of potential contamination of ground water supplies. Pollution is not the only threat to the ground water source. Lowering the water level through use in excess of recovery is another threat that must be considered in planning. A U.S. Geological Survey prepared in cooperation with the Idaho Department of Water Resources in December of 1977 makes the following summary and conclusion:

"Development of the ground-water resources in the Mountain Home plateau area has caused water level decline in several places, the largest of which are south of Mountain Home, where water levels have declined more than 20 feet in the past nine years. Although the total amount of water in storage in the aquifers may be considerable, it has not yet been determined. Present well-hydrography data indicate that additional large-scale ground water development will probably result in increased long-term water-level declines, which may result in economically prohibitive pumping lifts and use of excessive amounts of energy. Therefore, it seems that large-scale new agricultural development on the plateau would depend heavily on the availability of surface water."

In Elmore County, recharge of ground water systems is dependent on water from the Boise River Basin, runoff from adjacent mountains, and precipitation. In the 1994, Elmore County Comprehensive Plan, the area near the I-84 Fairfield interchange was designated as a groundwater recharge protection area. Development restrictions are still needed in this area to protect groundwater quality and quantity.⁸

Air Quality

The primary means by which the protection and enhancement of air quality is accomplished is through implementation of National Ambient Air Quality Standards (NAAQS). These standards address six

⁸ Elmore County, Idaho. 2014 Comprehensive Growth and Development Plan. Elmore County Growth and Development Department. Mountain Home, Idaho.



pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides.⁹

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority governing air resource management. The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, the Organization for Air Quality Protection Standards (OAQPS) is responsible for setting the NAAQS standards for pollutants which are considered harmful to people and the environment. OAQPS is also responsible for ensuring these air quality standards are met, or attained (in cooperation with state, Tribal, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources.¹⁰

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in Idaho are governed by a combination of factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. At a smaller scale, topography and vegetation cover also affect air movement patterns. Locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall.

Due principally to local wind patterns, air quality in Elmore County is generally good to excellent, rarely falling below IDEQ pollution standards. However, locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall. All major river drainages are subject to temperature inversions, which trap smoke and affect dispersion, causing local air quality problems. This occurs most often during the summer and fall months and would potentially affect all communities in Elmore County.

Smoke management in Elmore County is facilitated by the Idaho/Montana Airshed Group. This group advises when conditions are appropriate for prescribed burning based on information participating members (burners) supply to them. The southern half of the county is in Airshed Unit 22, and about half is in Airshed Unit 21 (the northern portion), with smaller sections to the east in Airshed Units 24 and 25. It's bordered to the west by the Boise Impact Area: Montana/Idaho Airshed Group Operating Guide (Levinson 2002). An airshed is a geographical area which is characterized by similar topography and weather patterns (or in which atmospheric characteristics are similar, e.g., mixing height and transport winds). The USDA Forest Service, Bureau of Land Management, and the Idaho Department of Lands are all members of the Montana/Idaho State Airshed Group, which is responsible for coordinating burning activities to minimize or prevent impacts from smoke emissions. Prescribed burning must be coordinated through the Missoula Monitoring Unit, which coordinates burn information, provides smoke forecasting,

⁹ USDA-Forest Service (United States Department of Agriculture, Forest Service). 2000. Incorporating Air Quality Effects of Wildland Fire Management into Forest Plan Revisions – A Desk Guide. April 2000. – Draft.

¹⁰ Louks, B. 2001. Air Quality PM 10 Air Quality Monitoring Point Source Emissions; Point site locations of DEQ/EPA Air monitoring locations with Monitoring type and Pollutant. Idaho Department of Environmental Quality. Feb. 2001. As GIS Data set. Boise, Idaho.



and establishes air quality restrictions for the Montana/Idaho Airshed Group. The Monitoring Unit issues daily decisions that may restrict burning when atmospheric conditions are not conducive to good smoke dispersion. Burning restrictions are issued for airsheds, impact zones, and specific projects. The monitoring unit is active March through November. Each Airshed Group member is also responsible for smoke management all year.¹¹

Hazard Management Capabilities

Elmore County Emergency Management is responsible for the administration and overall coordination of the emergency management program for Elmore County and the cities within the county. The Incident Command System (ICS) is the basis for all direction, control and coordination of emergency response and recovery efforts. Emergency response and supporting agencies and organizations have agreed to carry out their objectives, to the fullest extent possible, in support of the incident command structure.

Elmore County is home to the Mountain Home Air Force Base and is a regional population sub-center and transportation hub in the state and the multi-state region. The Elmore County Sheriff's Office houses a staff of emergency management personnel trained and dedicated to mitigating the negative impacts of natural and man-made disasters in the County. City offices throughout the county are equally dedicated to reducing catastrophic losses from disasters although their budgets are extremely limited.

Many states, counties and communities in the nation believe they are prepared for natural and manmade disasters, however, not all of them have faced the necessity of testing this belief. Too often, resources are tested beyond the ability of counties and communities to effectively respond, especially when the unexpected occurs. The Idaho Bureau of Homeland Security (IBHS) and FEMA work closely with the counties and communities of Idaho in the form of desktop exercises and preparedness drills in order to increase preparations and abilities of the state's first responders. IBHS houses its offices in neighboring Ada County. Although the Bureau is dedicated to serving the state, their juxtaposition to Elmore County has been a positive factor in management needs for the county and its communities.

Elmore County and the cities of Elmore County participate in preparedness drills, public education efforts, the implementation and enforcement of planning and zoning policies.

All fire districts and agencies providing fire protection services in Elmore County have reciprocal memorandums of understanding with each other.

¹¹ Montana/Idaho Airshed Management Group. 2010. Montana/Idaho Airshed Management System. Available online at <http://www.smokemu.org/>.



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Chapter 4:

Regional & Local Hazard Profiles

IN THIS SECTION:

- Flood Hazard Profile
- Earthquake Profile
- Landslide Profile
- Severe Weather Profile
 - Crop Failure
 - Extended Power Outage
- Wildland Fire Profile

Chapter 4 – Regional and Local Hazard Profiles

Flood Hazard Profile

Floods have been a serious and costly natural hazard affecting Elmore County and are the primary natural disaster in the State of Idaho. Floods damage roads, farmlands, and structures, often disrupting lives and businesses. Simply put, flooding occurs when water leaves the river channels, lakes, ponds, and other confinements where we expect it to stay. Flood-related disasters occur when human property and lives are impacted by flood waters. An understanding of the role of weather, runoff, landscape, and human development in the floodplain is therefore the key to understanding and controlling flood-related disasters. Major disaster declarations related to flooding were made for Idaho in 1956, 1957, 1961, 1962, 1963, 1964, 1972, 1974, 1984, 1996, 1997, 2005, 2006, 2008, 2010, 2011, and 2017.

Floods can be divided into two major categories in southern Idaho: riverine and flash flood. Riverine flooding is associated with a river watershed, which is the natural drainage basin that conveys water runoff from rain and snowmelt. Riverine flooding occurs when the flow of runoff is greater than the carrying capacities of the natural drainage systems. Rainwater and snowmelt runoff that is not absorbed by soil or vegetation seeks surface drainage lines following natural topography lines. These lines merge to form a hierarchical system of rills, creeks, streams, and rivers. Generally, floods can be slow or fast rising depending on the size of the river or stream.

Flash floods are much more dangerous and flow much faster than riverine floods. Flash floods are caused by the introduction of a large amount of water into a limited area (e.g. extreme precipitation events in watersheds less than 50 square miles). They also tend to crest quickly (e.g. eight hours or less) and more commonly occur in hilly or otherwise confined terrain. Flash floods occur in both urban and rural settings, principally along smaller rivers and drainage ways that do not typically carry large amounts of water. This type of flood poses more significant safety risks than riverine floods because of the rapid onset, the high-water velocity, the potential for channel scour, and the debris load.¹²

There are three types of flash flooding:

- Extreme precipitation and runoff events
- Inadequate urban drainage systems overwhelmed by small intense rainstorms
- Dam failures

Events that may lead to flash flooding include significant rainfall and/or snowmelt on frozen ground in the winter and early spring months, high intensity thunderstorms (usually during the summer months), and rainfall onto burned areas where high heat has caused the soil to become hydrophobic or water repellent which dramatically increases runoff and flash flood potential.

¹² Statewide Regional Evacuation Study Program. Central Florida Region Technical Data Report. Volume 1-7, Chapter II – Regional Hazards Analysis. Available online at <http://www.cfrpc.org/EVACUATION%20MASTER%20DVD%20-%20PDF%20VERSION/VOLUME%201/Chapter%202/CFRPC%20Chapter%20II%20-%20Hazards%20Analysis.pdf>.

Flash floods from thunderstorms do not occur as frequently as those from general rain and snowmelt conditions but are far more severe. The onset of these flash floods varies from slow to very quick and is dependent on the intensity and duration of the precipitation and the soil types, vegetation, topography, and slope of the basin. When intensive rainfall occurs immediately above developed areas, the flooding may occur in a matter of minutes. Sandy soils and sparse vegetation, especially recently burned areas, are conducive to flash flooding. Mountainous areas are especially susceptible to the damaging effects of flash floods, as steep topography may stall thunderstorms in a limited area and may also funnel runoff into narrow canyons, intensifying flow. A flash flood can, however, occur on any terrain when extreme amounts of precipitation accumulate more rapidly than the terrain can allow runoff. Flash floods are most common in Idaho during the spring and summer months due to thunderstorm activity.

Occasionally, floating ice or debris can accumulate at a natural or man-made obstruction and restrict the flow of water. Ice and debris jams can result in two types of flooding:

- Water held back by the ice jam or debris dam can cause flooding upstream, inundating a large area and often depositing ice or other debris which remains after the waters have receded. This inundation may occur well outside of the normal floodplain.
- High velocity flooding can occur downstream when the jam breaks. These flood waters can have additional destructive potential due to the ice and debris load that they may carry.¹³

Flooding from ice or debris jams is a relatively common phenomenon in southern Idaho and has been a significant contributor to flood-related damages in Elmore County specifically. Small jams frequently occur in many of the streams throughout Elmore County, particularly at bridge abutments and culverts.

Winter weather conditions are the main driving force in determining location and timing of base floods. The type of precipitation that a winter storm produces is dependent on the vertical temperature profile of the atmosphere over a given area.¹⁴ Unusually heavy snow packs or unusual spring temperature regimes (e.g. prolonged warmth) may result in the generation of runoff volumes significantly greater than can be conveyed by the confines of the stream and river channels. Such floods are often the ones that lead to widespread damage and disasters. Floods caused by spring snow melt tend to last for a period of several days to several weeks, longer than the floods caused by other meteorological sources.

Floods that result from rainfall on frozen ground in the winter, or rainfall associated with a warm, regional frontal system that rapidly melts snow at low and intermediate altitudes (rain-on-snow) can be the most severe. Both situations quickly introduce large quantities of water into the stream channel system, easily overloading its capacity.

On small drainages, the most severe floods are usually a result of rainfall on frozen ground; however, moderate quantities of warm rainfall on a snowpack, especially for one or more days, can also result in

¹³ Barnhill, Dave, et al. "Flash Floods – How do they occur?". Waterlines. Division of Water, Indiana Department of Natural Resources. Spring-Summer 1999. Indianapolis, Indiana.

¹⁴ "Snowstorms". Ramapo College. Resource Section for Meteorology. Available online at http://mset.rst2.edu/portfolios/k/khanna_n/meteorology/snowstorms.htm. October 2006.



rapid runoff and flooding in streams and small rivers. Although meteorological conditions favorable for short-duration warm rainfall are common, conditions for long-duration warm rainfall are relatively rare. Occasionally, however, the polar front becomes situated along a line from Hawaii through Oregon, and warm, moist, unstable air moves into the region.

The major source of flood waters in Elmore County is normal spring snow melt. As spring melt is a “natural” condition; the stream channel is defined by the features established during the average spring high flow (bank-full width). Small flow peaks exceeding this level and the stream’s occupation of the floodplain are common events. The magnitude of most floods in Elmore County depend on the combination of intensity and duration of rainfall, pre-existing soil conditions, area of a basin, elevation of the rain or snow level, and the amount of snowpack. Man-made changes to a basin also can affect the size of floods. Although floods can happen at any time during the year, there are typical seasonal patterns for flooding in southern Idaho, based on the variety of natural processes that cause floods:

- Heavy rainfall on wet or frozen ground, before a snowpack has accumulated, typically cause fall and early winter floods
- Rainfall combined with melting of the low elevation snowpack typically cause winter and early spring floods
- Late spring floods in Elmore County result primarily from melting of the snowpack

The most commonly reported flood magnitude measure is the “base flood.” This is the magnitude of a flood having a one-percent chance of being equaled or exceeded in any given year. Although unlikely, “base floods” can occur in any year, even successive ones. This magnitude is also referred to as the “100-year Flood” or “Regulatory Flood”. Floods are usually described in terms of their statistical frequency. A “100-year flood” or “100-year floodplain” describes an event or an area subject to a 1% probability of a certain size flood occurring in any given year. This concept does not mean such a flood will occur only once in one hundred years. Whether or not it occurs during a 12-month period has no bearing on the fact that there is still a 1% chance of a similar occurrence in the following year. Since floodplains can be mapped, the boundary of the 100-year flood is commonly used in floodplain mitigation programs to identify areas where the risk of flooding is significant. Any other statistical frequency of a flood event may be chosen depending on the degree of risk that is selected for evaluation, e.g., 5-year, 20-year, 50-year, 500-year floodplain.

The areas adjacent to the channel that normally carry water are referred to as the floodplain. In practical terms, the floodplain is the area that is inundated by flood waters. In regulatory terms, the floodplain is the area that is under the control of floodplain regulations and programs (such as the National Flood Insurance Program which publishes the FIRM maps). The floodplain is often defined as:

“That land that has been or may be covered by floodwaters, or is surrounded by floodwater and inaccessible, during the occurrence of the regulatory flood.”¹⁵

¹⁵ FEMA. Federal Emergency Management Agency. National Flood Insurance Program. Washington D.C. Available online at www.fema.gov.



The nature and extent of a flood event is the result of the hydrologic response of the landscape. Factors that affect this hydrologic response include soil texture and permeability, land cover and vegetation, land use and land management practices. Precipitation and snow melt, known collectively as runoff, follow one of three paths, or a combination of these paths, from the point of origin to a stream or depression: overland flow, shallow subsurface flow, or deep subsurface (“ground water”) flow. Each of these paths delivers water in differing quantities and rates. The character of the landscape will influence the relative allocation of the runoff and will, accordingly, affect the hydrologic response.

Unlike precipitation and ice formation, steps can be taken to mitigate flooding through manipulation or maintenance of the floodplain. Insufficient natural water storage capacity and changes to the landscape can be offset through water storage and conveyance systems that run the gamut from highly engineered structures to constructed wetlands. Careful planning of land use can build on the natural strengths of the hydrologic response. Re-vegetation of burned slopes diverts overland flow (fast and flood producing) to subsurface flow (slower and flood moderating).

The failure to recognize or acknowledge the extent of the natural hydrologic forces in an area has led to development and occupation of areas that can clearly be expected to flood on a regular basis. Despite this, communities are often surprised when the stream leaves its channel to occupy its floodplain. A past reliance on structural means to control floodwaters and “reclaim” portions of the floodplain has also contributed to inappropriate development and continued flood-related damages.

Development in or near floodplains increases the likelihood of flood damage. New developments near a floodplain add structures and people in flood areas thereby increasing, not the extent of the flood itself, but the impacts or damages that may be caused. New construction can also alter surface water flows by diverting water to new courses or increasing the amount of water that runs off impervious pavement and roof surfaces. This second effect diverts waters to places previously unaffected by flood issues. Unlike the weather and the landscape, this flood-contributing factor can be controlled. Development and occupation of the floodplain places individuals and property at risk. Such use can also increase the probability and severity of flood events (and consequent damage) downstream by reducing the water storage capacity of the floodplain, or by pushing the water further from the channel or in larger quantities downstream.¹⁶

¹⁶ Planning and Flood Risk. Planning Policy Statement 15. The Planning Service, Department of Environment. June 2006. Available online at http://www.planningni.gov.uk/index/policy/policy_publications/planning_statements/pps15-flood-risk.pdf.



Earthquake Hazard Profile

An earthquake is trembling of the ground resulting from the sudden shifting of continental plates beneath the earth's crust. Earthquakes may cause landslides and rupture dams. Severe earthquakes destroy power and telephone lines and gas, sewer, or water mains, which, in turn, may set off fires and/or hinder firefighting or rescue efforts. Earthquakes also may cause buildings, bridges, and other infrastructure to collapse.

Idaho experiences numerous minor earthquakes annually. Hebgen Lake and Borah Peak were two of the largest earthquakes in the continental United States (7.3 and 6.9 magnitude, respectively). They may affect large areas, cause great damage to structures, cause injury or loss of life, and alter the socioeconomic functioning of the communities involved. The hazard risk of earthquakes varies from place to place depending upon the regional and local geology.

Earthquakes occur along faults, which are fractures or fracture zones in the earth across which there may be relative motion. If the rocks across a fault are forced to slide past one another, they do so in a *stick-slip* fashion; that is, they accumulate strain energy for centuries or millennia, then release it almost instantaneously. The energy released radiates outward from the source, or focus, as a series of waves - an earthquake. The primary hazards of earthquakes are ground-breaking, as the rocks slide past one another, and ground shaking, by seismic waves. Secondary earthquake hazards result from distortion of surface materials such as water, soil, or structures.

Ground shaking may affect areas 65 miles or more from the epicenter (the point on the ground surface above the focus). As such, it is the greatest primary earthquake hazard. Ground shaking may cause seiche, the rhythmic sloshing of water in lakes or bays. It may also trigger the failure of snow (avalanche) or earth materials (landslide). Ground shaking can change the mechanical properties of some fine grained, saturated soils, whereupon they liquefy and act as a fluid (liquefaction). The dramatic reduction in bearing strength of such soils can cause buried utilities to rupture and otherwise undamaged buildings to collapse.

Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil, or trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area, it may cause deaths and injuries and extensive property damage.

The earth's crust breaks along uneven lines called faults. Geologists locate these faults and determine which are active and inactive. This helps identify where the greatest earthquake potential exists. Many faults mapped by geologists are inactive and have little earthquake potential; others are active and have a higher earthquake potential.

Aftershocks are smaller earthquakes that follow the main incident and can cause further damage to weakened buildings. Aftershocks can occur in the first hours, days, weeks, or even months after the quake. Some earthquakes are foreshocks with a larger earthquake eminent.



Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related injuries result from collapsing walls, flying glass, and falling objects as a result of the ground shaking, or people trying to move more than a few feet during the shaking.¹⁷

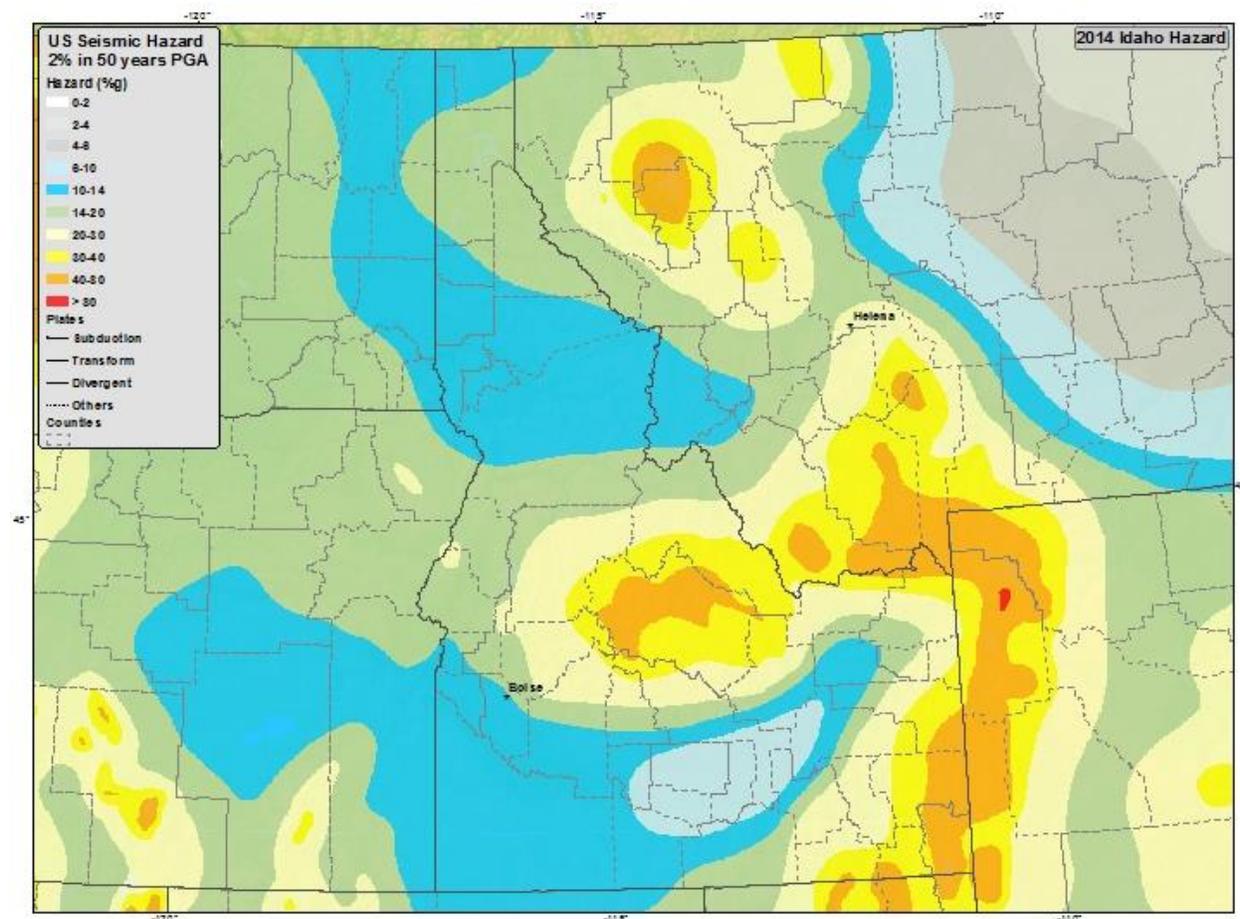


Figure 1) 2014 Seismic Hazard Map of the State of Idaho. The Seismic Hazard Map shows the distribution of earthquake shaking levels that have a 2% probability of occurring during a 50-year period. Earthquake shaking is reported in %g which is the potential ground shaking caused by an earthquake divided by acceleration due to gravity. Higher %g values indicate stronger ground shaking.¹⁸

Earth scientists believe that most earthquakes are caused by slow movements inside the Earth that push against the Earth's brittle, relatively thin outer layer, causing the rocks to break suddenly. This outer layer is fragmented into several pieces, called plates. Most earthquakes occur at the boundaries of these plates. Idaho is positioned on the western edge of the North American plate which converges with an oceanic

¹⁷ FEMA. Federal Emergency Management Agency. Available online at www.fema.gov. September 2007.

¹⁸ USGS. 2014. United States Geological Survey. Earthquake Hazards Program. Available online at <http://earthquake.usgs.gov/>. Accessed March 18, 2019.

plate in the northwest and slides past another oceanic plate along the southwestern boundary¹⁹. Idaho is part of an earthquake province called the Basin and Range Province. The Basin and Range Province is characterized by a series of northeast-southwest trending mountain ranges, which have been uplifted along normal faults and associated fault zones.²⁰ The Intermountain Seismic Belt connects the Basin and Range Province with the more stable parts of North America (Idaho). The majority of Idaho's earthquakes occur along the Intermountain Seismic Belt, which runs from northwestern Montana, along the border of Idaho and Wyoming, and into Utah and Nevada. A significant branch of the Intermountain Seismic Belt extends west from the Yellowstone Hotspot, called the Yellowstone Tectonic Parabola, which is a result of the Basin and Range Province and the Yellowstone Hotspot uniquely interacting together. There are at least 8 major active faults in the Yellowstone Tectonic Parabola that account for numerous earthquake swarms and the location of Hebgen Lake and Borah Peak earthquakes.²¹ Within the general region, the Beaverhead, Lemhi, Lost River, and Sawtooth mountain ranges host active faults which affect central Idaho and surrounding regions²². The Sawtooth fault system poses the highest threat to Elmore County and will be discussed later in further detail in the Elmore County Earthquake Profile.

The mountainous regions of eastern and central Idaho, both north and south of the Snake River, are at the most risk for large damaging earthquakes²³. Moderate earthquakes can occur anywhere in Idaho and could cause significant damage to un-reinforced infrastructure and even fatalities. Currently, many of Idaho's counties have building codes in place for new construction that help structures mitigate the effects of shaking. Older public buildings, especially unreinforced masonry, within Elmore County could be at risk to shaking hazards and may need to be retrofitted seismic stability. Figure 1 shows the distribution of earthquake shaking levels that have a 2% probability of occurring during a 50-year period. Earthquake shaking is reported in %g which is the potential ground shaking caused by an earthquake divided by acceleration due to gravity. Higher %g values indicate stronger ground shaking²⁴.

The International Building Code (IBC), a nationwide industry standard, sets construction standards for different seismic zones in the nation. IBC seismic zone rankings for Idaho are among the highest in the

¹⁹ Digital Atlas of Idaho: Idaho Earthquakes, Available online at: <https://digitalatlas.cose.isu.edu/geo/quakes/quakes.htm>, Accessed June 2019

²⁰ Digital Geology of Idaho. April 2011. Digital Atlas of Idaho. Available online at http://geology.isu.edu/Digital_Geology_Idaho/.

²¹ Idaho Bureau of Homeland Security. April 2011. Available online at www.bhs.idaho.gov.

²² <https://www.reuters.com/article/us-idaho-seismic/idaho-scientists-find-new-seismic-fault-in-rockies-idUSTRE6AH0YK20101118>

²³ IGS. April 2011. Idaho Geologic Survey. "Putting Down Roots in Earthquake Country – Your Handbook for Earthquakes in Idaho." Available online at http://www.idahogeology.org/uploads/Putting_Down_Roots_3_19_11.pdf, Accessed June 2019

²⁴ USGS. 2014. United States Geological Survey. Earthquake Hazards Program. Available online at <http://earthquake.usgs.gov/>. Accessed March 18, 2019.

nation. When structures are built to these standards, they have a better chance to withstand earthquakes. Structures compliant with the 1970 Uniform Building Codes (UBC), which are now replaced by the International Building Code, are generally less vulnerable to seismic damages due to the inclusion of seismic construction standards.

Future injuries and property losses from earthquake hazards can be reduced by considering these hazards when making decisions about land use, by designing structures that can undergo ground shaking without collapse, by securely attaching the non-structural elements of a building, and by educating the public about what to do before, during, and after an earthquake to protect life and property.²⁵

²⁵ Noson, Linda Lawrance, et al. Washington State Earthquake Hazards. Washington Division of Geology and Earth Resources Information Circular 85. Olympia, Washington. 1988.



Landslide Hazard Profile

Landslide is a general term for a wide variety of down slope movements of earth materials that result in the perceptible downward and outward movement of soil, rock, and vegetation under the influence of gravity. The materials may move by falling, toppling, sliding, spreading, or flowing. Some landslides are rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop. Although landslides usually occur on steep slopes, they also can occur in areas of low relief.²⁶

Landslides can occur naturally or be triggered by human-related activities. Naturally occurring landslides can occur on any terrain, given the right condition of soil, moisture content, and the slope's angle. They are caused from an inherent weakness or instability in the rock or soil combined with one or more triggering events, such as heavy rain, rapid snow melt, flooding, earthquakes, vibrations, and other natural causes. Other natural triggers include the removal of lateral support through the erosive power of streams, glaciers, waves, and longshore and tidal currents; through weathering, wetting, drying, and freeze-thaw cycles in surficial materials; or through land subsidence or faulting that creates new slopes. Long-term climate change can influence landslide occurrences through increased precipitation, ground saturation, and a rise in groundwater level, which reduces the strength and increases the weight of the soil.

Table 14) Landslide Disaster Declarations from 1996-2017 for the State of Idaho.

Year	Date/Month	State	Federal	Counties Affected
1996	November	X	DR-1177	Adams, Benewah, Boise, Bonner, Boundary, Camas, Clearwater, Elmore , Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington
1997	March	X	DR-1154	Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, Shoshone
2011	March 11	X	DR-1987	Bonner, Clearwater, Idaho, Nez Perce, Nez Perce Tribe, Shoshone
2014	August 4	ID-01-2014	None	Elmore
2016	February 12	ID-01-2016	None	Idaho
2017	March 6	ID-03-2017	DR-4313	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Shoshone, Valley
2017	May 6	ID-05-2017	DR-4333	Blaine, Camas, Custer, Elmore , and Gooding

²⁶ "Landslides". SAARC Disaster Management Center. New Delhi. Available online at <http://saarc-sdmc.nic.in/pdf/landslide.pdf>. Accessed March 2011.

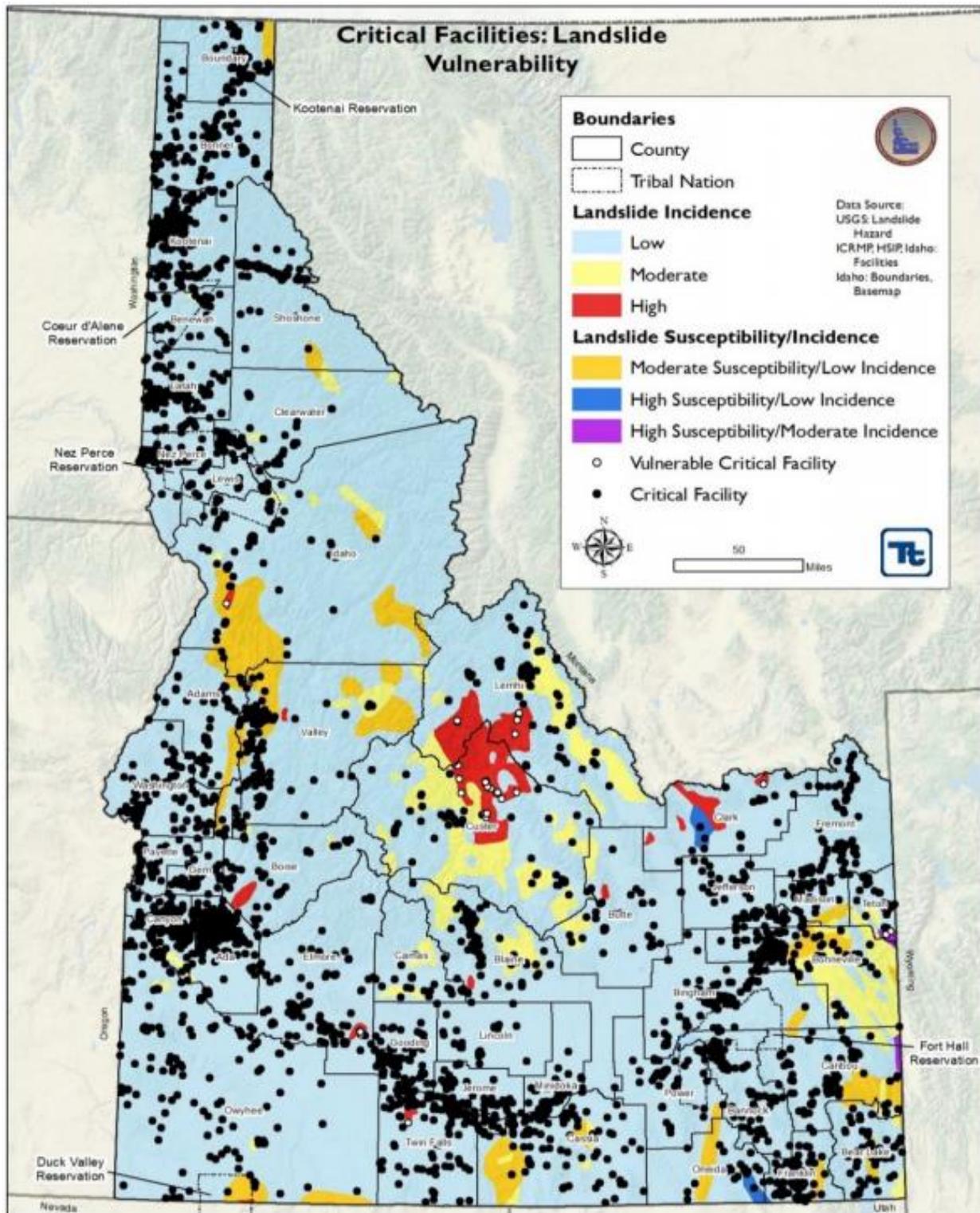


Figure 2) Landslide incidence map for the State of Idaho with critical facilities.²⁷

There are hundreds of landslides that occur in Idaho annually, most of which occur in high risk areas (Figure 2). The frequency of landslides, particularly cut and fill slopes along roads, is due to the geology,

vegetation, climate, soils, and other human factors. There are, on occasion, severe landslide events that occur in Idaho. Since 1996, there have been five federally declared disasters and four state disasters.²⁸ Since 1976, major events have had a significant impact on transportation, communities, and natural resources in 1982, 1986 (x2), 1991, 1996-97, 1997, 1998 (x2), 2000, 2011, and 2017 (x2).

Landslides range from shallow debris flows to deep-seated slumps. They destroy homes, businesses, and public buildings, undermine bridges, derail railroad cars, interrupt transportation infrastructure, damage utilities, and take lives. Sinkholes affect roads and utilities. Losses often go unrecorded because insurance claims are not filed, no report is made to emergency management, there is no media coverage, or the transportation damages are recorded as regular maintenance.

Land stability cannot be absolutely predicted with current technology. The best design and construction measures are still vulnerable to slope failure. The amount of protection, usually correlated to cost, is proportional to the level of risk reduction. Debris and vegetation management is integral to prevent landslide damages. Corrective measures help but can often leave the property vulnerable to some level of risk.

The following is a list of characteristics that may be indicative of a landslide hazard area:

- Bluff retreat caused by sloughing of bluff sediments, resulting in a vertical bluff face with little vegetation.
- Pre-existing landslide area.
- Tension or ground cracks along or near the edge of the top of a bluff.
- Structural damage caused by settling and cracking of building foundations and separation of steps from the main structure.
- Toppling bowed or jack sawed trees.
- Gullying and surface erosion.
- Mid-slope ground water seepage from a bluff face.

By studying the effects of landslides in slide prone areas, we can plan for the possibility of future events. More needs to be done to educate the public and to prevent development in vulnerable areas. Some landslide hazards can be mitigated by engineering, design, or construction so that risks are acceptable. When technology cannot reduce the risk to acceptable levels, building in hazardous areas should be avoided.²⁹

Stream and riverbank erosion, road building, or other excavation can remove the toe or lateral slope and exacerbate landslides. Seismic or volcanic activity often triggers landslides as well. Urban and rural living

²⁷ Idaho Office of Emergency Management. State of Idaho Hazard Mitigation Plan 2018. <http://ioem.idaho.gov/preparedness-and-protection/mitigation/state-hazard-mitigation-plan/>. Accessed April 12, 2019

²⁸ Idaho Department of Emergency Management. April 2019. Available online at <https://ioem.idaho.gov/preparedness-and-protection/mitigation/state-hazard-mitigation-plan/>.

²⁹ Canning, Douglas J. "Geologically Hazardous Areas". Shorelands and Environmental Assistance Program. Washington Department of Ecology. Olympia, Washington.



with excavations, roads, drainage ways, landscape watering, logging, and agricultural irrigation may also disturb the solidity of landforms. In general, any land use changes that affect drainage patterns or that increase erosion or change ground-water levels can augment the potential for landslide activity.

Landslides are a recurrent menace to waterways and highways and a threat to homes, schools, businesses, and other facilities. The unimpeded movement over roads—whether for commerce, public utilities, school, emergencies, police, recreation, or tourism—is essential to the normal functioning of Elmore County. The disruption and dislocation of these or any other routes caused by landslides can quickly jeopardize travel and vital services. Although small slumps on cut and fill slopes along roads and highways is relatively common, most significant landslide risk in Elmore County is associated with the steeper, mountainous slopes in the northern half of the county.



Severe Weather Hazard Profile

Storms are naturally occurring atmospheric disturbances manifested in strong winds accompanied by rain, snow, or other precipitation and often by thunder or lightning. All areas within Elmore County region are vulnerable to severe local storms. The effects are generally transportation problems and loss of utilities. When transportation accidents occur, motorists are stranded and schools and businesses close. The effects vary with the intensity of the storm, the level of preparation by local jurisdictions and residents, and the equipment and staff available to perform tasks to lessen the effects of severe local storms. Severe weather and severe storms are an inherent characteristic of the region that will occur annually. Because they occur with a greater level of certainty than most other natural hazards, residents should be prepared for the potential impacts of severe weather.

There is a wide range of climate in Elmore County due to the variances in altitude--2,300 feet in the south along the Snake River to over 10,000 feet to the north in the Sawtooth Mountains. Precipitation along the Snake River is less than eight inches per year. Temperatures climb to over 100° F in the summer. The other extreme of climate is in the northern mountains where precipitation frequently reaches more than 50 inches per year and temperatures can drop to lower than minus 50° F. Figure 3 shows annual precipitation totals for Elmore County from 1960 to 2019; the mean value was 20.51", the maximum was 32.59" in 1970, and the minimum was 12.04" in 2013. Figure 4 is a map of the state that shows annual average precipitation totals for Idaho from 1971 to 2000; the totals for the northern and southern ends of Elmore County differ significantly. Winds average zero to six miles per hour 30% of the time and seven to sixteen miles per hour 41% of the time (Figure 5).

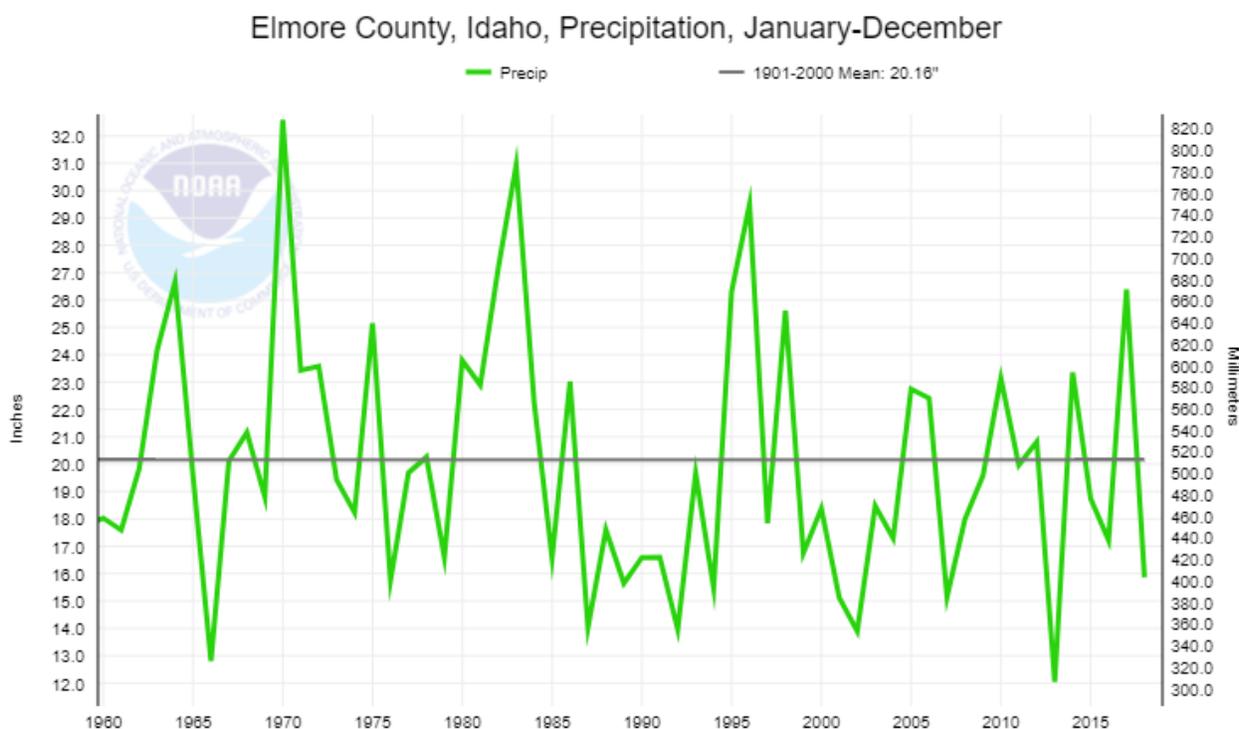


Figure 3) Annual precipitation totals from 1960 to 2019 for Elmore County, ID (mean: 20.51", max: 32.59" in 1970, min: 12.04" in 2013).

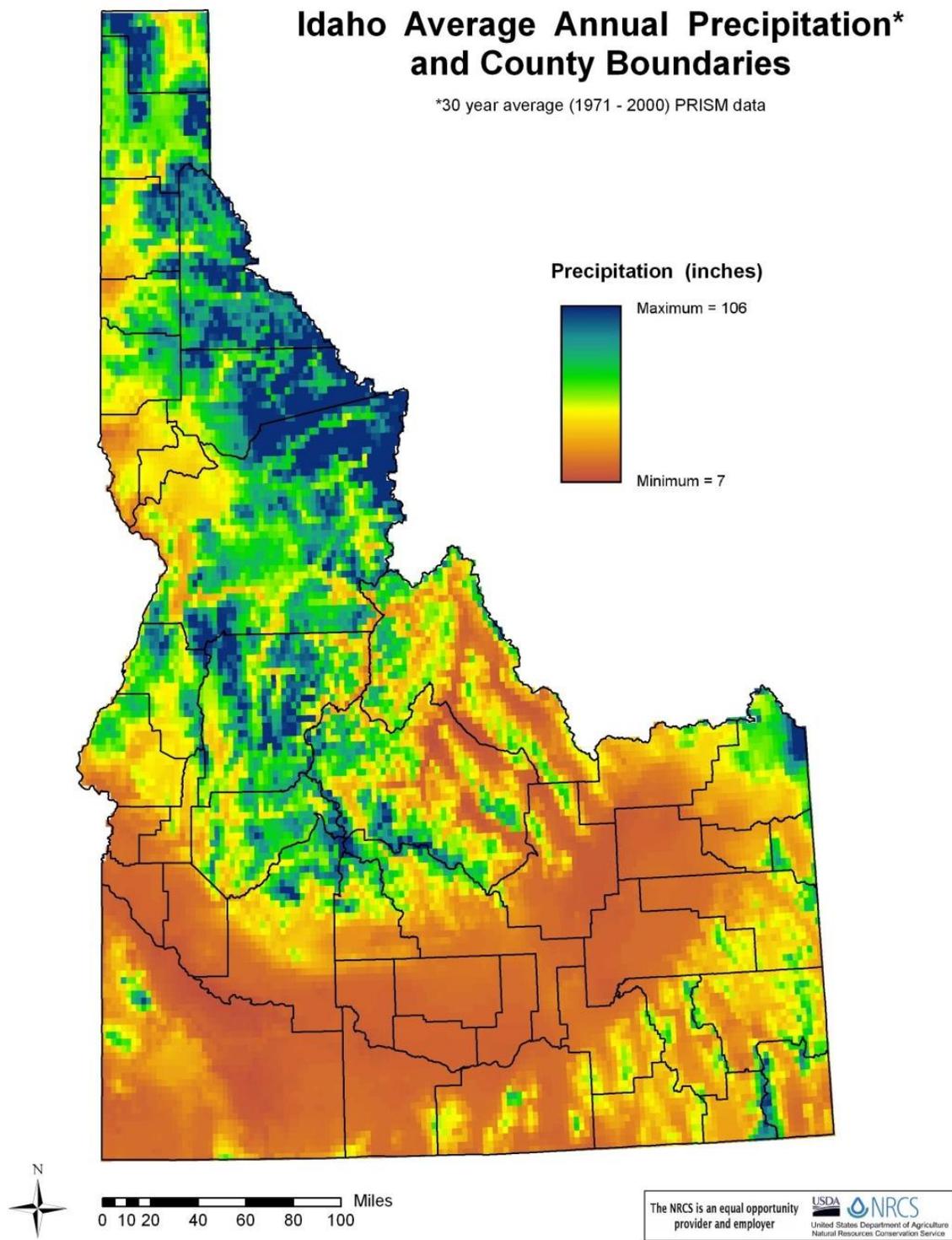


Figure 4) Average annual precipitation for the State of Idaho. Map displays 30-year averages using data from 1971 to 2000.³⁰

³⁰ NRCS. Natural Resources Conservation Service. Map of Idaho Average Annual Precipitation and County Boundaries, 30-year average (1971 to 2000). Available online at <https://www.nrcs.usda.gov>. Accessed March 18, 2019.



Idaho - Annual Average Wind Speed at 30 m

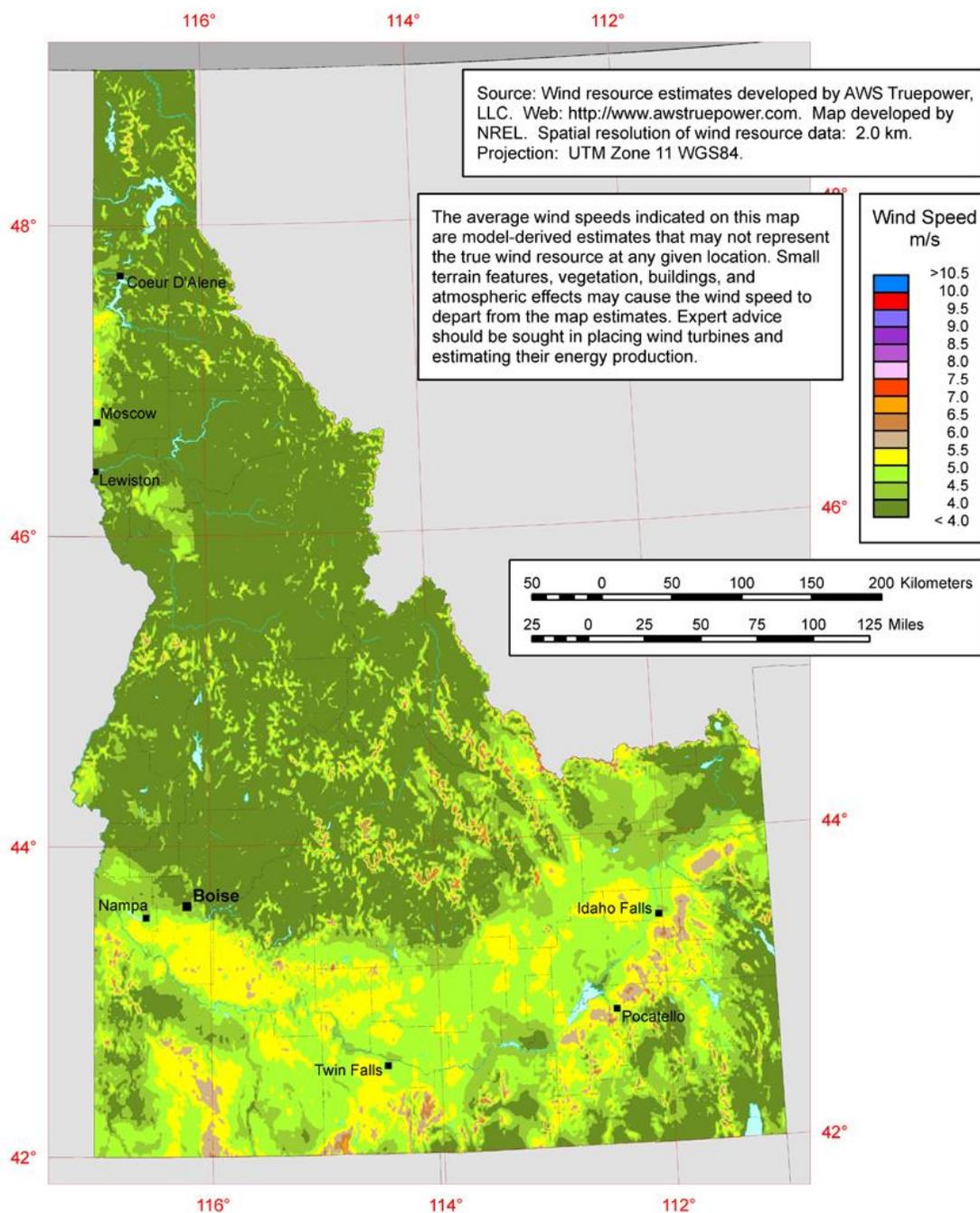


Figure 5) Average Wind Speed Map for the State of Idaho.³¹

³¹ WINDEXchange. Idaho 30-Meter Residential-Scale Wind Resource Map. Available online at <https://windexchange.energy.gov>. Accessed March 18, 2019.



Severe storms are a serious hazard that affects Idaho regularly. Severe storms affect the entire state with varying degrees, due to the complex landscape and the influence from the Pacific Ocean. Although Idaho's climate sees relatively few damaging storms in comparison with the rest of the nation, it still poses a significant hazard to the state and local communities. Storm-related Major Disaster Declarations were made for Idaho in 1964, 1972, 1974, 1996, 1997, 2005, 2006, 2010, 2015, 2016, and 2017. Most of these storms resulted in flood damages.

In the Idaho Panhandle, the main barrier is the rugged chain of Bitterroot Mountains forming much of the boundary between Idaho and Montana. The extreme range of elevation in the State is from 738 feet above sea level at the confluence of the Clearwater and Snake Rivers to 12,655 feet at Mt. Borah in Custer County. Comprised of rugged mountain ranges, canyons, high grassy valleys, arid plains, and fertile lowlands, the State reflects in its topography and vegetation a wide range of climates. Located some 300 miles from the Pacific Ocean, Idaho is influenced by maritime air borne eastward on the prevailing westerly winds. Particularly in winter, the maritime influences are noticeable in the greater average cloudiness, greater frequency of precipitation, and mean temperatures, which are above those at the same latitude and altitude in mid-continent regions. This maritime influence is most marked in the northern part of the State, where the air arrives via the Columbia River Gorge with a greater burden of moisture than at lower latitudes.

The pattern of average annual temperatures for the State indicates the effect both of latitude and altitude. The highest annual averages are found in the lower elevations of the Clearwater and Little Salmon River Basins, and in the stretch of the Snake River Valley from the vicinity of Bliss downstream to Lewiston, including the open valleys of the Boise, Payette, and Weiser Rivers. The range between the mean temperature of the coldest and warmest months of the year varies from less than 40°F at numerous northern stations, to well over 50° F at stations in the higher elevation of the central and eastern parts of the State. In general, it can be said that monthly means are 32° F or lower at stations above 5,000 feet from November through March; 4,000 and 5,000 feet from November through February; 3,000 to 4,000 feet from December through February; and 2,000 to 3,000 feet only one or two months of the year. In summer, periods of extreme heat extending beyond a week are quite rare and the same can be said of periods of extremely low temperatures in winter. In both cases the normal progress of weather systems across the State usually results in a change at rather frequent intervals. In the realm of extremely low temperatures, two winters stand out in the records for the State: 1937-38 and 1948-49. The lowest monthly mean temperatures on record occurred throughout the State in January 1949 and many stations registered the absolute lowest temperature on record during that month.

Drought

Drought is an expected phase in the climactic cycle of almost any geographical region. Objective, quantitative definitions for drought exist but most authorities agree that, because of the many factors contributing to it and because its onset and relief are slow and indistinct, none are entirely satisfactory. According to the National Drought Mitigation Center, drought originates from a deficiency of precipitation over an extended period, usually a season or more. This deficiency results in a water shortage for some



activity, group, or environmental sector. What is clear is that a condition perceived as “drought” in a given location is the result of a significant decrease in water supply relative to what is “normal” in that area.³²

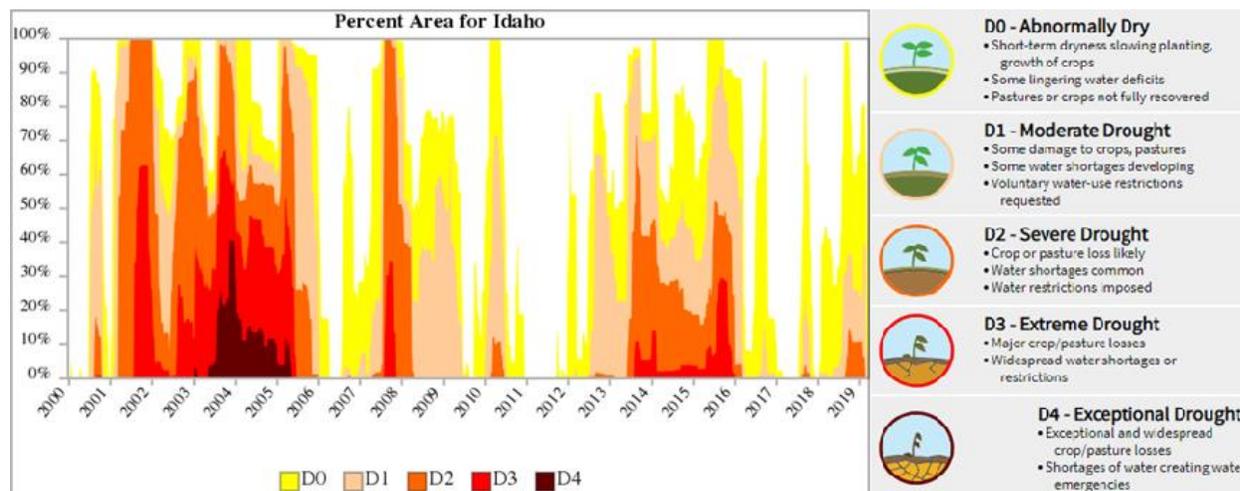


Figure 6) Drought conditions for the state of Idaho from 2000 to 2019 (www.drought.gov).

It should be noted that water supply is not only controlled by precipitation (amount, frequency, and intensity), but also by other factors including evaporation (which is increased by higher than normal heat and winds), transpiration, and human use. Drought in Idaho is generally associated with a sustained period of low winter snowfall. This results from a temporary, yet significant, change in the large-scale weather patterns in the western U.S. The limited snowpack results in reduced stream flows and ground water recharge. Idaho’s system of reservoirs and natural storage can buffer the effects of minor events over a few years, but a series of dry winters (or an especially pronounced single low snowfall event) will result in a shortage of available water. Extended periods of above-average temperatures during the spring and summer can exacerbate the impacts of low snowpack.

The Idaho Department of Water Resources reports that meteorological drought conditions (a period of low precipitation) existed in the State approximately 30% of the time during the period 1931-1982. Principal drought in Idaho, indicated by stream flow records, occurred during 1929-41, 1944-45, 1959-61, 1977, and 1987-92.³³ Figure 6 shows drought trends for the State of Idaho from 2000 to 2019; the different colors represent the percentage of the state (total area) that was assigned a particular drought-status. Figure 7 shows the number of drought disaster declarations made for each county in Idaho; more than 17 declarations have been made for Elmore County.

³² National Oceanic & Atmospheric Administration. 2010. U.S. Drought Monitor. Drought Information Center. U.S. Department of Agriculture. Available online at <http://www.drought.noaa.gov/index.html>.

³³ Idaho Department of Water Resources. 2010. Idaho Drought Emergency Declarations. Available online at <http://www.idwr.idaho.gov/News/drought/drought.htm>.

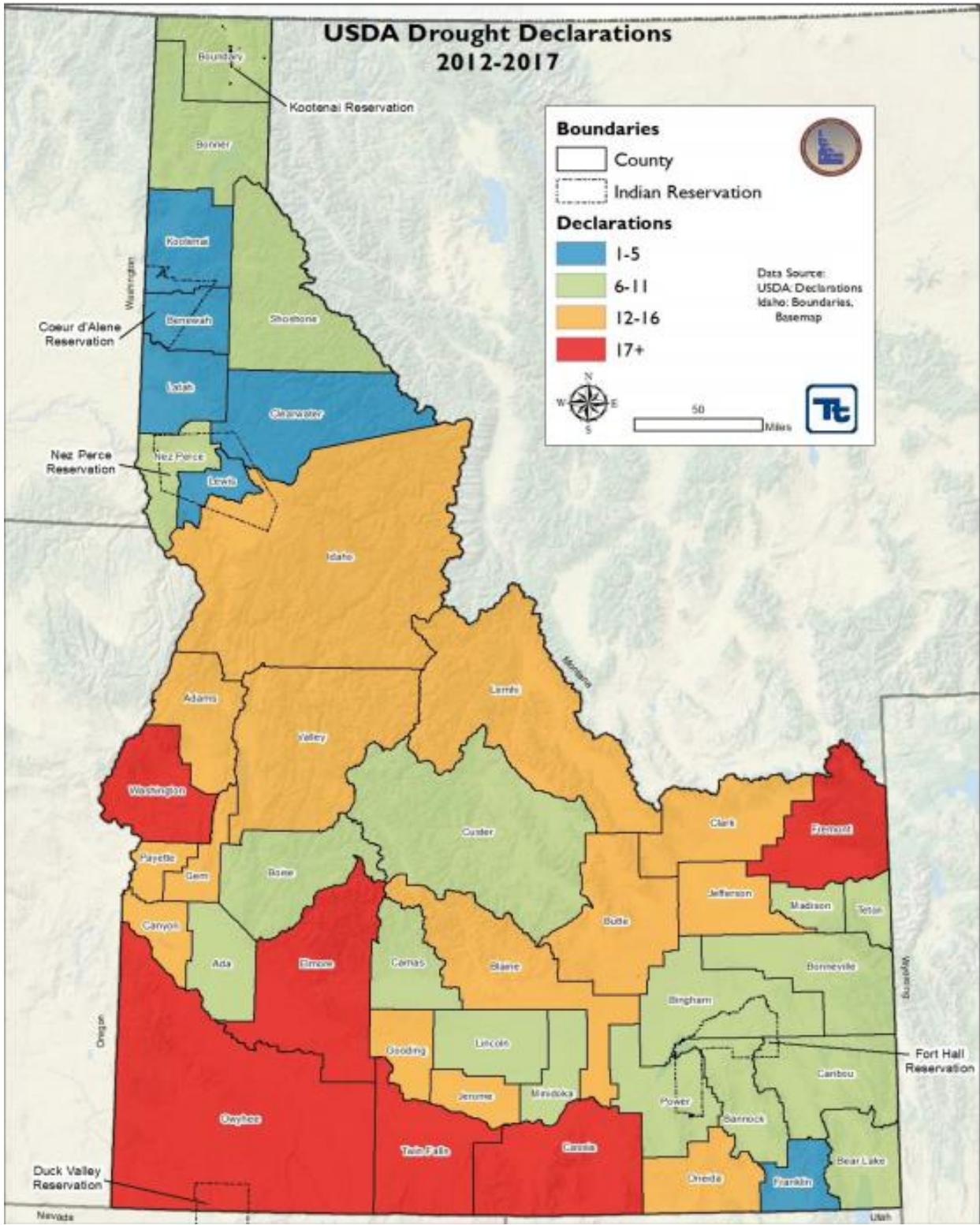


Figure 7) USDA drought declaration map of Idaho for 2012 to 2017. Counties are color-coded based on the number of declarations in which they were included (Elmore County was included in more than 17 declarations between 2012 and 2017).

Hazard management of drought involves the long-term reduction of the probable gap between water supply and demand. Supply can be addressed through the development of storage and delivery capacity (construction of reservoirs and associated facilities), improved operation of existing facilities, and weather modification. Demand can be addressed through various forms of conservation.³⁴

Hail

Hail is almost exclusively a result of severe thunderstorms and can be defined by the National Weather Service as showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud³⁵. Hail damage in Idaho is very small in comparison with damage in areas of the central part of the United States. Often the hail that occurs does not grow to a size larger than one-half inch in diameter and the areas affected are usually small. Quite often hail comes during early spring storms, when it is mostly of the small, soft variety with a limited damaging effect. Later when crops are more mature and more susceptible to serious damage, hail occurs in widely scattered areas in connection with summer thunderstorms. The incidence of summer thunderstorms is greatest in mountainous areas with lightning often causing forest and range fires.

Past weather patterns show that severe weather conditions are likely to happen in any part of Elmore County in any given year. The topographical features of the county contribute greatly to the various weather patterns that occur. The following table lists the average climate within Elmore County.

Severe Wind

Windstorms are not uncommon in Idaho, but the State has no destructive storms such as hurricanes, and an extremely small incidence of tornadoes. Windstorms associated with cyclonic systems, and their cold fronts, do some damage to trees each year, often causing temporary disruption of power and communication facilities, but only minor damage to structures in most instances. Storms of this type may occur at any time from October into July, while during the summer months strong winds almost invariably accompany thunderstorms.

Thunderstorms

A thunderstorm is a rain event that includes thunder and lightning. A thunderstorm is classified as “severe” when it contains one or more of the following: hail with at least 1” diameter, wind gusting in excess of 58 mph, or tornado. Thunderstorms may also carry lightning. The vigorous movement of air within a thunderstorm results in a buildup of electrical charge. Lightning is defined by the National Weather Service as a visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and the air, between a cloud and the ground, or between the ground and a cloud. Lightning is most often associated with thunderstorm clouds, but lightning can

³⁴ Idaho Bureau of Homeland Security. 2007. State of Idaho Hazard Mitigation Plan. Hazard Mitigation Program. November 2007. Available online at <http://www.bhs.idaho.gov/Resources/PDF/SHMPFinalw-signatures.pdf>.

³⁵ 2018 State of Idaho Hazard Mitigation Plan, Available online at: <https://ioem.idaho.gov/wp-content/uploads/sites/57/2018/12/Chapter-3.3-Severe-Weather.pdf>, Accessed June 2019

strike as far as 5-10 miles from a storm³⁶. Thunderstorms affect all counties in Idaho, including Elmore County. However, most thunderstorms are localized events that only affect communities that lie in their path. Impacts from thunderstorms are usually limited and do not warrant a disaster declaration. Given the magnitude of flooding that can result from heavy precipitation and thunderstorms, flooding is covered in much greater detail in the Flood Hazard Profile found at the beginning of the chapter.

Winter Storms

Snowfall distribution is affected both by availability of moisture and by elevation. Annual snowfall totals in Shoshone County in northern Idaho have reached nearly 500 inches. The greatest long-term (1942-56) seasonal average was 182 inches at Mullan Pass, while the greatest snow depth (also 182 inches) was recorded at that station on February 20, 1954. The major mountain ranges of the State accumulate a deep snow cover during the winter months and the release of water from the melting snowpack in late spring furnishes irrigation water for more than two million acres, mainly within the Snake River Basin above Weiser. Irrigation water supplies are nearly always plentiful, except on some of the smaller projects where storage facilities are inadequate. Hydro-electric power is generated by the waters of the many rivers in Idaho.

Winter storms are a part of life in Idaho. They vary in degree and intensity and can occur at any time but are especially probable between September and May. These storms could be localized or could affect the entire state. They can last a matter of minutes or many days. Typically, winter storms are measured by the amount of snow accumulated during any given storm. Additionally, these storms could be measured by the accompanying wind or associated temperatures.

Extended Power Outages

Power is supplied to the residents and businesses within Elmore County by Idaho Power Company. This company has had a strong presence in southern Idaho and eastern Oregon since 1916. Idaho Power has developed an extensive power grid network that traverses throughout the most rugged and remote landscapes in the region. The Idaho Power Company provides assistance and service through operating districts. Most operating districts serve parts of multiple counties and most counties are served by multiple districts. Elmore County is served by the Boise, Fairfield, Glens Ferry, Gooding, and Mountain Home districts of Idaho Power Company.

A power outage is the loss of electrical power network supply to an end user lasting longer than five minutes. A shorter-duration outage in which power is lost to end users for less than five minutes is referred to as a momentary power interruption. Since Elmore County is lumped into several Idaho Power districts, county specific information on historic power outages and momentary interruptions is not available. However, Table 15 provides an estimate of all residents of districts which service Elmore County and other various counties within the State of Idaho. In Elmore County, Idaho Power maintains two power plants (Bennett Mountain and Danskin) as well as the CJ Strike Dam. As of August 2018, Idaho Power

³⁶ 2018 State of Idaho Hazard Mitigation Plan, Available online at: <https://ioem.idaho.gov/wp-content/uploads/sites/57/2018/12/Chapter-3.3-Severe-Weather.pdf>, Accessed June 2019



provides electricity to approximately 550,000 customers.³⁷ In addition, the Bureau of Reclamation operates the Anderson Ranch Dam, which provides power as well as flood control for residents in Elmore and other counties.

Table 15: Summary of Power Failures Based on Idaho Power Districts Affecting Elmore County Residents

District	Year	Customers	Average Outages / Customer	Average Duration of Outages / Customer (hours)	Average Number Momentary Interruptions / Customer
Boise	2014	97,078	1.05	1.87	1.13
	2015	98,510	1.26	2.57	1.19
	2016	100,121	0.99	1.87	0.92
	2017	101,480	0.95	2.02	1.10
	2018	102,861	0.80	1.53	0.89
Fairfield	2014	2,492	5.12	11.19	3.63
	2015	2,528	2.04	13.57	3.75
	2016	2,546	0.45	6.70	1.16
	2017	2,547	4.52	16.38	2.25
	2018	2,582	2.61	7.83	4.36
Glenns Ferry	2014	1,871	1.31	3.80	4.89
	2015	1,868	4.04	8.47	4.68
	2016	1,891	1.21	5.80	1.10
	2017	1,908	4.27	10.47	0.32
	2018	1,925	3.00	7.89	0.78
Gooding	2014	9,678	3.21	10.43	2.08
	2015	9,743	3.21	5.87	2.09
	2016	9,790	2.32	3.73	1.87
	2017	9,830	4.18	13.46	2.13
	2018	9,798	1.56	3.75	2.31
Mountain Home	2014	12,332	2.34	7.19	5.80
	2015	12,446	4.56	10.40	3.07
	2016	12,570	1.34	2.91	1.78
	2017	12,648	3.88	7.66	1.58
	2018	12,710	1.31	3.20	2.15

Power outages can be a serious and costly occurrence. Extended power outages can result in a collapse of community infrastructure and services. Traffic lights go off, water and gas pumps stop operating, and businesses and schools close. Essential community functions such as hospitals, police and fire

³⁷ Idaho Power. Company Facts. Available online at <https://www.idahopower.com/about-us/company-information/company-facts/>. Accessed March 18, 2019.

departments, airports, and critical care facilities should all be equipped with backup power generators to maintain their necessary functions. The length of time these essential services can stay operational is dependent upon how extensively they prepared for a disaster such as a power outage.

An understanding of the primary causes of power failure is essential when preparing for power outages. In many instances, a basic understanding regarding the reason power outages occur can help focus planning efforts to minimize the effects power outages can have on a region.

Power outages can occur for a variety of reasons, but weather events, objects falling on power lines, catastrophic failure of power grid components, and grid overload (too much demand at one time) are the most common. Most power outages in Elmore County typically result from weather related damage and/or from foreign objects falling onto power lines and power poles.

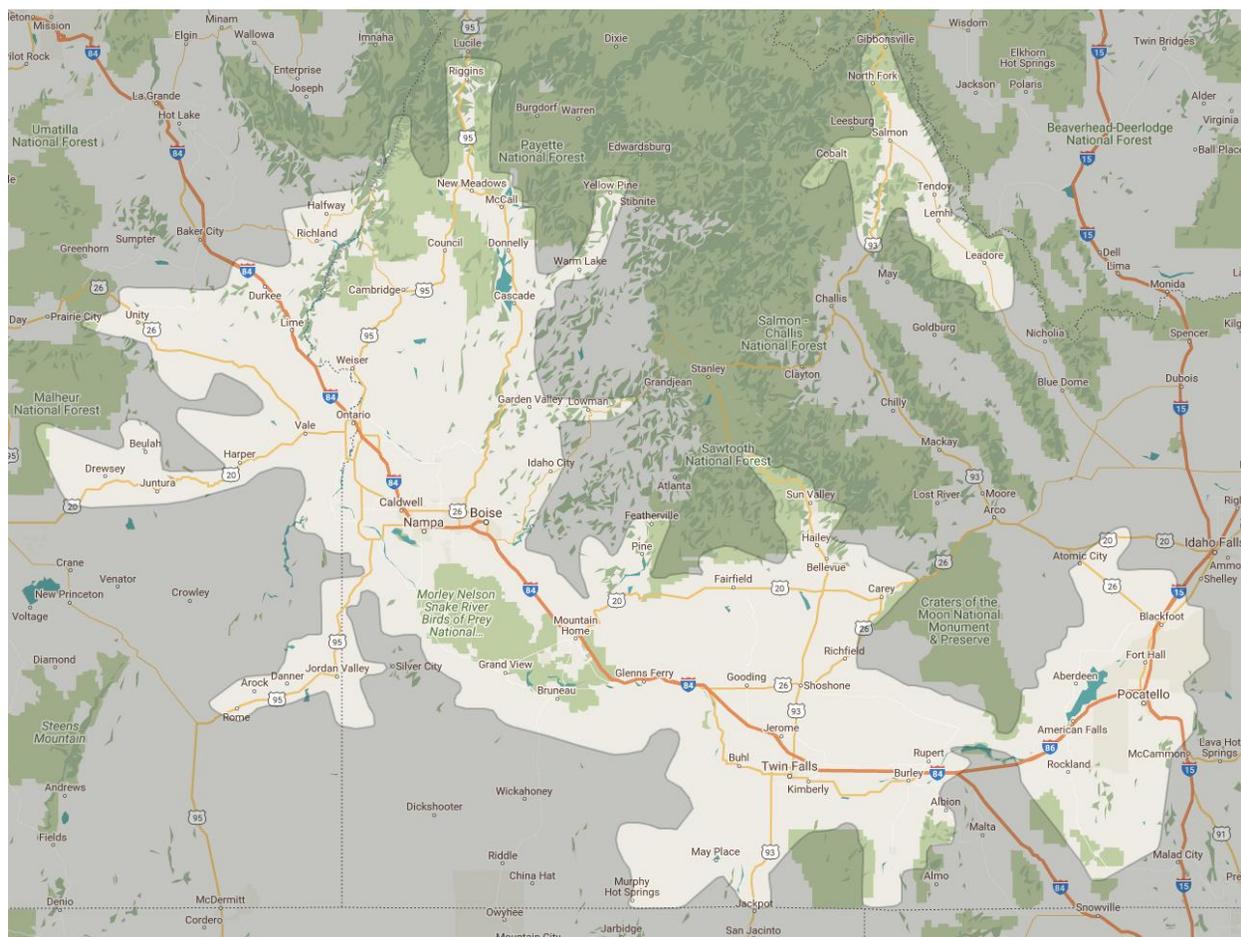


Figure 8) Idaho Power Service Area Map in southern Idaho.³⁸

Strong winds, freezing rain, and heavy snow are typical of significant weather events that commonly result in a loss of power. Strong winds can topple power lines and poles and blow limbs off trees onto power

³⁸ Idaho Power. Service Area Map. Available online at <https://www.idahopower.com/about-us/service-area-map/>. Accessed March 18, 2019.

lines. Freezing rain and heavy snow can accumulate on power lines, exceeding the tension strength of a power line. When this occurs, power lines collapse and fall to the ground causing power outages and creating an electrical hazard on the ground for pedestrians and drivers.

Objects adjacent to power lines, such as trees and structures that could fail because of severe weather, could fall and damage power lines, causing a power outage. Most power line damage is caused by falling tree limbs, but damage can also be caused by streetlights, signs, and low flying aircraft. Downed power lines can become trapped under the fallen object, electrifying any conductors that are in contact with the downed line. This creates a secondary hazard for pedestrians and drivers as well as the utility workers responsible for making repairs.

Failure of power grid components includes all aspects of the power system such as underground high voltage feeder lines, shorts on power poles, malfunctioning substations, transformer failures, and conductor failure. In addition, power companies routinely shut off power for maintenance and repairs. When this occurs, it is the responsibility of the power company to notify the affected area beforehand to ensure that proper precautions can be taken within the service area.

Grid overload can reduce the amount of available power to a service area. Typically, this occurs during peak demand times such as evenings when most customers are at home using power, and during cold weather periods when there is an increased demand for electricity heating homes and other buildings. Rolling blackouts, power outages that are built into the system as a safeguard, can occur if a higher than normal demand for power continues for a prolonged period. These blackouts are typically a last resort measure used by an electric utility company in order to avoid a total blackout of the power system and are usually in response to a situation where the demand for electricity exceeds the supply capability of the power network. These rolling blackouts may be localized to a specific part of the electricity network or may be more widespread and affect entire regions or countries. Rolling blackouts generally result from two causes: insufficient generation capacity or inadequate transmission infrastructure to deliver power where it is needed.

Power outages cannot be prevented, absolutely. The delivery of power to residents in Elmore County will always be susceptible to an interruption as the result of an unforeseeable event. There are, however, mitigation actions that can be accomplished to help prevent outages in the first place as well as reduce the impacts when they do occur. For example, the spacing between trees and power lines should be monitored, following and adhering to power company standards. In areas where trees or tree branches have encroached upon a power line right-of-way, a certified arborist or related professional should be used to address encroachment, reducing the likelihood that a falling tree limb or tree will damage nearby powerlines. Routine inspections of infrastructure by power companies will help to identify and resolve potential problem areas.

Critical community institutions and offices such as hospitals, care facilities, police and fire departments, airports, and community utility services should all be capable of maintaining a “ready state” during times of power outages.



At the county level, a focus towards public education regarding power outages should be made a priority. When extended periods of times pass between major power outages, both emergency response units and the public tend to forget to review plans and take necessary precautions.

Requiring building permits and compliance with building codes is a good foundation for avoiding damage to electrical infrastructure. Builders, future homeowners, and power companies should coordinate with one another so that all parties can be made aware of the potential risk of building near electrical infrastructure. Periodic publication of the highlights of these building codes can help maintain public awareness.

Crop Damage

Crop damage, losses, and failures can be the result of both human-causes and naturally occurring phenomenon. Human activities resulting in crop failure can be related farming technique and strategy, chemical application, mechanical and equipment issues, seed or product defects and contamination, or vandalism. Crop losses resulting from human causes are typically localized or isolated occurrences that only affect one field or farm. Naturally occurring phenomenon, such as severe weather events, are much more likely to be the cause of crop damage or crop losses and can potentially affect agricultural operations across multiple states.

Recent research is beginning to reveal the impact that El Niño Southern Oscillations (ENSO) can have on crop failures and crop losses on a global scale. An El Niño Southern Oscillation is “a warm water wave that travels across the Pacific every three to five years, causes a variety of irregular weather patterns, which affect crops worldwide.”³⁹ As suggested by Anderson et al., an ENSO, along with other climate patterns, can cause synchronous crop failures or damage in different parts of the world. They found that corn was the most susceptible to climate variability, accounting for approximately 18% of volatility in production, with soybeans (7%) and wheat (6%) yields being the second and third most affected crops, respectively⁴⁰.

Understanding the role that ENSOs, and other climate patterns, have in influencing weather has important implications for agricultural operations around the world. Anticipating the occurrence of climate patterns may help improve the accuracy of local and regional weather forecasts and help farmers plan and prepare for unusual or unexpected weather events. While climate patterns serve as a mechanism that drives weather patterns, it is local and regional weather events that are responsible for crop damage and crop losses. Prolonged periods of drought, freezing temperatures, late and early snowfalls, strong wind events, flooding, and, in some regions, mid or late summer rain showers.

In recent years, agricultural operations in southern Idaho have either been threatened by or subjected to unseasonal or severe weather capable of damaging crops. In 2014, numerous counties in the eastern and

³⁹ *El Niño linked to widespread crop failures*. Sci Dev Net. July 15, 2019. Available online at: <https://www.scidev.net/global/agriculture/news/el-ni-o-linked-to-widespread-crop-failures.html>. Accessed October 2019.

⁴⁰ W.B. Anderson, R. Seager, W. Baethgen, M. Cane, L. You, Synchronous crop failures and climate-forced variability. *Sci. Adv.* 5, eaaw1976 (2019).



southern parts of the state received disaster funding for damage and losses caused by “ill-time storms which caused grain to sprout before it could be harvested and some crops to mold in the fields.”⁴¹ Farmers, depending on the damage, were eligible for low interest loans of up to \$500,000. As of late October 2019, early unseasonably cold temperatures were causing concern for potato farmers who could lose their crops if they are unable to harvest in a timely manner. It was estimated that roughly 15% of the potato crop in Idaho was still in the ground when temperatures dropped. Of those potatoes still in the ground, roughly 10-40% were damaged by cold temperatures (depending on location). Most of the unharvested potatoes were to be sold in the fresh sector.⁴² The cold weather also caused damage to several other crops⁴³:

- Sugar Beets: Growers were confident that damage to crops did occur; they are concerned about placing 85-90% of the crop in storage if it is compromised.
- Onions: Approximately 25% of the crop was still in the ground as temperatures dropped in the mid-20’s. It is likely that the cold caused significant damage to onions still in the ground.
- Sweet Corn Seed: “More than 60% of the world’s temperate sweet corn seed is grown in the Treasure Valley.” Approximately 15-25% of the crop was still in the ground when temperatures fell below freezing. The extent of the damage is unclear.
- Dry Beans: The cold temperatures did little damage to the region’s dry bean seed as most was harvest before the cold spell. The few fields that had not been harvested were damaged significantly.

The financial consequences can be significant and far reaching across local and regional economies. Not only do farmers incur financial losses because of crop failure, but the other “links” in the supply chain lose as well. Farm employees, trucking, processing facilities, retailers, and consumers will either lose money or pay more for an agricultural commodity. Refer to the Crop Failure section in the Elmore County Annex for more information about disaster declarations and payouts related to crop losses in Elmore County.

⁴¹ *Idaho Counties Will Receive Disaster Status Due to Crop Damage*. Ag Web Farm Journal. October 7, 2014. Available online at: <https://www.agweb.com/article/idaho-counties-will-receive-disaster-status-due-to-crop-damage>. Access October 2019.

⁴² *Mother Nature deals setbacks to Idaho, North Dakota potatoes*. The Packer. October 23, 2019. Available online at: <https://www.thepacker.com/article/updated-mother-nature-deals-setbacks-idaho-north-dakota-potatoes>. Accessed October 2019.

⁴³ *Cold snap impacted several Idaho crops*. Idaho Farm Bureau Federation. October 16, 2019. Available online at: <https://www.idahofb.org/News-Media/2019/10/cold-snap-impacted-several-idaho>. Accessed October 2019.



Wildland Fire Hazard Profile (CWPP)

Prior to the 2019 update, the Elmore County Community Wildfire Protection Plan (CWPP) was a separate document from the Hazard Mitigation Plan. At the request of the planning team, the CWPP is to be incorporated into the HMP as a part of the 2019 revision process. Collectively, all wildland fire information in this plan, including this section and the wildland fire profiles in each jurisdictional annex, constitutes the Elmore County CWPP.

Wildland Fire Behavior

In general, wildland fire behavior describes how fire reacts to available fuels, local topography, and current weather conditions. The relationships between these three components are dynamic; changing one condition can often exacerbate the affects that the other conditions have on fire behavior. As such, fire behavior is often modeled as a triangle with fuels, topography, and weather serving as the three sides (Figure 9). Understanding the relationships between the fire behavior components has important implications for not only managing an active wildfire but also mitigating wildfire risk. Since fuel is the only component that can be managed directly, management decisions regarding fuel types and fuel loading across the landscape need to be made based on characteristics that are inherent of the region; climate and topography. Strategic fuel breaks, conservation and restoration of native species, and prescribed burns are examples of management activities that can reduce wildfire risk and simplify the process of assessing potential wildfire behavior.

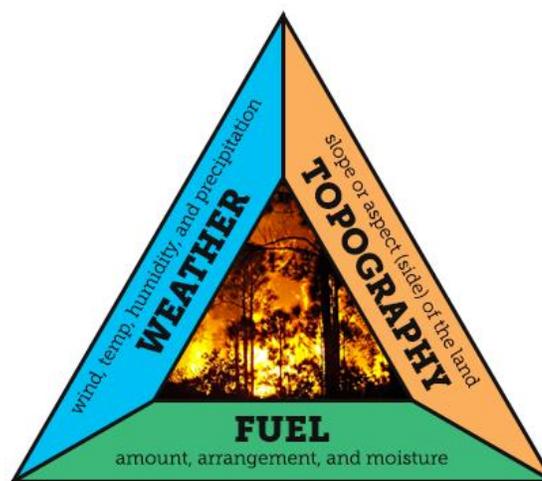


Figure 9) Wildland fire triangle.

The following sections further describe the three elements of the fire triangle and the overall effect that each has on wildland fire behavior.

Weather

Fire behavior is largely influenced by weather conditions. Wind, moisture levels, temperature, and relative humidity are all factors that determine the rates at which fuels dry and vegetation cures. The ignition potential of fuels is also determined by these factors; weather patterns and trends can be analyzed to determine how likely or easily a certain fuel type will ignite and if a fire will be sustained. Once started, the behavior of a wildfire is further determined by atmospheric stability and local and regional weather. As temperature, wind speed, wind direction, precipitation, storm systems, and prevailing winds all influence fire behavior, weather is the most difficult component of the fire triangle to predict and interpret. As observed in the Yarnell Hill fire in Arizona that killed 19 firefighters, a storm cell can cause a flaming front to change direction abruptly, 90 degrees in the case of the Yarnell Hill fire, and rapidly accelerate.



Topography

Fires burning in similar fuel types will burn differently under varying topographic conditions. Topography alters heat transfer and localized weather conditions, which in turn influences vegetative growth and resulting fuels. Changes in slope and aspect can have significant influences on how fires burn. In general, north slopes tend to be cooler, wetter, more productive sites. This typically results in heavy fuel accumulations, high fuel moistures, lower rates of curing for fuels, and lower rates of spread. In contrast, south and west slopes tend to receive more direct sun and therefore have the highest temperatures, lowest soil and fuel moistures, and lightest fuels. The combination of light fuels and dry sites leads to fires that typically display the highest rates of spread. These slopes also tend to be on the windward side of mountains which means they tend to be “available to burn” for a greater portion of the year. Slope also plays a significant role in the rate of spread of a fire as fuels upslope from the flaming front are subjected to preheating which means that they readily combust as the fire draws closer. The preheating process is exacerbated as slope increases which results in greater rates of spread and increased flame lengths. Therefore, steep slopes with a south –southwest aspect generally promote intense fire behavior due to dry fuels and the likelihood of predominant, westerly winds.

Fuels

In the context of wildfire, fuels describe any organic material, dead or alive, found in the fire environment. Grasses, brush, branches, logs, logging slash, forest-floor litter, conifer needles, and buildings are all examples of fuel types. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content, and continuity and arrangement all affect fire behavior. In general, the smaller and finer the fuels, the faster the potential rate of fire spread. Small fuels such as grass, needle litter and other fuels less than a quarter inch in diameter are most responsible for fire spread. Fine fuels, those with high surface to volume ratios, are considered the primary carriers of surface fire. As average fuel size increases, rate of wildfire spread tends to slow due to a decrease in the surface to volume ratio. Fires in large fuels generally burn at a slower rate but release much more energy and burn with much greater intensity. This increased energy release, or intensity, makes these fires more difficult to control.

Fuels are classified by diameter as that has important implications for fuel moisture retention. The smaller the diameter, the more quickly the moisture content of a given fuel type changes; the moisture level in larger diameter fuels takes longer to change. In terms of fire potential on the landscape and fire suppression, the amount of time that is required for a fuel type to become volatile is critical, which is why instead of referring to fuels by size they are referred to as one-hour, ten-hour, 100-hour, or-1000 hour fuels. This method of classifying fuels describes the amount of time required for a fuel’s status to change from non-combustible to combustible because of altered moisture levels in the surrounding environment.



Wildfire Ignition Profile

Detailed records of wildfire ignitions and burned acreage from the US Forest Service (USFS) have been summarized and included in the Elmore County ignition profile. In interpreting these data, it is important to keep in mind that the information represents only the lands protected by the agency specified and may not include all fires in areas covered only by local fire departments or other agencies.

The United States Forest Service (USFS) database of wildfire ignitions used in this analysis includes ignition and acreage data from 1980 through 2016 that covers all USFS land (Table 16). During this period, the agency recorded an average of 47 wildfire ignitions per year resulting in an average total burn area of 44,345 acres per year.

Table 16) Wildfire ignition profile for Elmore County, ID. Data used in the analysis only includes wildfires that burned on USFS ground between 1980 and 2016.

General Cause	Number of Ignitions	Percent of Total Ignitions	Acres Burned	Percent of Total Acres
Human-Caused	774	45%	613,566	38%
Natural Ignition	928	54%	982,016	62%
Unknown	1	0%	840	0%
Total	1,703	100%	1,596,422	100%

According to the dataset, most wildfires on USFS land in Elmore County were caused by lightning (it is important to note that the data used in this analysis is for USFS land only; fires that were responded to by local agencies are not included in the data set). Lightning strike fires burned the greatest number of acres during that same time period, accounting for nearly one million acres burned (compared to human caused fires which burned just over 613,000 acres); lightning strike fires likely burn more acreage as they can be difficult to spot and access, potentially burning for days before they are spotted and can be reached by firefighters.

The 2011 Elmore County CWPP included wildland fire information by decade in the analysis for the county (Figure 10). New for the 2019 update is the inclusion of data for the 2010's decade which suggests that annual acreage burned in Elmore County has steadily increased since the 1980's and that the data for the 2000's decade could be an outlier. According to the USFS data, just over 604,000 acres of USFS land burned in Elmore County which is a 62% increase from the 2000's decade. It should be noted that changes in reporting or record-keeping of wildland fire information may have changed from decade to decade, particularly as GIS and other technology became available, improving the accuracy of burned-area measurements.



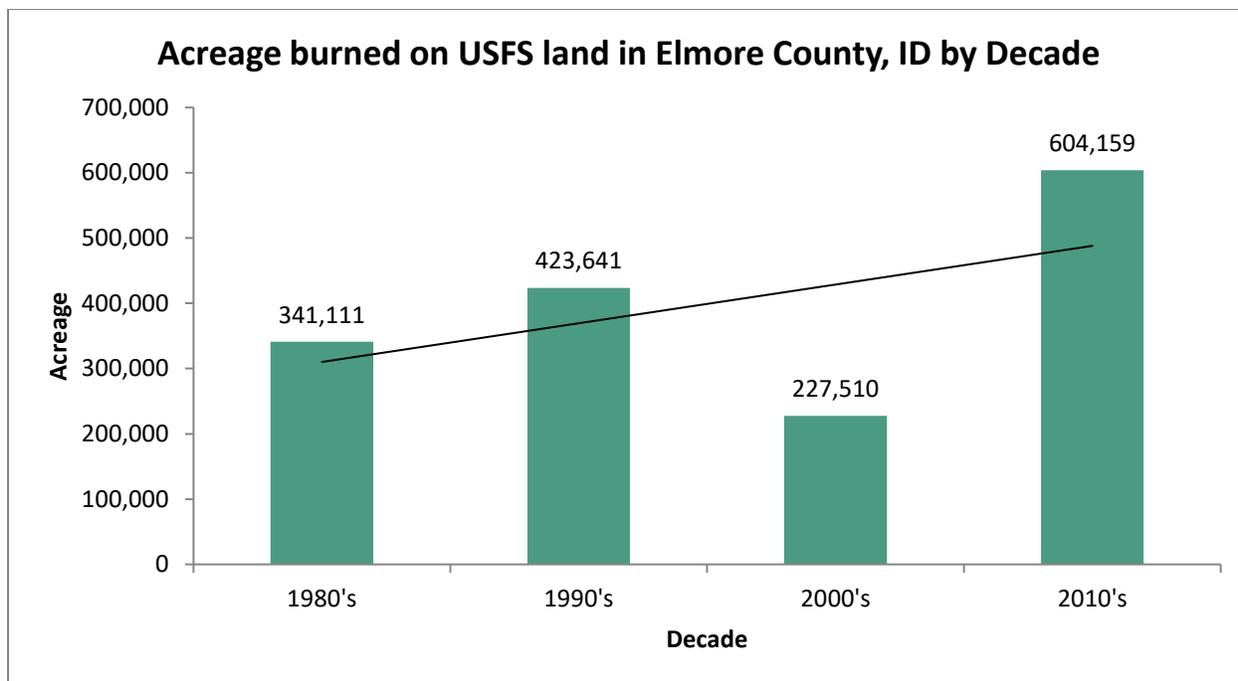


Figure 10) Acreage burned on USFS land in Elmore County, ID by decade.

The USFS data provides a general picture regarding the level of wildland-urban interface fire risk within Elmore County. There are several reasons why the fire risk may be even higher than suggested above, especially in developing wildland-urban interface areas.

1. Large fires may occur infrequently, but statistically they will occur. One large fire could significantly change the statistics. In other words, 30 years of historical data may be too short to capture large, infrequent wildland fire events.
2. The level of fire hazard depends profoundly on weather patterns. A several year drought period would substantially increase the probability of large wildland fires in Elmore County. For smaller vegetation areas, with grass, brush and small trees, a much shorter drought period of a few months or less would substantially increase the fire hazard.
3. The level of fire hazard in wildland-urban interface areas is likely significantly higher than for wildland areas as a whole due to the greater risk to life and property. The probability of fires starting in interface areas is much higher than in wildland areas because of the higher population density and increased activities. Many fires in the wildland urban interface are not recorded in agency datasets because the local fire department responded and successfully suppressed the ignition without mutual aid assistance from the federal agencies.

Wildland Fire History and Location

Between 1980 and 2016, there have been 1,703 ignitions on USFS land. The greatest number of ignitions occurred in 1986 when firefighters responded to 100 wildfires; the fewest fires were recorded in 2016 when 10 ignitions occurred. The greatest number of acres burned in a single year occurred in 1992 when



nearly 210,000 burned. The Foothills Fire accounts for most the acreage with nearly 177,544 acres burning between August 19th and November 5th. Table 17 lists the ten largest fires that have affected Elmore County to date, ranging from the 29,100-acre Benwalk fire to the 177,544-acre Foothills fire. It should be noted that some of the fires listed may have been a part of a complex fire. This may be true for the East Slick fire as a year could not be found.

Table 17) The top ten largest fires that have affected Elmore County, ID.

Ranking	Name of Fire	Year	Acreage	Cause
1	Foothills	1992	177,544	Human
2	Trinity Ridge	2012	146,832	Human
3	Mudd	2013	135,231	Lightning
4	Village	2013	129,730	Lightning
5	Blair	2011	39,577	Lightning
6	South Barker	2008	31,912	Lightning
7	Trail Creek	2000	35,238	Lightning
8	East Slick		35,041	
9	Oregon Trail	2000	31,316	Human
10	Benwalk	2012	29,100	Lightning

When the USFS data is plotted spatially, there appears to be a relationship between the number and size of fires and the fuel-types in which they are occurring (Figure 11). Although spatial distribution of fires throughout the county has been relatively even, it seems that fires are smaller but more numerous in the northern half of the county and less frequent but larger in the southern half of the county. As will be addressed in the Landscape Risk Assessment section of this plan, there is a significant difference between fuel-types and fuel distribution in the southern and northern parts of the county. Coniferous forests in the north end of the county are situated at higher elevations and receive, and therefore retain, more moisture throughout the year. As such, storms and lightning strikes occur regularly as a result of summer storms, igniting small fires in the timbered high county. When lightning-strike fires occur early in the summer when fuels in high elevation forests still contain high levels of moisture, fires are slow to spread giving firefighters adequate time to respond.

In the southern part of Elmore County, rangeland fuel types are largely characteristic of the landscape. Light, flashy rangeland fuels can cure by late spring causing fire danger levels to change suddenly and drastically. Lightning strike fires also occur in the southern part of the county, but human-caused fires may also be more common than in the northern part of the county due to high levels of traffic and human activity. While ignitions may be less frequent in the southern part of the county as fires may be caused more often by human activity, fires have the potential to grow and move rapidly through rangeland fuel types. Even with the immediate availability of wildland fire resources in the southern part of the county, wildfires burning in cured rangeland fuel types can quickly grow beyond the capabilities of initial attack crews; especially if fires are pushed by strong winds.



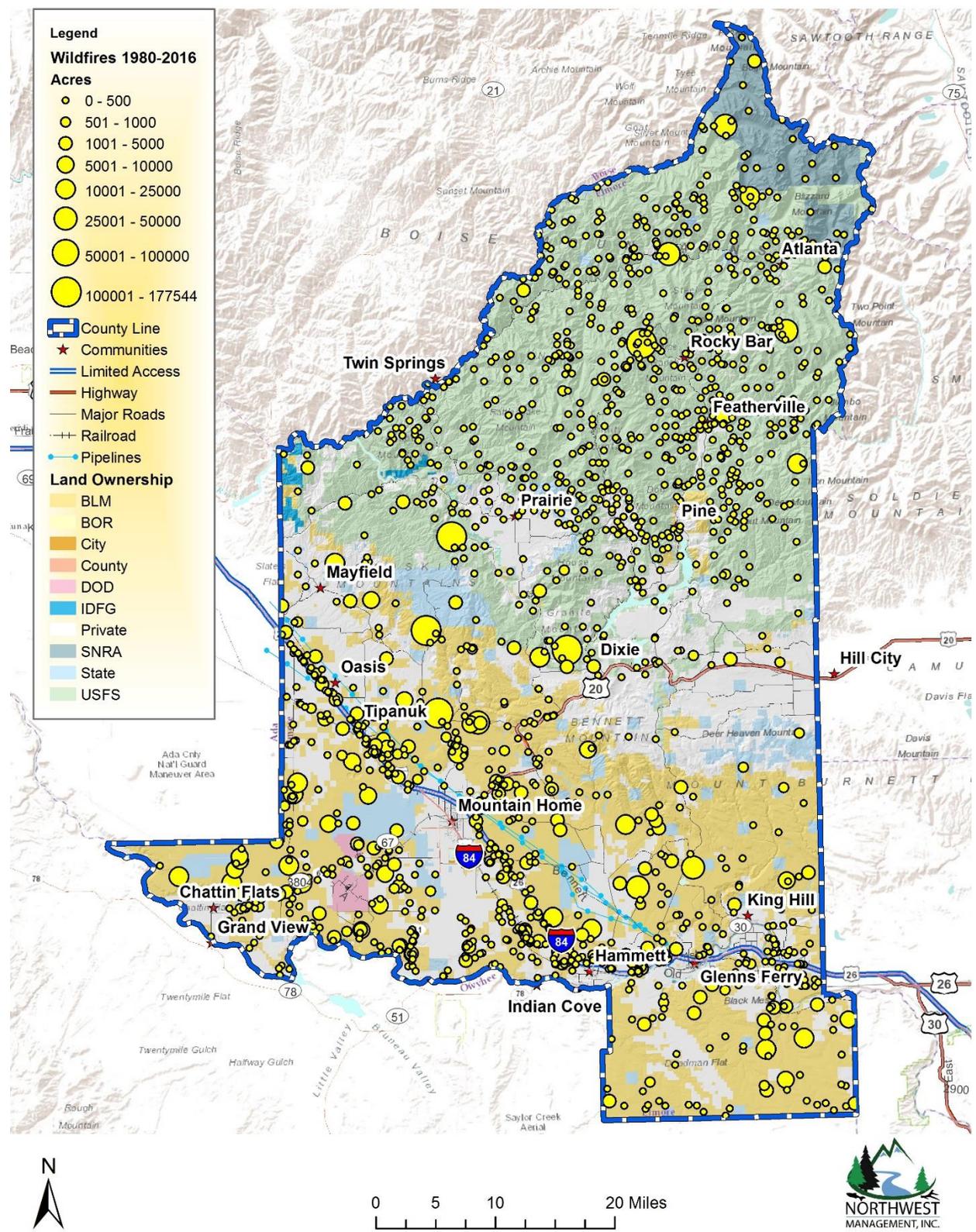


Figure 11) Fire history map of Elmore County, ID. The USFS dataset used to make the map includes fires that occurred between 1980 and 2016.

Wildfire Hazard Assessment

Elmore County was analyzed using a variety of models, managed on a Geographic Information System (GIS). Physical features of the region including roads, streams, soils, elevation, and remotely sensed images were represented by data layers. Field visits were conducted by specialists from Northwest Management, Inc. and others in 2011. Discussions with area residents and local fire suppression professionals augmented field visits and provided insights into forest health issues and treatment options. Those assessments, which are summarized in this section, were reviewed with the planning group for the 2020 plan update and used to help describe wildland fire risk in Elmore County.

Historic Fire Regime

Historical variability in fire regime is a conservative indicator of ecosystem sustainability, and thus, understanding the natural role of fire in ecosystems is necessary for proper fire management. Fire is one of the dominant processes in terrestrial systems that constrain vegetation patterns, habitats, and ultimately, species composition. Land managers need to understand historical fire regimes, the fire return interval (frequency) and fire severity prior to settlement by Euro-Americans, to be able to define ecologically appropriate goals and objectives for an area. Moreover, managers need spatially explicit knowledge of how historical fire regimes vary across the landscape.

Many ecological assessments are enhanced by the characterization of the historical range of variability which helps managers understand: (1) how the driving ecosystem processes vary from site to site; (2) how these processes affected ecosystems in the past; and (3) how these processes might affect the ecosystems of today and the future. Historical fire regimes are a critical component for characterizing the historical range of variability in fire-adapted ecosystems. Furthermore, understanding ecosystem departures provides the necessary context for managing sustainable ecosystems. Land managers need to understand how ecosystem processes and functions have changed prior to developing strategies to maintain or restore sustainable systems. In addition, the concept of departure is a key factor for assessing risks to ecosystem components. For example, the departure from historical fire regimes may serve as a useful proxy for the potential of severe fire effects from an ecological perspective.

Table 18) Historic Fire Regimes in Elmore County, ID.

Fire Regime Group	Description	Acres	% Total
FRG I	<= 35 Year Fire Return Interval, Low & Mixed Severity	548,910	27.7%
FRG II	<= 35 Year Fire Return Interval, Replacement Severity	23,476	1.2%
FRG III	35 - 200 Year Fire Return Interval, Low & Mixed Severity	286,650	14.4%
FRG IV	35 - 200 Year Fire Return Interval, Replacement Severity	999,826	50.4%
FRG V	> 200 Year Fire Return Interval, Any Severity	102,383	5.2%
Water	Water	12,297	0.6%
Snow / Ice	Snow / Ice	2,211	0.1%
Barren	Barren	2,541	0.1%
Sparsely Vegetated	Sparsely Vegetated	6,345	0.3%
Total		1,984,640	100.0%

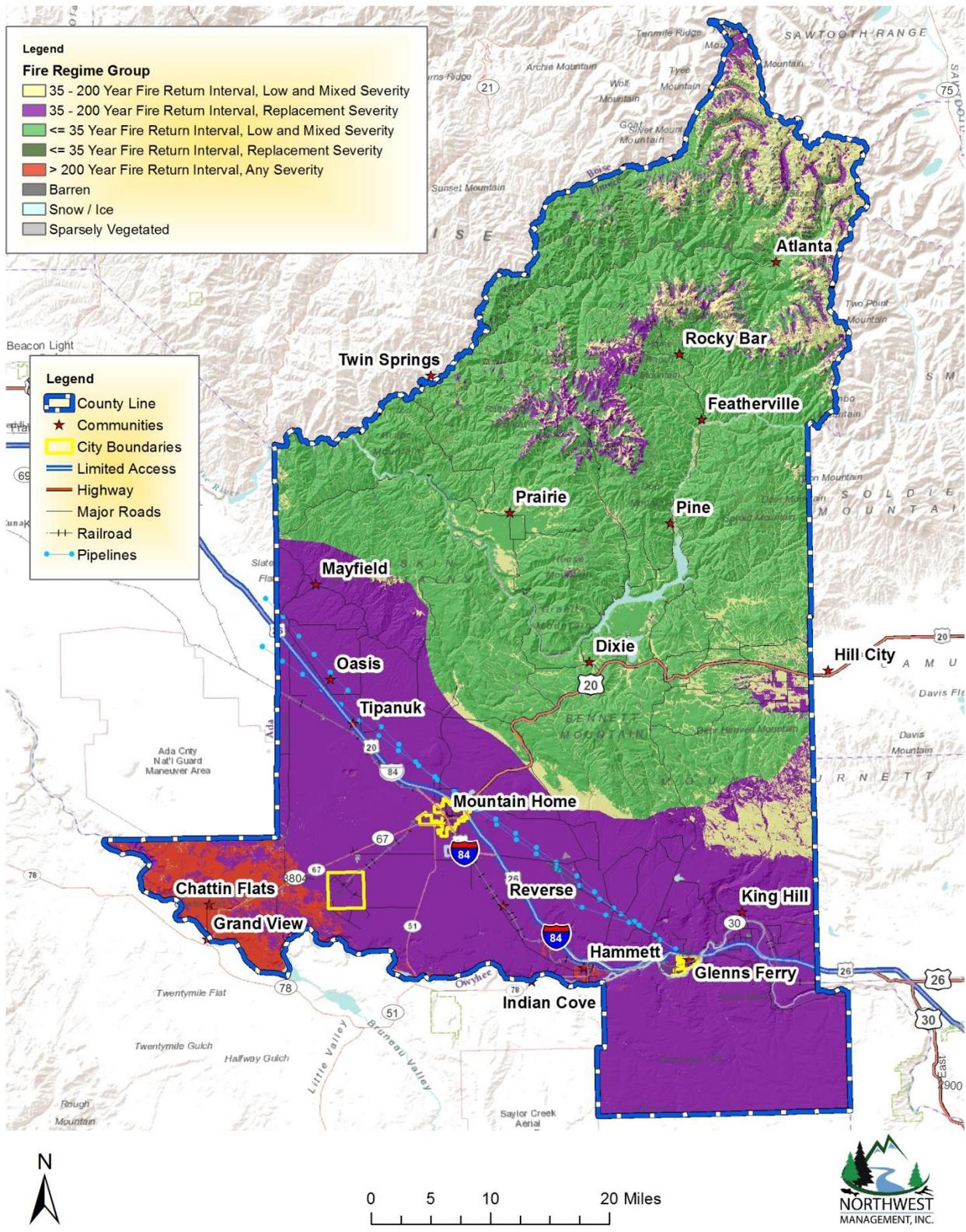


Figure 12) Historic fire regime for Elmore County.

The historic fire regime data shows that southern half of Elmore County in the sagebrush steppe ecosystem historically burned very intensely with a moderate to sometimes longer fire return to interval (35 to 200 years). The foothills area, the transition zone between the rangelands and the forestlands to the north, burned somewhat less intensely resulting in a mosaic pattern at approximately the same fire frequency. The forestlands on the north end of Elmore County had a more variable pattern. Lower elevations typically burned every 35 to 200 years at lower intensities. Mid to higher elevations experienced more frequent fires, but often burned with mixed severity depending on aspect and other topographic features. According to the data, north aspect slopes and the highest elevation peaks tended to experience infrequent, but replacement severity fires.

Vegetation Condition Class

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning.^{44, 45} Coarse scale definitions for historic fire regimes have been developed by Hardy et al⁴⁶ and Schmidt et al⁴⁷ and interpreted for fire and fuels management by Hann and Bunnell.

A vegetation condition class (VCC) is a classification of the amount of departure from the historic regime.⁴⁸ The three classes are based on low (VCC 1), moderate (VCC 2), and high (VCC 3) departure from the central tendency of the natural (historical) regime.^{49,50} The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

⁴⁴ Agee, J. K. *Fire Ecology of the Pacific Northwest forests*. Oregon: Island Press. 1993.

⁴⁵ Brown, J. K. "Fire regimes and their relevance to ecosystem management." *Proceedings of Society of American Foresters National Convention*. Society of American Foresters. Washington, D.C. 1995. Pp 171-178.

⁴⁶ Hardy, C. C., et al. "*Spatial data for national fire planning and fuel management.*" *International Journal of Wildland Fire*. 2001. Pp 353-372.

⁴⁷ Schmidt, K. M., et al. "*Development of coarse scale spatial data for wildland fire and fuel management.*" General Technical Report, RMRS-GTR-87. U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. Fort Collins, Colorado. 2002.

⁴⁸ Hann, W. J. and D. L. Bunnell. "Fire and land management planning and implementation across multiple scales." *International Journal of Wildland Fire*. 2001. Pp 389-403.

⁴⁹ Hardy, C. C., et al. "*Spatial data for national fire planning and fuel management.*" *International Journal of Wildland Fire*. 2001. Pp 353-372.

⁵⁰ Schmidt, K. M., et al. "*Development of coarse scale spatial data for wildland fire and fuel management.*" General Technical Report, RMRS-GTR-87. U.S. Department of Agriculture, Forest Service. Rocky Mountain Research Station. Fort Collins, Colorado. 2002.



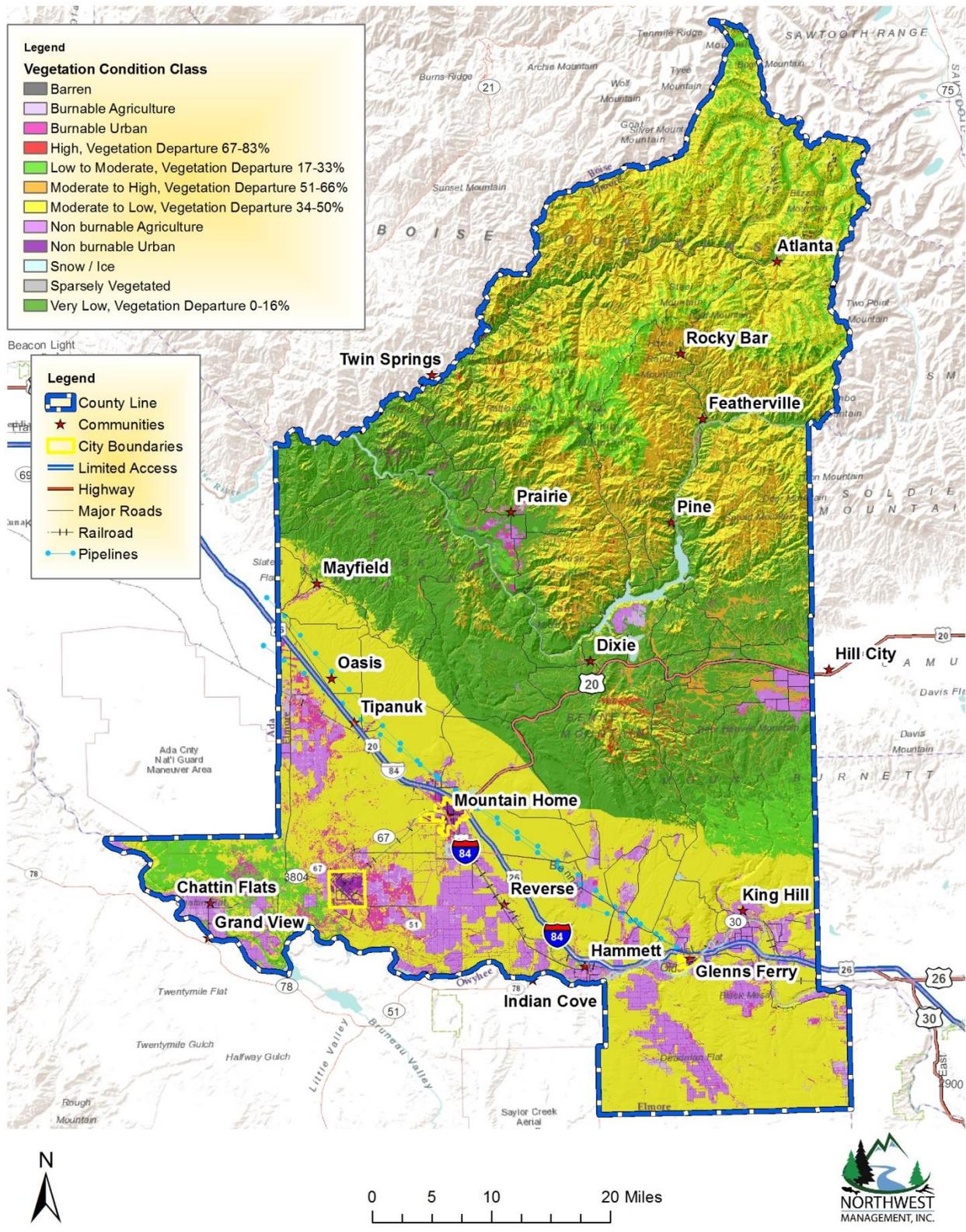


Figure 13) Vegetation Condition Class map of Elmore County, ID.

An analysis of Vegetation Condition Classes in Elmore County shows that most of the land is low to moderately departed (48.9%) from its historic fire regime and associated vegetation and fuel characteristics (Table 19). Most of the rangeland in the southern half of the county is moderately departed; this is likely attributed to the presence of cheat grass and other invasive grasses that alter the fire regime of native range plant communities. The northern, mountainous areas of the county are also low to moderately departed from historic vegetation-conditions, but departure in forested areas of the county is likely a result of changes in stand structure or stand mortality. Almost 29% of the vegetated landscape is classified as very low departure while only 0.4% is highly departed. Approximately 0.8% of the county surface area is water, snow, or ice; 3.8% is classified as urban; 6.4% of the county is land use is urban.

Table 19) Vegetation Condition Class for Elmore County, ID.

Vegetation Condition Class	Description	Acres	% Total
VCC I.A	Very Low, Vegetation Departure 0-16%	572,235	28.8%
VCC I.B	Low to Moderate, Vegetation Departure 17-33%	132,846	6.7%
VCC II.A	Moderate to Low, Vegetation Departure 34-50%	838,393	42.2%
VCC II.B	Moderate to High, Vegetation Departure 51-66%	206,813	10.4%
VCC III.A	High, Vegetation Departure 67-83%	8,269	0.4%
Water	Water	13,714	0.7%
Snow / Ice	Snow / Ice	1,348	0.1%
Non burnable Urban	Non burnable Urban	25,411	1.3%
Burnable Urban	Burnable Urban	49,485	2.5%
Barren	Barren	2,981	0.2%
Sparsely Vegetated	Sparsely Vegetated	6,543	0.3%
Non burnable Agriculture	Non burnable Agriculture	101,122	5.1%
Burnable Agriculture	Burnable Agriculture	25,480	1.3%
Total		1,984,640	100.0%

Wildland Urban-Urban Interface

The wildland-urban interface (WUI) has gained attention through efforts targeted at wildfire mitigation; however, this analysis technique is also useful when considering other hazards because the concept looks at where people and structures are concentrated in any region.

A key component in meeting the underlying need for protection of people and structures is the protection and treatment of hazards in the wildland-urban interface. The wildland-urban interface refers to areas where wildland vegetation meets urban developments or where forest fuels meet urban fuels such as houses. The WUI encompasses not only the interface (areas immediately adjacent to urban development), but also the surrounding vegetation and topography. Reducing the hazard in the wildland-urban interface

requires the efforts of federal, state, and local agencies and private individuals.⁵¹ “The role of [most] federal agencies in the wildland-urban interface includes wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical experience. Structural fire protection [during a wildfire] in the wildland-urban interface is [largely] the responsibility of Tribal, state, and local governments”.⁵² The role of the federal agencies in Elmore County is and will be much more limited. Property owners share a responsibility to protect their residences and businesses and minimize danger by creating defensible areas around them and taking other measures to minimize the risks to their structures.⁵³ With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities against other hazard risks. In addition, a wildland-urban interface that is properly treated will be less likely to sustain a crown fire that enters or originates within it.⁵⁴

By reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing existing defensible space, landowners can protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior;⁵⁵
- improving defensible space for suppression efforts in the event of wildland fire.

Three wildland-urban interface conditions have been identified (Federal Register 66(3), January 4, 2001) for use in wildfire control efforts. These include the Interface Condition, Intermix Condition, and Occluded Condition. Descriptions of each are as follows:

- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;

⁵¹ Norton, P. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment. Fish and Wildlife Services, Bear Valley Wildlife Refuge. June 20, 2002.

⁵² USFS. 2001. United States Department of Agriculture, Forest Service. Wildland Urban Interface. Web page. Date accessed: 25 September 2001. Accessed at: <http://www.fs.fed.us/r3/sfe/fire/urbanint.html>

⁵³ USFS. 2001. United States Department of Agriculture, Forest Service. Wildland Urban Interface. Web page. Date accessed: 25 September 2001. Accessed at: <http://www.fs.fed.us/r3/sfe/fire/urbanint.html>

⁵⁴ Norton, P. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment. Fish and Wildlife Services, Bear Valley Wildlife Refuge. June 20, 2002.

⁵⁵ McCoy, L. K., et al. Cerro Grand Fire Behavior Narrative. 2001.



- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres; and
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size.

In addition to these classifications detailed in the Federal Register, Elmore County has included four additional classifications to augment these categories:

- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.
- **High Density Urban Areas** – those areas generally identified by the population density consistent with the location of incorporated cities, however, the boundary is not necessarily set by the location of city boundaries or urban growth boundaries; it is set by very high population densities (more than 7-10 structures per acre).
- **Infrastructure Area WUI** – those locations where critical and identified infrastructure is located outside of populated regions and may include high tension power line corridors, critical escape or primary access corridors, municipal watersheds, and areas immediately adjacent to facilities in the wildland such as radio repeater towers.
- **Non-WUI Condition** – a situation where the above definitions do not apply because of a lack of structures in an area or the absence of critical infrastructure. This classification is not considered part of the wildland urban interface.

In summary, the designation of areas by the Elmore County planning committee includes:

- | | |
|----------------------------|--|
| • Interface Condition: WUI | • High Density Urban Areas: WUI |
| • Intermix Condition: WUI | • Infrastructure Areas: WUI |
| • Occluded Condition: WUI | • Non-WUI Condition: Not WUI, but present in Elmore County |
| • Rural Condition: WUI | |

Elmore County's wildland urban interface (WUI) is mostly based on population density (Figure 14). Relative population density across the county was estimated using a GIS based kernel density population model that uses object locations to produce, through statistical analysis, concentric rings or areas of consistent density. To graphically identify relative population density across the county, structure locations are used as an estimate of population density. Aerial photography was used to identify structure locations in 2005. This existing structure layer was updated in 2011 using 2009 NAIP imagery and Elmore



County's cadastral data. The resulting output identified the extent and level of population density throughout the county.

When this plan was last updated in 2011, the Elmore County CWPP planning committee recognized the clear change in Fire Regime Condition Class along the transition zone from the Snake River Plain to the foothills area in central Elmore County. Because most of the Snake River Plain was classified as Fire Regime Condition Class III, the committee included this entire area in the WUI designation in order to provide flexibility in planning fuels mitigation and rangeland restoration projects within this Condition Class.

By evaluating structure density in this way, WUI areas can be identified on maps by using mathematical formulae and population density indexes. The resulting population density indexes create concentric circles showing high density areas, interface, and intermix condition WUI, as well as rural condition WUI (as defined above). This portion of the analysis allows us to "see" where the highest concentrations of structures are in reference to relatively high-risk landscapes, limiting infrastructure, and other points of concern.

The WUI, as defined here, is unbiased and consistent, allows for edge matching with other counties, and most importantly – it addresses all of the county, not just federally identified communities at risk. It is a planning tool showing where homes and businesses are located and the density of those structures leading to identified WUI categories. It can be determined again in the future, using the same criteria, to show how the WUI has changed in response to increasing population densities. It uses a repeatable and reliable analysis process that is unbiased.

The Healthy Forests Restoration Act makes a clear designation that the location of the WUI is at the determination of the county or reservation when a formal and adopted Community Wildfire Protection Plan is in place. It further states that the federal agencies are obligated to use this WUI designation for all Healthy Forests Restoration Act purposes. The Elmore County planning team evaluated a variety of different approaches to determining the WUI for the county and selected this approach and has adopted it for these purposes. In addition to a formal WUI map for use with the federal agencies, it is hoped that it will serve as a planning tool for the county, state and federal agencies, and local fire districts.

Potential WUI Treatments

Most treatments may begin with a home evaluation, and the implicit factors of structural ignitability (roofing, siding, deck materials) and vegetation within the treatment area of the structure. However, treatments in the low population areas of rural lands (mapped as yellow) may look closely at access, ensuring two ways in and out and adequate room for two-way traffic where possible, and communications through means other than land-based telephones.

In contrast, subdivision with high building densities and closely spaced homes (mapped as brown – interface areas -if they appear on the map) that are surrounded by forests and dense underbrush, may be better protected by allocating time and effort to the implementation of fuels treatments beyond the immediate home site. This may reduce the probability of a crown fire affecting or encroaching on the subdivision.



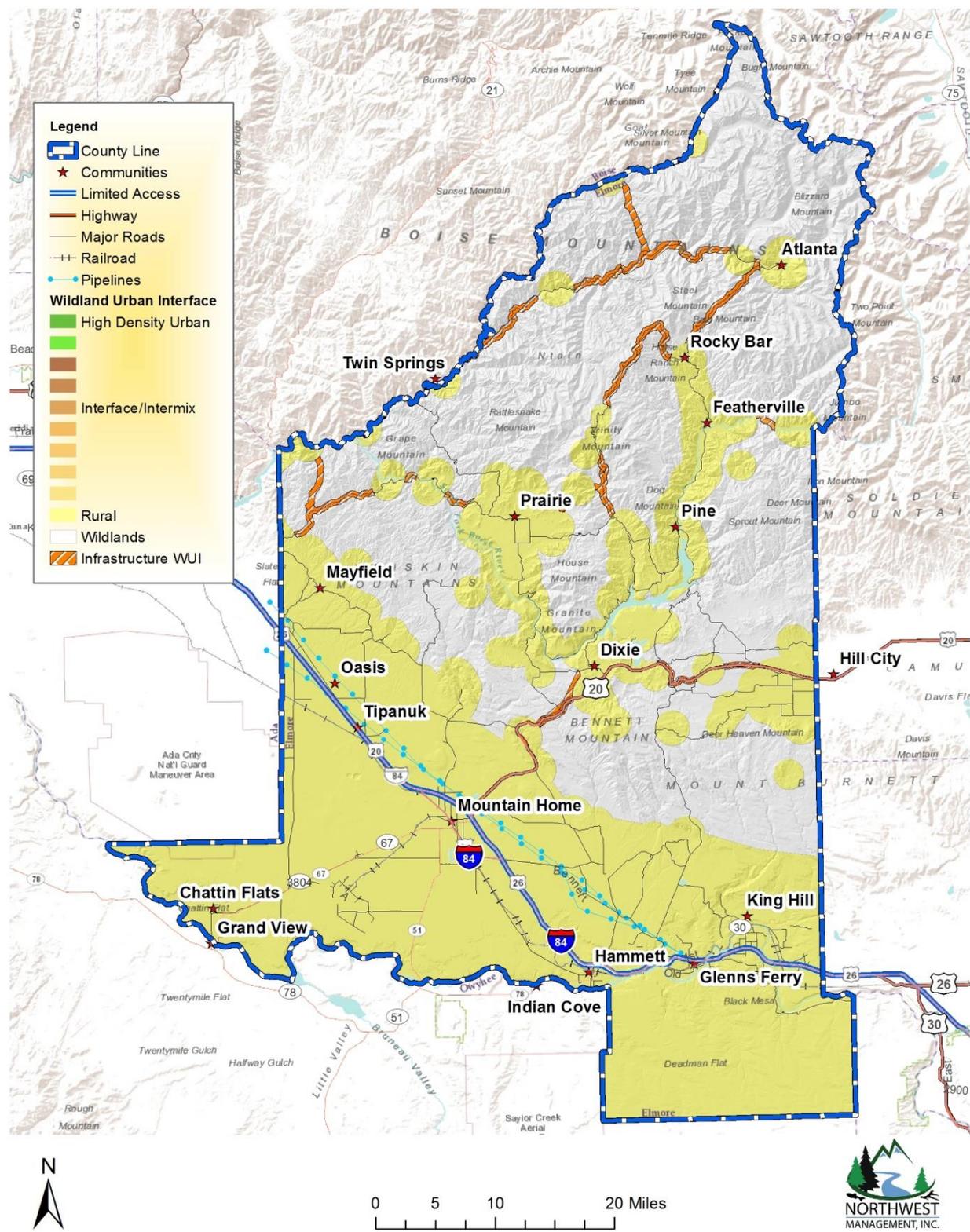


Figure 14) Wildland Urban Interface (WUI) in Elmore County, ID.

Relative Threat Level Mapping

Wildland fire risk in Elmore County was also assessed using the Relative Risk to Communities and Ecosystems from Uncharacteristic Wildland Fire, developed by the Idaho Department of Lands. Figure 15 is the output for Elmore County; the map shows areas of low, moderate, and high-risk wildland fire risk in the county. The following text describes the methodology used to create the threat level map; it is a direct excerpt from the Inside Idaho web page which can be accessed at:

<http://insideidaho.org/webapps/search/search.aspx?searchterm=fire+risk&submit=Search#top>

This layer was constructed by using the following layers:

1) The Relative Risk to Communities from Wildland Fire in Idaho model, developed by the Idaho Interagency Wildland Fire Plan Working Group. A complete description of this model is available for download at: <http://www.idahofireplan.org/images/Assessment.pdf>. The assessment was completed by Jeff Jones, Landscape Ecologist, Flathead National Forest, and others from the State Fire Plan Working Group. This model considers relative wildland fire risk (weather, ignition probability, rate of spread), relative wildland fire hazard (fuel hazard, expected fuel moisture, slope effect on fire spread) and wildland urban interface (inhabited areas, communities at risk). This dataset identifies wildland urban communities from the Federal Register (66 Fed. Reg. 753, January 4, 2001). The SAFR Core Development Team felt this model best informed the issue of community risk to wildfire and is supported by the Interagency Fire Plan Working Group.

2) Fire Regime Condition Classes (FRCC): This dataset shows changes in vegetation and fuels from historical conditions. From this map, inferences can be made to characterize forest lands with higher potential of uncharacteristic wildland fires (if ignitions were to occur). It is deemed the best indicator available of potential threat to forest systems from uncharacteristic fire. FRCC was used in the Idaho Roadless Rule to assess potential for uncharacteristic wildfires, and to evaluate the ability to treat fuels to reduce this potential. Information on this dataset can be found at:

http://www.fs.fed.us/rm/pubs_other/rmrs_2004_menakis001.pdf

Issue Process: The Relative Risk to Communities from Wildland Fire in Idaho dataset was reclassified into five groups (1-5), from very low risk to very high risk, using natural breaks in the data. The FRCC data measures relative departure from historic fire regimes in three categories (1-3), from low departure to high. This data was first masked to include only forested areas, and then reclassified into three categories with values of 1, 3 and 5. Instead of adding these two datasets together, they were merged such that the highest value from either dataset became the value for that cell. For example, if either the Relative Risk to Communities from Wildland fire or the FRCC had a value of five for a particular cell, that cell received a value of five.

Idaho Statewide Assessment of Forest Resources document contains additional information and can be found at:

<http://www.idl.idaho.gov/bureau/ForestAssist/safr/final/061410-ID-SAFR-FINAL.pdf>



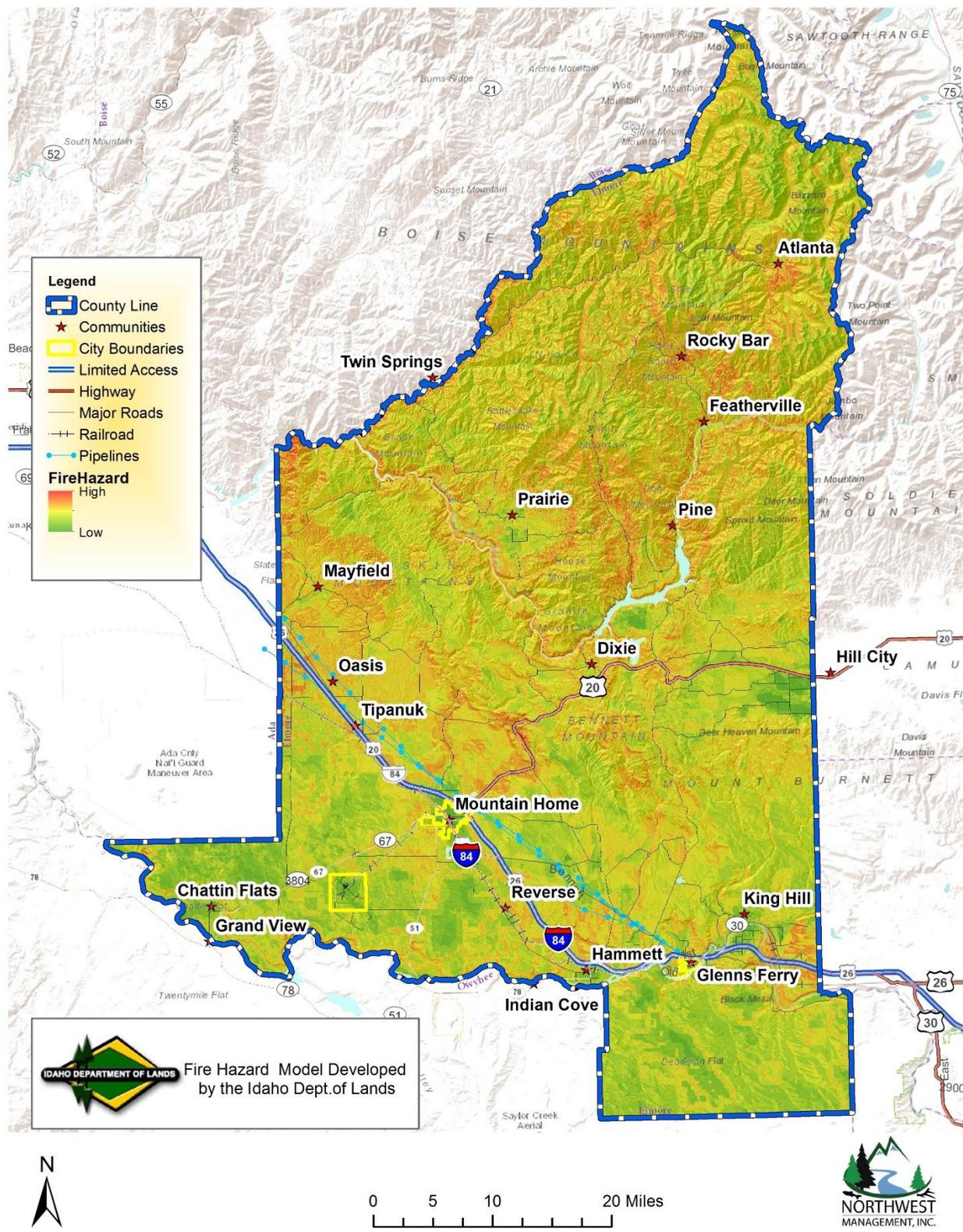


Figure 15) Wildland Fire Hazard map of Elmore County, ID. Map and model were developed by the Idaho Department of Lands.

Landscape Risk Assessments

This section evaluates wildland fire risk in Elmore County as it relates to natural and human-made features across the landscape. For the purpose of simplification, the South Fork of the Boise River was used as a natural break between the two major landscape and vegetation types in county. The northern portion of the county is mountainous and features coniferous forests of varying species compositions and stocking densities. The southern portion of the county features extensive coverage of grasses, herbaceous plants, and shrubs. These two regions are referred to as Rangeland and Forestland landscapes and will be addressed in greater detail in the following sections. General cover-type classifications are summarized in Table 20 and displayed in Figure 16; the table and figure compliment the in-depth landscape assessments on the following pages.

Fire protection jurisdictions are also listed in both landscape assessments; both lists include the fire protection entities whose jurisdictions fall primarily within the respective landscape-zone. Refer to Figure 17 when reviewing the lists of fire protection entities.

Table 20) Ground cover-type for Elmore County, ID.

Ground Cover-Type	Acres	% Total
Agricultural	126,602	6.4%
Barren	2,981	0.2%
Conifer	310,122	15.6%
Conifer-Hardwood	2,145	0.1%
Developed	49,485	2.5%
Developed-High Intensity	700	0.0%
Developed-Low Intensity	3,412	0.2%
Developed-Medium Intensity	2,881	0.1%
Developed-Roads	18,417	0.9%
Exotic Herbaceous	429,587	21.6%
Grassland	362,222	18.3%
Hardwood	18,498	0.9%
Open Water	13,714	0.7%
Riparian	17,718	0.9%
Shrubland	555,939	28.0%
Snow-Ice	1,348	0.1%
Sparsely Vegetated	68,869	3.5%
Total	1,984,640	100.0%



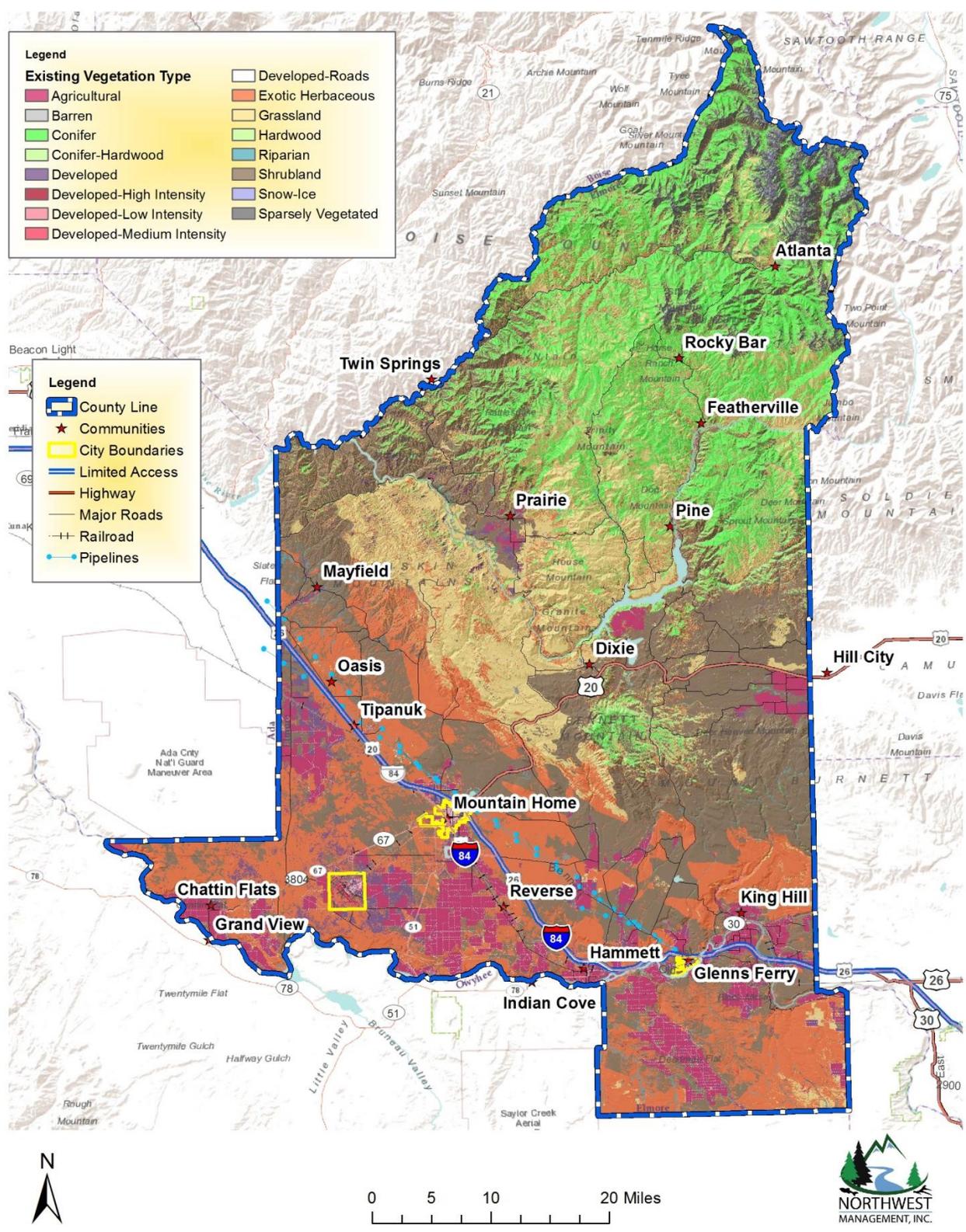


Figure 16) Existing Vegetation Type map of Elmore County, ID.

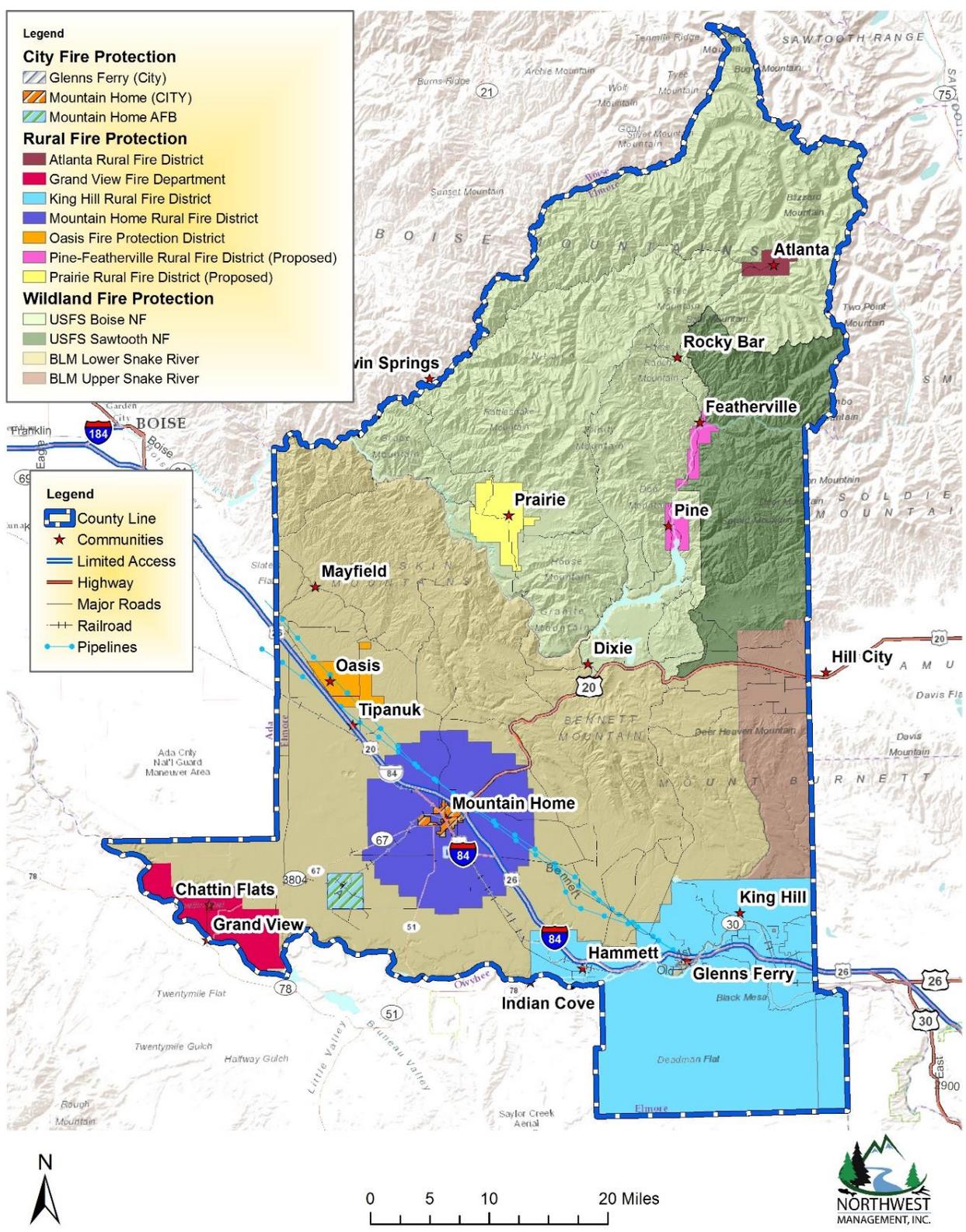


Figure 17) Fire protection jurisdictions in Elmore County, ID.

Rangeland Communities

Wildfire Potential: The communities of Oasis, Tipanuk, Mountain Home, Grand View, Hammett, Glenns Ferry, and King Hill lie in the vegetative ecosystem known historically as the “sagebrush steppe” community. The sagebrush steppe ecosystem is widespread over much of southern Idaho, eastern Oregon and Washington, and portions of northern Nevada, California and Utah. The southern Idaho portion of this ecosystem occurs over a variety of landforms and vegetation types. Historically, native vegetative communities ranged from vast expanses of grasslands to sagebrush communities. More recently, these vegetative communities have gradually been displaced by invasive grasses; primarily cheatgrass and medusahead grass. Invasive grass species have dramatically altered the fire regime in southern Elmore County, decreasing fire return interval, causing fire behavior to increase in severity, and increasing fire suppression costs for affected communities.

The sagebrush steppe region of Elmore County is characterized by a persistently warm and arid environment providing resources and climate for a matrix of bunchgrass, annual grass, and sagebrush-dominant, low elevation rangelands. Hot, dry, and windy conditions accompanied by shifts in vegetation and fire suppression have resulted in a rich history of frequent fires. Increase in dominance of exotic annual grass species and stands of sagebrush (*Artemisia* spp.) with low age diversity have affected ability of resilience to fire events. Intact sagebrush stands throughout the county are characteristically older, lacking open area for seedling recruitment and fire break. Cheatgrass (*Bromus tectorum* L.) and medusahead rye (*Taeniatherum caput-medusae*) are both exotic grass species originating from Europe and displacing native bunchgrass species. Cheatgrass and medusahead rye responds well to soil disturbance and are abundant along roadsides, driveways, new construction areas, and in recently burned areas. These grasses take advantage of available resources quickly through shallow root systems, early germination, and proliferation ability through high seed production. Both species mature early proving fine litter fuels. Medusahead rye has a particularly high silica content resulting in slow breakdown of vegetative litter. Over time, vegetative species composition in unmanaged or non-irrigated land has shifted toward fire prone species, particularly in high use areas where disturbance is common.

Agricultural and irrigation practices surrounding some communities within the Snake River Valley have created a patchwork of green, lush vegetation and cured rangeland. This patchwork helps to break the continuity of fuels that are available to burn around highly populated areas of the county. This pattern is particularly apparent around Grand View, Hammett, and Glenns Ferry. Cultivation has also broken fuel continuity in areas surrounding immediate Mountain Home. However, dry fuels become continuous above the irrigated zone providing a consistent fuel bed for fire spread. The area northwest of Mountain Home bound by the Bennett Mountain and along either side of Interstate 95 is dominated by rangeland vegetation. Unincorporated communities of Oasis and Tipanuk are prone to fire risk, with little to no break in fuel continuity surrounding infrastructure. Highly disturbed, xeric vegetation is dominant outside of towns and communities with few breaks in continuity. Under dry and windy conditions, fires in these vegetation communities can burn thousands of acres in a single burning period. Rangeland post-fire mitigation strategies implemented within the county have included reclamation through planting forage kochia (*Kochia prostrata*) and crested wheatgrass (*Agropyron cristatum*) to reduce fuel loads and provide improved plant community structure and function.



Fuels throughout the entire sagebrush steppe community in Elmore County are quite consistent, dominated by annual grasslands and degraded sagebrush steppe. Fires in these fuel types tend to spread rapidly and burn at relatively low to moderate intensity. Where grasses become less consistent, wind is needed to push fires through the bunchgrass. Typically, fires in sagebrush-dominated fuel types require a moderate wind to push fire through the fuels. Without wind, the fire will drop to the ground and in the absence of fine fuels, fire spread will stop.

Perennial bunchgrasses, which are more widely spaced, historically dominated the herbaceous vegetation in sagebrush steppe communities allowing for discontinuity of fuels. Under historic vegetation community conditions, fires created mosaics of sagebrush stands of varying ages and successional stages and native bunchgrass growth structure resulted in smaller fires. Fire behavior and fire regimes have been altered due to the proliferation of medusahead and cheatgrass. The fine fuel structure and its ability to completely dominate disturbed sites provide a dry, consistent fuel bed for fire. Where these invasive species have encroached sagebrush stands, it now provides a consistent bed of fine fuels that actively carry fire without the influence of wind. Because of these characteristics, cheatgrass and medusahead will support fire during several months of the year and under conditions that native vegetation would not have sustained.

Cheatgrass has taken over more than 50% of the nearby Snake River Birds of Prey National Conservation Area with detrimental effects to native flora and wildlife. Cheatgrass can reduce the fire recurrence interval in sagebrush grasslands dramatically; 20 to 100 years for a natural cycle and to 3 to 5 years on cheatgrass-dominated sites. Continued natural and human-caused disturbances will favor cheatgrass and medusahead invasion; shifting species composition away from native species toward these highly flammable exotics. Consequently, the landscape will become increasingly fire prone over time. Fuels in more populated areas will continue to become increasingly receptive to ignition sources; thus, increasing the frequency of wildland fires.

Fire Protection: Mountain Home Rural Fire District, King Hill Rural Fire District, Grand View Fire Department, Glens Ferry (City), Oasis Fire Protection District, Mountain Home AFB, Mountain Home (City), BLM Lower and Upper Snake River

Potential Mitigation Activities: Mitigation efforts in the range landscape include creation of fuel breaks, mowing or grazing, and emphasis on promoting native, fire-adapted range species. As vehicle traffic during the tourist season could be a potential source of ignition, fire-awareness programs and public education can also help limit the potential for a large wildfire to occur in the range areas of Elmore County. Adherence to community fire guidelines can help protect structures in the event of a fire.

Forestland Communities

Wildfire Potential: Vegetative structure and composition within the northern half of Elmore County is closely related to elevation, aspect, and precipitation. Warm and dry environments characterize the undulating topography of the region which transitions from the sagebrush steppe plant communities of the south to the forested ecosystems of the north. Within the transition zone, these conditions limit the establishment of woody tree species allowing for the dominance of sagebrush and bunchgrass communities. These vegetative communities contain high fuel accumulations that burn rapidly at



relatively low to moderate intensities. The sagebrush/bunchgrass fuel types are common in central Elmore County, especially around Prairie. This “transition zone” sometimes experiences extreme fires as moisture and temperatures can combine to stress tree species while allowing sagebrush and bunchgrasses to grow thick and tall. This combination can lead to extreme fire behavior.

At higher elevations and in the mountainous river canyons, moisture becomes less limiting due to a combination of higher precipitation and reduced solar radiation. Vegetative patterns begin to show a shift toward forested communities dominated by ponderosa pine and Douglas-fir at the lower elevations, transitioning to lodgepole pine and subalpine species at the highest elevations. The forested conditions possess a greater quantity of both live and dead and down fuels. Rates of fire spread tend to be lower than those in the grass and shrub lands; however, intensities can escalate dramatically, especially under the influence of slope and wind. These conditions, as well as reduced access and difficult terrain features, can lead to control problems and potentially threaten lives, structures, and other valued resources.

Between the shrub and grass communities and the forested lands is a transitional area that has components of both types of vegetative communities. These warm and dry forests are typically open stands of pine with grass and often sagebrush in the understory. These attributes allow for rapid fire spread through the surface fuels. This type of forest is highly valued for its scenic qualities as well as for its proximity to travel corridors in Elmore County. This has led to increased recreational and residential home construction in these areas. The juxtaposition of highly flammable forest types and residential areas will affect the management and response to wildland fires.

Fire Protection: Prairie Rural Fire District (proposed), Pine-Featherville Rural Fire District (proposed), Atlanta Rural Fire District, USFS Boise NF, and Sawtooth NF.

Potential Mitigation Activities: Mitigation strategies that would be most effective in the forested areas in the mountainous norther portion of Elmore County include understory and overstory thinning, the creation of fuel breaks, attention to and implementation of forest management practices that promote forest health, expansion and maintenance of right-of-ways, and adherence to community fire guidelines in the WUI.



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Chapter 5:

Risk & Vulnerability Assessments

IN THIS SECTION:

- Elmore County Annex
- City of Glenns Ferry Annex
- City of Mountain Home Annex
- Oasis Fire Protection District Annex

Chapter 5 – Risk and Vulnerability Assessments

The Elmore County MHMP planning committee reviewed many of the natural and man-made hazards that have affected or pose a potential risk to people or property throughout the county. The committee agreed that the natural hazards of flood, earthquake, landslide, severe weather, and wildland fire, as well as, the hazards of massive crop failure and extended power outage should be included in the risk assessment for each jurisdiction. The planning committee recognizes that there are additional hazards, particularly man-made hazards, which may also affect Elmore County. These types of additional hazards will be reviewed for inclusion during the subsequent annual and 5-year evaluations of the MHMP.

As part of the development of the original risk and vulnerability assessment, each member of the planning committee was asked to fill out a critical infrastructure worksheet identifying and locating all structures, infrastructure, and culturally significant sites that loss or damage of which would have a significant impact on the community. This exercise also included all communication, hazardous materials storage, transportation, and emergency response infrastructure. The list from each member was compiled and added to a GIS database. At that time, the critical infrastructure database was used to develop maps and address each type of hazard risk in each jurisdiction.

Furthermore, Elmore County's existing parcel master listing has been converted to an accessible GIS database. This database allowed the planning committee to map every parcel within the County and City jurisdictions. This data was combined with the hazard vulnerability models to develop the risk assessments and loss estimations for each jurisdiction.

In order to be eligible for project funds under the Flood Mitigation Assistance (FMA) Program authorized by the National Flood Insurance Act of 1968, as amended, communities are required under 44 CFR 79.6(d)(1) to have a mitigation plan that addresses flood hazards. On October 31, 2007, FEMA published amendments to the 44 CFR Part 201 at 72 Federal Register 61720 to incorporate mitigation planning requirements for the FMA program, which combined the Local Mitigation Plan requirement for all hazard mitigation assistances programs under 44 CFR 201.6 to include the FMA as well as the HMGP, PDM, and SRL programs thus eliminating duplicative mitigation planning regulations. The purpose of the flood sections in the following annexes is to fulfill the requirements for both the FMA program and the Local Hazard Mitigation Plan.



Elmore County Annex

Flooding, landslides, and wildland fires are common occurrences in Elmore County, particularly in the northern part of the county. Less common hazards include extreme severe weather events and earthquakes. To the north of the South Fork Boise River, the county is characterized by rugged terrain that features steep slopes and heavy timber. Many forested areas are overstocked and diseased, increasing the potential for catastrophic wildfires. The northern portion of Elmore County has a history of destructive flooding, landslides, and wildland fires that have resulted in the destruction of private property and homes. Historic events have negatively impacted ecological and economic aspects of the county including soil, wildlife habitat, wildlife, and livestock. Table 21 shows the overall natural hazard ratings selected by the planning team for Elmore County. Featherville, Pine, and Prairie are small unincorporated communities located in rural and remote areas of the county. All three communities completed hazard rating tables; that information is included in the “Probability of Future Occurrence” section of each hazard profile in the Elmore County Annex.

Table 21) Natural hazard ratings for Elmore County, ID. (This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.)

Elmore County				
Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Flood	4	4	4	12
Landslide	4	4	4	12
Earthquake	1	1	1	3
Severe Weather	3	3	3	9
Wildland Fire	4	4	4	12
Terrorism/Civil Unrest	1	1	1	3
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

National Flood Insurance Program

Participation in the National Flood Insurance Program (NFIP) and subsequent adoption of the Uniform Building Codes, or more stringent local building codes, provide basic guidelines to communities on how to regulate development. County participation in the NFIP enables property owners in the county to insure against flood losses. By employing wise floodplain management, a participating county can protect its citizens against a significant amount of the devastating financial loss resulting from flood disasters. Careful local management of development in the floodplains results in construction practices that can reduce flood losses and the high costs associated with flood disasters to all levels of government.



An important part of being an NFIP community is the availability of low-cost flood insurance for those homes and businesses within designated flood plains, or in areas that are subject to flooding is an important element of being a NFIP community, providing insurance for areas that not designated as Special Flood Hazard Areas.

Elmore County, Mountain Home, and Glenns Ferry all participate in the NFIP (Table 22 displays NFIP policy statistics and Table 23 displays community rating system information). Although policy information is not available for Glenns Ferry, the city does participate in the NFIP and there are no repetitive loss structures within city limits. Additionally, there are no repetitive loss properties or Special Flood Hazard Areas in unincorporated Elmore County, including the Oasis Fire Protection District.

Table 22) FEMA National Flood Insurance Program policy statistics for Elmore County, ID as of September 30, 2018⁵⁶

Community Name	Community Type	Policies In-Force	Insurance In-Force	Written Premium In-Force	Repetitive Loss Structures
Elmore County (unincorporated areas; including OFPD)	County	31	\$6,003,600	\$24,712	None
Mountain Home	City	62	\$9,892,400	\$63,617	None
Glenns Ferry	City	N/A	N/A	N/A	None

Table 23) FEMA National Flood Insurance Program Community Rating System for Elmore County, ID. Community Ratings were effective as of October 1, 2018.⁵⁷

Community Number	Community Name	CRS Entry Date	Current Effective Date	Current Class	% Discount for SFHA	% Discount for Non SFHA	Status
160212	Elmore County	10/1/1994	10/1/2009	9	5	5	C
160058	Mountain Home	10/1/1994	10/1/1999	8	10	5	C
160057	Glenns Ferry	N/A	N/A	N/A	N/A	N/A	N/A

Elmore County Flood Plain Ordinance

Elmore County will continue to participate in the NFIP by regularly reviewing the Floodplain Ordinance and updating it when necessary (it was last updated in May of 2018). It is through the ordinance that the county recognizes flood zones identified by FEMA FIRM maps and through the requirements of the

⁵⁶ Policy Statistics. National Flood Insurance Program. Federal Emergency Management Agency. Available online at <https://bsa.nfipstat.fema.gov/reports/1011.htm>. Accessed June 14, 2019.

⁵⁷ Community Rating System. National Flood Insurance Program. Federal Emergency Management Agency. Available online at https://www.fema.gov/media-library-data/1538670889773-81423feb161c06426ac157a409123f3d/app-f_crs_508_oct2018.pdf. Accessed June 14, 2019.

ordinance that the county administers the NFIP. Chapter 2 of the ordinance provides the following information about development in the county as it relates to flooding and regulation:

- **Section 8-2-1: Statutory Authorization**
 - Fact (current flood condition in Elmore County)
 - Purpose (of the ordinance)
 - Objectives and Methods of Reducing Flood Losses
- **Section 8-2-2: General Provisions**
 - Lands to Which this (Ordinance) Applies
 - Basis for Area of Special Flood Hazard
 - Establishment of Floodplain Development Permit
 - Compliance (with the ordinance)
 - Abrogation and Greater Restrictions
 - Interpretation (of provisions)
 - Warning and Disclaimer of Liability
 - Penalties for Violation
- **Section 8-2-3: Administration**
 - Describes the duties of the Floodplain Ordinance Administrator
 - Floodplain development application, permit, and certification requirements
 - Violations and corrective procedures
 - Variance procedures
- **Section 8-2-4: Provisions for Flood Hazard Reduction**
 - General Standards: In all Special Flood Hazard Areas
 - Specific Standards: In all Special Flood Hazard Areas where Base Flood Elevation (BFE) data has been provided
 - Standards for Floodplains without Established Base Flood Elevations
 - Standards for Riverine Floodplains with Base Flood Elevations but without Established Floodways or Flood Fringe Areas
 - Floodways and Flood Fringe Areas

Chapter 2 of the Elmore County Floodplain Ordinance can be found online at:

https://elmorecounty.org/wp-content/uploads/2018/05/title-8-chapter_2-flood_damage.pdf

Mountain Home Flood Plain Ordinance

Mountain Home will continue to participate in the NFIP by regularly reviewing the Floodplain Ordinance and updating it when necessary. It is through the ordinance that the city recognizes flood zones identified by FEMA FIRM maps and through the requirements of the ordinance that the city administers the NFIP. Chapter 5 of the ordinance provides the following information about development in the city as it relates to flooding and regulation:

- **Section 5-5-1: Statutory Authorization, Findings of Fact, Purpose, and Objectives**
 - Statutory Authority



- Findings of Fact
- Statement of Purpose
- Objectives and Methods Of Reducing Flood Losses
- **Section 5-5-2: Definitions**
 - This section includes an exhaustive list of definitions related to terms used throughout the ordinance.
- **Section 5-5-3: General Provisions**
 - Lands to Which This Chapter Applies
 - Basis for Special Flood Hazard Areas:
 - Establishment of Floodplain Development Permit
 - Compliance
 - Abrogation and Greater Restrictions
 - Interpretation
 - Warning and Disclaimer of Liability
 - Penalties for Violation
- **Section 5-5-4: Administration**
 - Designation of Floodplain Administrator
 - Duties and Responsibilities of the Floodplain Administrator
 - Floodplain Development Application, Permit, and Certification Requirements
 - Corrective Procedures
 - Variance Procedures
- **Section 5-5-5: Provisions for Flood Hazard Education**
 - General Standards
 - Specific Standards
 - Standards for Floodplains Without Established Base Flood Elevations
 - Standards for Riverine Floodplains with Base Flood Elevations but Without Established Floodways or Flood Fringe Areas
 - Standards for Floodways and Flood Fringe Areas
 - Standards for Areas of Shallow Flooding (Zone AO, AH, AR/AO, Or AR/AH)
- **Section 5-5-6: Legal Status Provisions**
 - Effect on Rights and Liabilities Under the Existing Flood Damage Prevention Ordinance
 - Effect Upon Outstanding Floodplain Development Permits

Glenns Ferry Flood Plain Ordinance

Glenns Ferry will continue to participate in the NFIP by regularly reviewing the Floodplain Ordinance and updating it when necessary. It is through the ordinance that the city recognizes flood zones identified by FEMA FIRM maps and through the requirements of the ordinance that the city administers the NFIP. Chapter 4 of the ordinance provides the following information about flood hazard areas in the city as it relates to regulating development and other activities (several excerpts that mention flood insurance maps and studies):



- **Section 9-4-1: Application of Chapter**
 - The following measures as set forth in this chapter shall be required within zone A of the flood hazard boundary map issued by the federal insurance administration for this community. (Ord. 380, 6-4-1987)
- **Section 9-4-2: Definitions**
 - AREA OF SPECIAL FLOOD HAZARD: The land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year.
 - BASE FLOOD: The flood having a one percent (1%) chance of being equaled or exceeded in any given year, also referred to as the "100-year flood". Designation on maps always includes the letters A or V.
- **Section 9-4-3: General Provisions**
 - Applicability
 - Penalties for Noncompliance
 - Greater Restrictions
 - Disclaimer
- **Section 9-4-4: Administration**
 - Development Permit Required
 - Applications for Development Permit
 - Review of Application for Permit
- **Section 9-4-5: Provisions for Flood Hazard Reduction**
 - General Standards
 - Specific Standards
 - Floodways
- **Section 9-4-6: Basis for Establishing Areas of Special Flood Hazard**
 - The areas of special flood hazard identified by the federal insurance administration through those identified areas on flood insurance map dated January 23, 1974, is hereby incorporated by reference and declared to be a part of this chapter. (No flood insurance study has been performed by the federal insurance administration, as of this date, in the Glens Ferry unit.) (Ord. 380, 6-4-1987)
- **Section 9-4-7: Severability**

Chapter 4: Flood Hazard Areas of the Glens Ferry Ordinance can be found online at:

https://www.sterlingcodifiers.com/codebook/index.php?book_id=963

Flood Profile

Two types of flood events occur in Elmore County. Riverine flooding occurs along all tributaries to the Snake and Boise Rivers. The mountainous terrain surrounding the Boise River in the northern end of the county creates a flood-prone environment. Rain-on-snow events occur at almost all elevations across the county. These events often contain enough moisture to cause flooding on the Boise River drainage and most of its major tributaries in the county. To a lesser extent the Snake River is also affected by rain on snow events. Due to its large drainage area and dams, the impacts of flood events on the main stem of the Snake River are muted; however, tributaries to the Snake River can be greatly influenced by rain on



snow events. In general, these flood events can be predicted 24 to 72 hours in advance of the rising waters.

In Elmore County, summer thunderstorms can result in flash flooding of specific smaller drainages. Often there is little time to react to the quickly rising waters. Due to the nature of the terrain within the county, localized flooding from thunderstorms tends to be more of a storm drainage problem for many communities. Short-term blockage of roads is usually the biggest issue as drainage structures are overwhelmed by the rapid influx of water.

Ice/debris flows occur as part of riverine and flash flooding, usually exacerbating the effects of those types of flood events. In the event of a fire or heavy logging activity, flash flooding and mudslides can result due to the loss of vegetation that usually holds the soil in place and intercepts some of the water's velocity. Flooding and mudslides were documented along the Middle Fork of the Boise River in the first years following the Hot Creek Fire in 2003. The Middle Fork Boise River Road, the main year-round access road to the community of Atlanta, was heavily damaged by flooding due to the increased runoff after the fire and the effects of mudslides blocking the river channel and rerouting water onto or adjacent to the road.

A high level of sediment is prevalent in Elmore County drainages during periods of runoff primarily from the abundance of high elevation washouts and agricultural fields in the lowlands. This sediment tends to cause a deteriorating condition in channel beds through erosion and deposition. Natural obstructions to flood waters include trees, brush, and other vegetation along the stream banks in the floodplain areas. Debris can plug culverts and accumulate on bridge abutments at several locations. Many secondary routes are not paved, which results in gravel washing downslope potentially clogging drainage systems or directing water to places that were not intended. Sedimentation and accumulated debris and vegetation are significantly increasing the flood risk throughout Elmore County. Debris jams during high water events have caused considerable flood damage to adjacent properties.

Local Event History

Significant flooding appears to happen in the county every five to ten years. Table 24 shows historic flood events that affected Elmore County and, in some cases, resulted in a disaster declaration.

Table 24) Flood event history for Elmore County, ID. Data is from the NOAA National Centers for Environmental Information.

Date	Event	Description
Late December 1964	Flood, Federal Declaration #186	Warm weather combined with heavy rains and melting snow causing flooding along the Payette, Big Wood, Little Wood, Portneuf, Clearwater, and Boise River drainages causing approximately \$21,000,000 in damages. Highway 21 and 15, US 95N and 30E were closed. Over 100 homes were damaged, numerous bridges were washed out, and thousands of acres of farmlands were flooded. Two deaths were attributed to the flood. A state of emergency was declared. Approximately 64 people in the Atlanta logging camps were isolated due to road washouts. Telephone service to 190 people in Glens Ferry and Hammett was cut because of a wet cable.

January 17, 1971	Flooding	Heavy rain and snow over four days caused flooding in southwest Idaho. Streets and basements in Mountain Home were flooded with 10" of water.
February 1986	Flooding	A warming trend melted low elevation snowpack, triggering flooding and mudslides throughout western Idaho. Over \$75,000 was spent on flood control efforts in this area. The dam at Fraser Reservoir broke, washing out roads and telephone lines including a 50' long x 4' deep section of State Highway 67 and another 650' section of road was damaged by Canyon Creek floodwaters. During this event, the Mountain Home Reservoir overtopped which caused severe flooding to areas in Mountain Home. Damage estimates in Mountain Home alone topped \$2.7 million. A State Disaster Declaration was issued in February 1986.
May 26, 1991	Kirby Dam Failure	The collapse of the Kirby dam near Atlanta cut off electrical power to residents and blocked the access bridge to Atlanta. Mine tailings containing arsenic, mercury and cadmium were released into the Middle Fork of the Boise River. A state disaster declaration was issued 9/14/90.
December 31, 1996- January 7, 1997	Flooding, Federal Declaration #1154	Warm temperatures and heavy rain fall caused record flooding and mudslides in the Weiser, Payette and Salmon River drainages of southwestern Idaho. The community of South Banks was condemned because of extensive slide damage. Over 400 miles of roads and several railroad lines were blocked or destroyed, stranding over 10,000 holiday travelers in western Idaho. Rivers were "running like chocolate," carrying huge trees, mud and boulders; the Snake River at Hells Canyon Dam crested at 101,728 cfs January 1, nearly 30,000 cfs over its previous record level on 2/23/82. Governor Batt declared 13 counties a disaster: Gem, Adams, Washington, Idaho, Clearwater, Valley, Payette, Elmore, Latah, Boundary, Bonner, Shoshone and Boise. A Federal disaster was declared on January 4, 1997 with a total of \$65,000,000.00 damages reported.
2003-2005	Flash Flooding	The road to Atlanta along the Middle Fork of the Boise River was washed out 3 times from 2003 through 2005 due to flash floods and debris flows originating on water repellent soils in the 2003 Hot Creek Fire Burn scar. Vegetation has returned to the burn area and the soil is not as water repellent as it was right after the fire
January 2008	Flooding	Repetitive maintenance costs for annual flooding events totaled approximately \$4,600.
June 2009	Flooding	Flooding within the City of Mountain Home in June of 2009 caused multiple road closures. There were 48 parcels without access resulting in over \$20,000 in detour costs. Damages to structures, not including contents, were approximated at \$523,289. The cost of emergency response to this event was approximately \$20,335
2011	Canal Failure	Occurred in Glens Ferry, flooded homes, basements, and streets; damaged a section of main railroad tracks.

May 6- June 16, 2017

Flooding, Landslides,
Mudslides. Federal
Declaration #4310

As in March and April, winter storm melt from record winter snowfall led to flooding in southeast Idaho, especially in the central mountains and along the Big Wood River. Pine Valley flooded within Elmore County. Field flooding caused agricultural damage and many roads and facilities were damaged from the floods as well. The flooded fields led to significant agriculture damage. Many people were without power in the valley. Damage in the county included farms, homes, businesses, roadways, bridges, infrastructure, preserves, and levees. On August 27, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The State requested over \$3.8 million in public assistance. Overall, the State had approximately \$10.3 million in damages from this event.

Probability of Future Occurrence

The probability of flood events occurring in Elmore County is high. Low magnitude flood events can be expected several times each year. However, due to various flood control measures and drainage infrastructure, the impacts of these events in unincorporated areas are slight and usually amount to minor and temporary traffic issues throughout the county. Larger magnitude and high impact flood events have occurred but are not likely in any given year. These types of flood events have the highest probability of occurrence in the winter or early spring and often have a greater impact on the cities of Mountain Home and Glenns Ferry. Minor flash flood events are expected annually most likely as a result of summer thunderstorms or rain-on-snow events.

Table 25) Flood hazard ratings for Elmore County and the unincorporated communities of Featherville, Pine, and Prairie. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Flood				
Community Rating	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Elmore County	4	4	4	12
Featherville	3	3	3	9
Pine	3	3	3	9
Prairie	2	2	3	7
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Impacts of Flood Events

Flood events in Elmore County are most likely to affect private property by damaging homes, businesses, barns, equipment, livestock, and vehicles. Both water and contaminants can damage or permanently ruin equipment. Flood waters can also erode land. This is particularly an issue when lands supporting roads, power lines, pipelines, sewage control facilities, levees, bridges, and other infrastructure are damaged by

erosion. Figure 18 is a NFIP flood zone map of Elmore County that identifies all high-risk flood areas. Maps of individual communities are included later in this section.

Since the last update of this plan, Elmore County was subjected to severe flooding as a result of catastrophic wildfire and heavy spring precipitation and runoff. Both the 2012 and 2013 wildfire seasons were significant, combining to burn hundreds of thousands of acres. The resulting damage from these fires contributed to the severity of the 2017 Pine Valley flooding which was caused by heavy rainfall and rapid snow melt. The flooding damaged homes, roads, campgrounds, bridges, and disrupted the lives of residents and businesses. Rivers and creeks were heavy with silt from the runoff. Under normal conditions, the South Fork Boise River, is clear or slightly clouded with spring thaw; however, it was heavy with mud and black in color. The Yuba River near Atlanta was also subjected to extreme levels of sedimentation from run-off; negatively impacting fish and other wildlife. Landslides blocked roads and dammed up creeks. Floating debris in the river, including fully mature trees, wedged against Johnson, McCoy, and Pine Bridges. Heavy equipment was required to remove the blockages to prevent damage, collapse, or partial collapse of the bridges. Furthermore, overflow on or around the bridge caused damage to the roadway and surrounding areas. Access roads to campgrounds and ranch property were severely affected as well.

Though the flooding in 2017 was severe and caused major damage, it is unlikely that flood events will result in long-term impacts to county operations or the local economy. The delivery of some services may be hindered by localized flooding in certain areas; however, due to the availability of alternative routes, this is not a significant concern. Damage to facilities, equipment, or files could impact certain organizations or public services depending on the extent of damage and duration of the event. Depending on the magnitude of the event, individual residents and businesses may be adversely impacted, but the economic viability of the community will not be affected. Severe damage to transportation infrastructure may have a short-term impact on certain communities due to the presence of state and U.S. highway routes, but alternative routes are available.

Flooding in Elmore County is also unlikely to have major long-term impacts on the environment. Some environmental impacts from localized flooding could include erosion of stream banks, loss of riparian plant life, or contamination by chemicals or sewage. Flooding in some areas may have some environmental benefits such as establishing meanders that slow the stream flow, replenishing wetland areas and replenishing the soil with nutrients from sediment.

Due to several large, swift bodies of water in Elmore County and numerous irrigation canals, the probability of a flood-related fatality is moderate. Flash flood events, particularly, or accidents could result in a death or injury. First responders or other persons could be pinned under debris and drowned or receive trauma from debris being carried along the waterway. Once flood waters recede, mold can grow in wet material causing a public health hazard. Flood waters may contain sewage and hazardous chemicals that could be left on people's property following a flood event. Furthermore, water and food may be contaminated, and heat and electricity may be temporarily inoperable. Although the probability of these types of impacts occurring at a moderate to large scale is very low, all factors could contribute to a decline in current and long-term health of Elmore County residents.



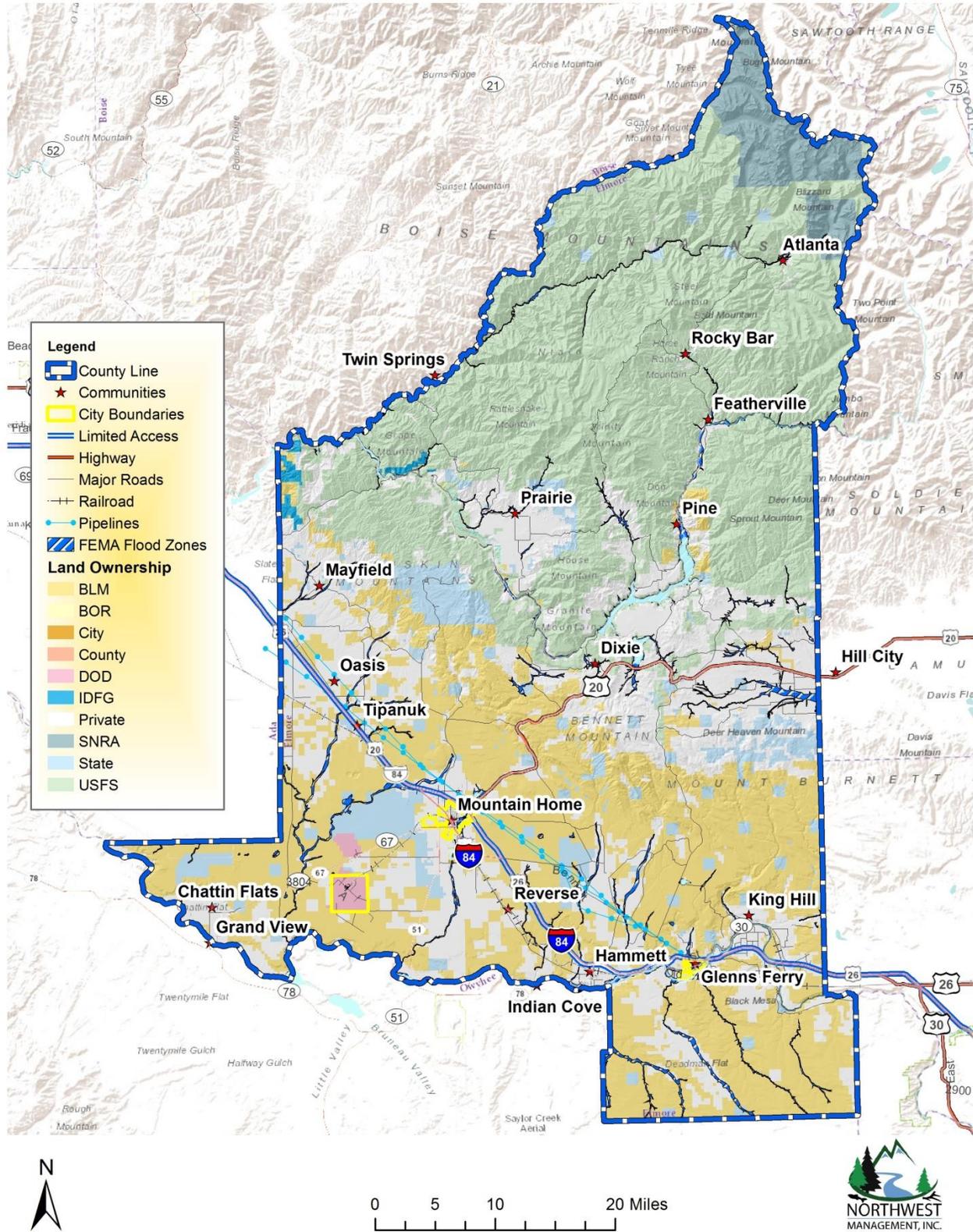


Figure 18) National Flood Insurance Program map for Elmore County, ID.

Unincorporated Communities

There are multiple small, unincorporated communities in Elmore County located in proximity to NFIP Flood zones. Most of the structures in the FEMA-identified floodplains for unincorporated areas of Elmore County are located along the South Fork of the Boise River in the communities of Featherville, Pine, and Prairie.

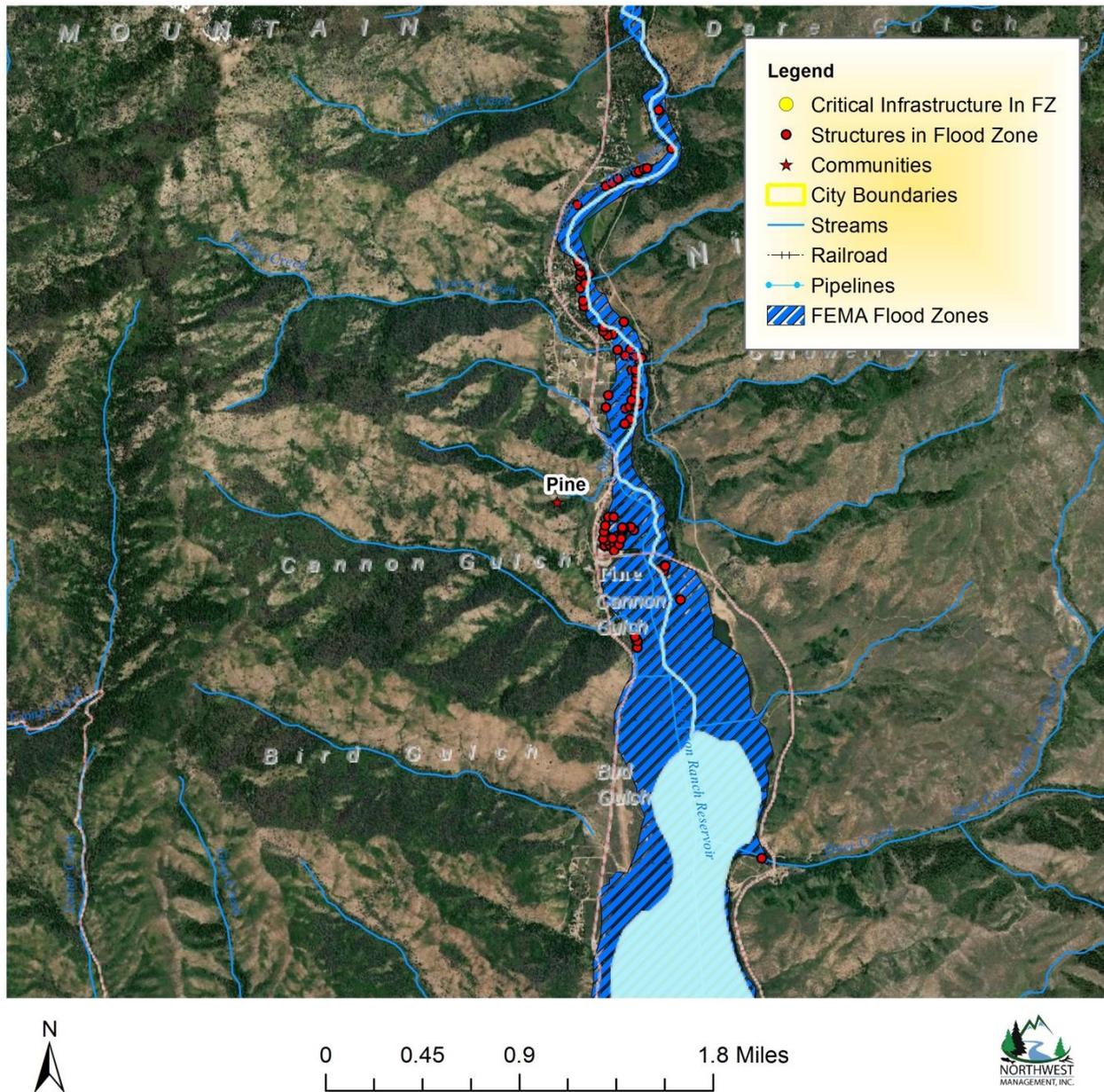


Figure 19) National Flood Insurance Program map for the Community of Pine in Elmore County, ID.

The South Fork of the Boise River drainage is a collector watershed for the Boise Mountain Range. Numerous smaller tributaries drain into the South Fork including the Feather River, Smith Creek, Willow Creek, Deer Creek, Lime Creek, Trinity Creek, and Grouse Creek. Most of these drainages have large, high



elevation drainage areas; thus, are heavily influenced by rain-on-snow events. Flash floods have also been recorded but are not as common. The Anderson Ranch Reservoir just south of Pine (Figure 19) helps control flood waters for Prairie (Figure 20) and other communities downstream. Pine and additional communities downstream are not at significant flooding risk from the Anderson Ranch Reservoir, as the water level in the reservoir is closely monitored and excess water is released before it becomes a hazard.

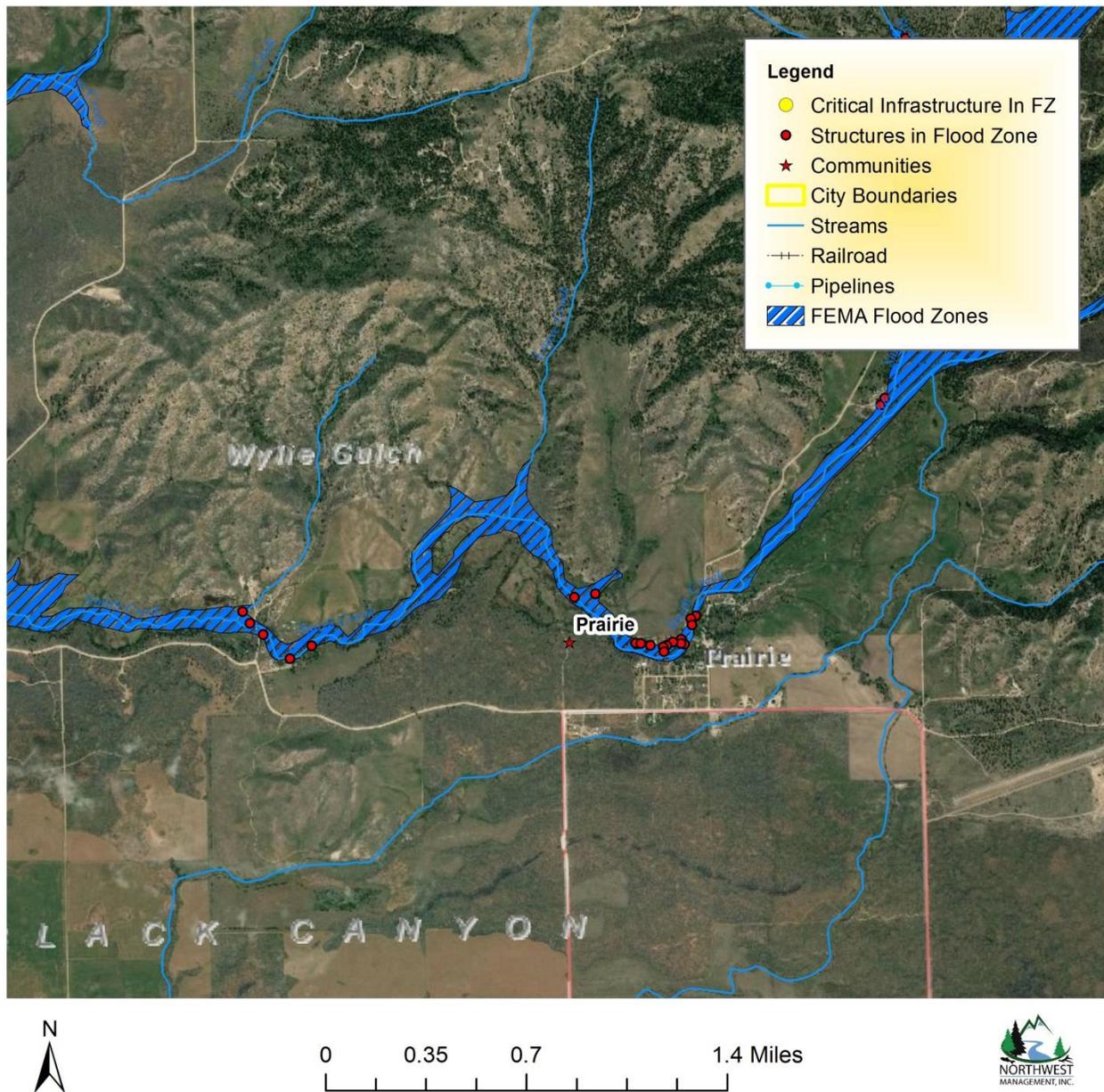


Figure 20) National Flood Insurance Program map for the Community of Prairie in Elmore County, ID.

Floods in the South Fork of the Boise River watershed are the result of spring runoff, rain-on-snow events, and to a lesser extent localized thunderstorms. Rain-on-snow events that affect Pine and Featherville occur when significant snowpack exists within the hydrologic watershed surrounding these communities. The boundaries of the watersheds are defined by steep forestlands. Warm rains falling on the snowpack



result in a significantly increased rate of snowmelt. Often this melting occurs while the ground is frozen and the water cannot be absorbed into the soil, resulting in increased overland flows. Floodwaters recede slowly as rain-on-snow weather events tend to last for several days.

Thunderstorms are typically localized summer events that have not historically caused serious flooding in Pine, Featherville, or Prairie. However, residents along the South Fork of the Boise River and other drainages should be aware of the risks and impacts of these intense localized events. This type of flooding can occur rapidly, overwhelming the water carrying capacity of channels in a short time.

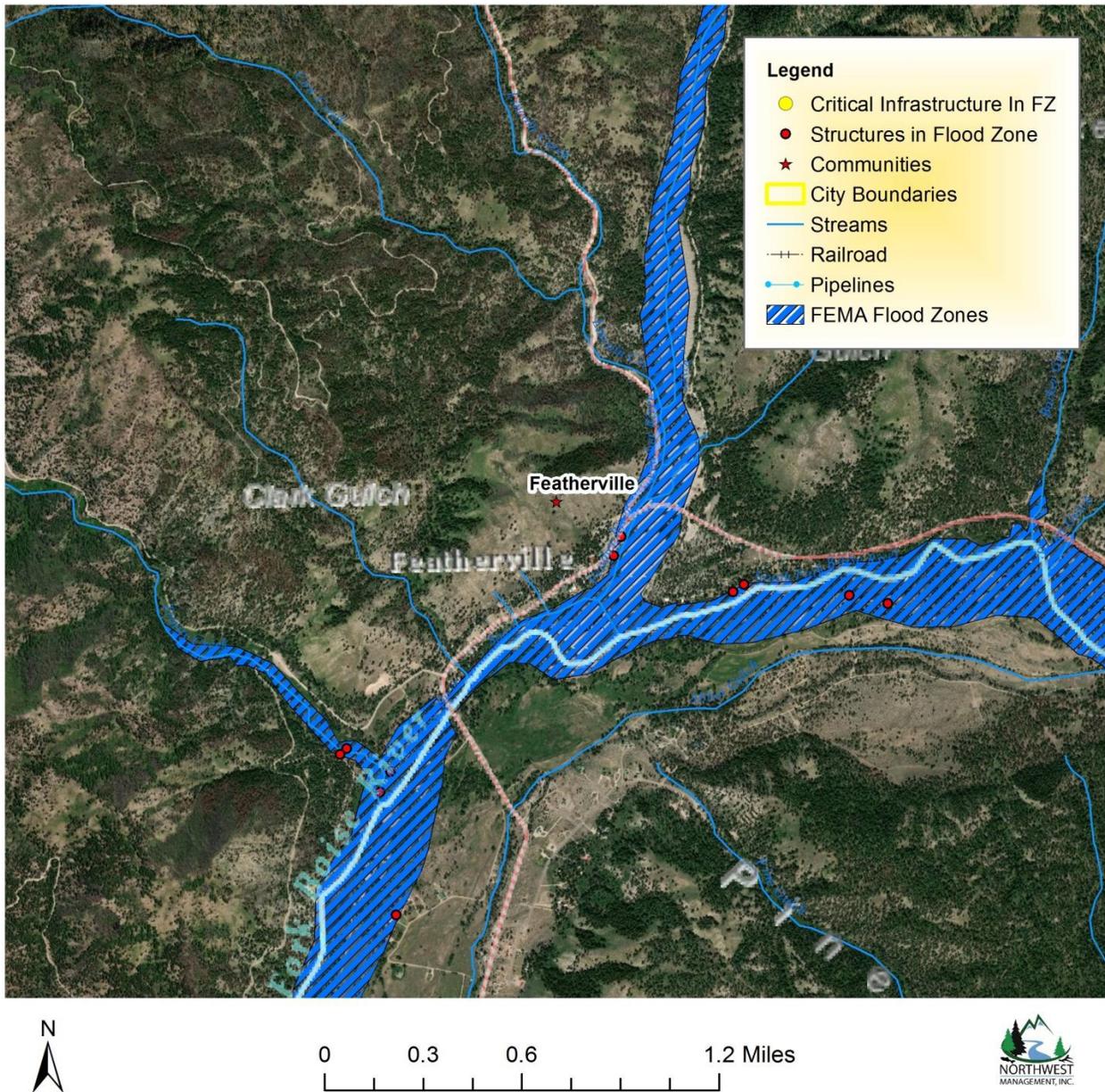


Figure 21) National Flood Insurance Program map for the Community of Featherville in Elmore County, ID.



For unincorporated Elmore County, the community of Pine has the largest concentration of structures in the floodplain (Figure 19). Many of the homes and other structures in Pine are recreational properties that are typically only occupied periodically during the warmer months. The Pine Bridge crossing the South Fork of the Boise River at the community of Pine has recently been rebuilt as a single span structure with no pillars. The new design does not cause debris build-ups and serves as an example of an effective infrastructure improvement.

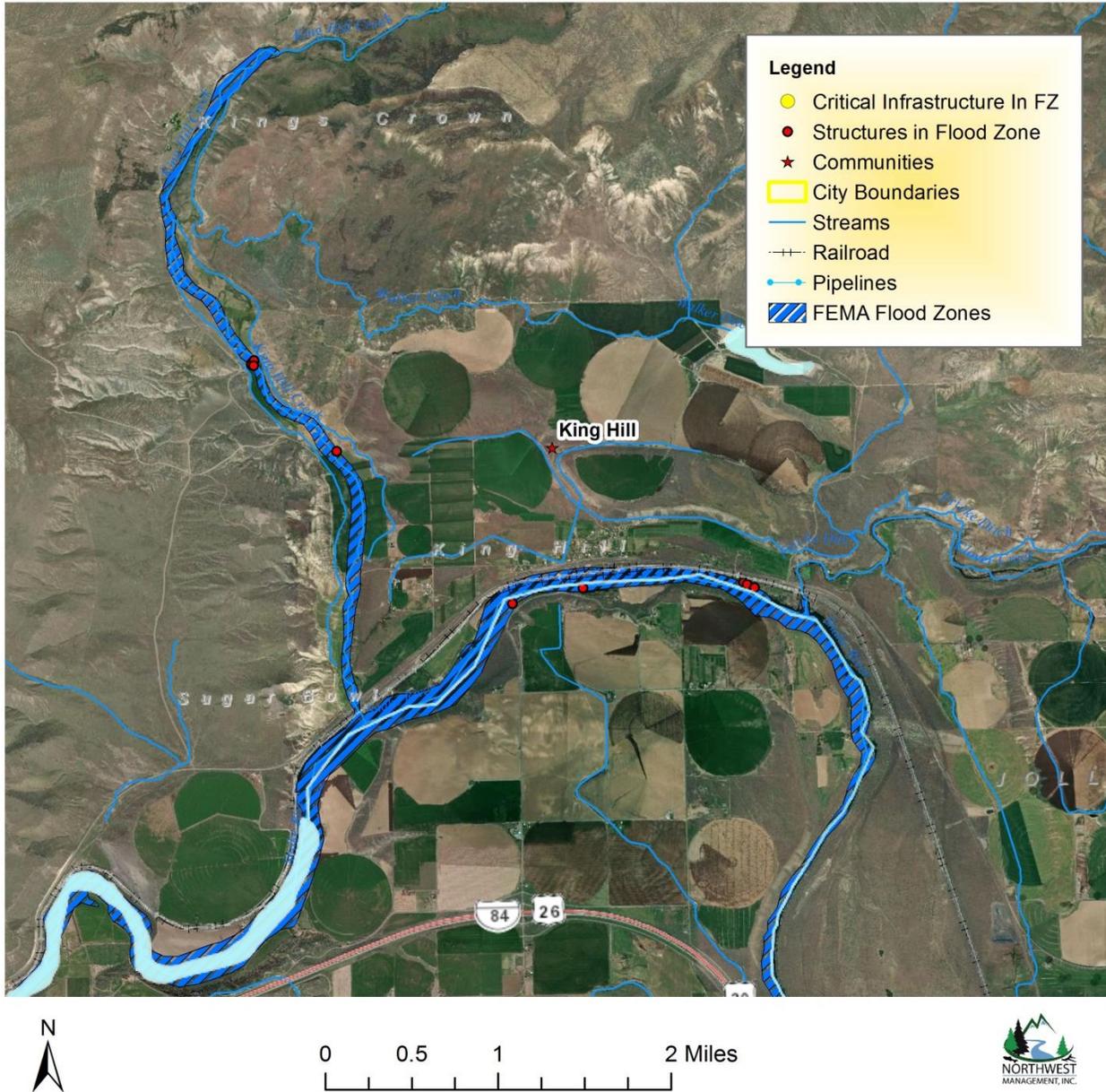


Figure 22) National Flood Insurance Program map for the Community of King Hill in Elmore County, ID.

Featherville is located at the confluence of the Feather River and the South Fork of the Boise River (Figure 21). Structures in this area are primarily vacation homes and recreational facilities including several campgrounds. Roads are the most affected infrastructure in Pine and Featherville during flood events.



Alternative routes to these areas may not be available during floods events. Historically, there has been significant damage to the road systems in the area as a result of flood waters and debris flows.

Atlanta is located near the Middle Fork of the Boise River in the northeastern corner of the county. The town site of Atlanta is not at significant risk to flooding. The single access route to Atlanta via the Boise River Road, however, runs parallel to the Middle Fork for most of its length and is very prone to washouts from riverine flooding and associated landslides. The Boise River Road is subject to almost annual closures due to flooding and landslides. The Hot Creek Fire in 2003 increased flood and debris slides limiting access into Atlanta for weeks at a time. Permanent improvements to the roadway must be undertaken to provide the community of Atlanta with a dependable vehicle access route.



Figure 23) National Flood Insurance Program map for the Community of Hammett in Elmore County, ID.



There are also a handful of structures within the FEMA-identified floodplains near the unincorporated communities of King Hill and Hammett. In King Hill, the Snake River and King Hill Creek floodplains have been mapped; there are very few structures located in or near the King Hill floodplain (Figure 22). In Hammett, a few residents along the Snake River and Bennett Creek are affected by the FEMA floodplain and, although it is not identified as an NFIP flood zone, Clover Creek has a history of flooding that dates back to the 1960's and 70's (Figure 23).

Value of Resources at Risk

There are approximately 3,047 parcels and 1,052 structures within the FEMA-identified floodplains (100- and 500-year) in the entirety of Elmore County, yielding a total structure value of more than \$117.4 million. In unincorporated Elmore County, there are approximately 2,353 structures within the FEMA-identified floodplains and 492 improvements. The total structure value of unincorporated Elmore County is more than \$64.1 million. The structural value is based on the county's assessed value of property improvements and does not reflect the replacement cost of a structure. Unincorporated communities within Flood impact zones in Elmore County are expressed below in Table 26.

Table 26) Parcels and improvements counts and values in NFIP zones in unincorporated communities of Elmore County, ID.

Community	# of Parcels	# of Improvements	Total Improvement Value
Hammett	75	27	\$4,495,177
Pine	98	50	\$8,930,130
Featherville	124	43	\$8,362,628
Prairie	52	26	\$1,240,031
King Hill	54	14	\$1,460,665
Oasis FPD	64	13	\$1,407,287

Critical infrastructure located within the identified floodplain for unincorporated Elmore County includes the Mountain Home effluent pumps, Anderson Ranch Dam, and the well at 3750 Summerwind Road.

In addition to the Pine Bridge on the Pine-Featherville Road, the Mountain Home Highway District has identified the Neal Bridge on Blacks Creek Road crossing of the South Fork of the Boise River and two of the Rattlesnake Bridges on Long Gulch Road as requiring replacement. These bridges are old, narrow and often cause debris build up at the abutments. It is estimated that the replacement cost for each bridge is approximately \$1 million.



Earthquake Profile

Based on historical records, Elmore County has not experienced any seriously damaging earthquakes in recorded history. Several distant earthquakes produced intensities strong enough to be felt in southern Idaho, but no earthquake epicenters were recorded for the region.⁵⁸ Many of Idaho's cities are at risk to earthquakes, even small ones, due to layout and construction of buildings on unconsolidated sediments that move easily in response to seismic waves. Seismic waves are defined as a form of energy that ripples through Earth when an earthquake occurs. When seismic waves propagate through unconsolidated sediments, the sediments re-organize and move chaotically (analogy to shaking like a bowl of gelatin). Many cities in the Snake River Plain were built near rivers below the foothills and mountains for convenience of water use, resulting in a two-fold danger, as these communities eventually expanded upward into the foothills. Mountain foothills contain erosion remnants called alluvial fans. The alluvial fans may either slide down into the valley or shake creating new topography due to internal settling. For this reason, Idaho ranks fifth in the lower 48 states as to its earthquake hazard.

The U.S. Geological Survey (USGS) has gathered data and produced maps of the nation, depicting earthquake-shaking hazards. This information is essential for creating and updating seismic design provisions of building codes in the United States. The USGS Shaking Hazard maps for the United States are based on current information regarding earthquake recurrence intervals and strength of shaking distance from quake epicenters. Studies of ground shaking in Idaho during previous earthquakes have led to better interpretations of the seismic threat to buildings. In areas of severe seismic shaking hazard, older buildings are especially vulnerable to damage. Older buildings are at risk even if their foundations are on solid bedrock. Older structures may suffer damage even in areas of moderate ground shaking hazards.⁵⁹ Areas shown on the shaking map (Figure 24) with high seismic shaking hazard can experience earthquakes with high intensity where weaker soils exist. Most populated areas in Idaho are located on or near alluvial deposits which poorly respond to earthquake activity and put building sites at higher risk.

Local Event History

Although no historical southern Idaho earthquakes are on record as having originated from within Elmore County, the county has been affected by proximal earthquakes (Table 27). The 1983 Borah Peak earthquake measured 7.3 in magnitude on the Richter scale and was the most violent earthquake to occur in the lower 48 states since the 1959 Hebgen Lake earthquake. The quake caused an estimated \$15 million in damage and caused two deaths in the town of Challis, ID⁶⁰.

⁵⁸ Idaho Geological Society. 2004. Available online at <http://www.idahogeology.com/Services/GeologicHazards/Earthquakes/>.

⁵⁹ Idaho Geological Society. 2004. Available online at <http://www.idahogeology.com/Services/GeologicHazards/Earthquakes/>.

⁶⁰ The Borah Peak Earthquake. Steven W. Moore and R. David Hoveland. Accessed July 2019. Available online at <https://digitalatlas.cose.isu.edu/geo/quakes/borahEQ/boraheq.htm>

Table 27: Historic earthquakes with epicenters in southern Idaho.⁶¹

Date	Event	Description
Nov 11, 1905	Near Shoshone, Lincoln County, ID	Cracks formed in the walls of the courthouse and schools in Shoshone, and plaster fell from ceilings in almost all the buildings. Felt from Salt Lake City, Utah to Baker, Oregon.
Jan 27, 1963	Clayton, Custer County, ID	Plaster and windows cracked at Clayton, northeast of Boise. Large boulders rolled down a hill at Livingston Camp, about 22 km south of Clayton. Several aftershocks were felt in the area.
October 14, 1982	Soda Springs Area	In the Soda Springs area, about 45 km southeast of Pocatello, bricks fell from chimneys and cracks formed in the foundation of a house and interior drywalls. Also felt in Utah and Wyoming.
October 28, 1983	Borah Peak Earthquake	The 6.9 magnitude Borah Peak earthquake is the largest ever recorded in Idaho - both in terms of magnitude and in amount of property damage. It caused two deaths in Challis, about 200 km northeast of Boise, and an estimated \$12.5 million in damage in the Challis-Mackay area. A maximum MM intensity IX was assigned to this earthquake on the basis of surface faulting. Vibrational damage to structures was assigned intensities in the VI to VII range.

Probability of Future Occurrence

Representatives of Elmore County and unincorporated communities of the county have rated earthquakes as a low-level hazard based on frequency of events and impact potential in unincorporated areas (Table 28). Elmore County lies just south of the Sawtooth Wilderness, located at the base of the Sawtooth Mountain Range. In 2010, a 40-mile long active fault line in the Sawtooth Mountain Range was discovered by geoscientist Glenn Thackray. The fault line is 65 miles as the crow flies from Boise. Thackray said researchers believe the fault triggered two earthquakes over the past 10,000 years - one approximately 7,000 years ago and another 4,000 years ago - suggesting significant seismic activity occurs at the site every several thousand years⁶². Although no explicit recurrence intervals have been reported in the literature, Thackray and others indicate that the difference in offset of glacial landforms and the adjacent Holocene fluvial terraces argue for a minimum of two surface faulting events since the latest Pleistocene.

⁶¹ Idaho Geological Survey. Historical Earthquakes in Idaho. 2004. Available online at: <https://www.idahogeology.org/historical-earthquakes-idaho>, accessed June 2019

⁶² Idaho scientists find new seismic fault in Rockies, Available online at: <https://www.reuters.com/article/us-idaho-seismic/idaho-scientists-find-new-seismic-fault-in-rockies-idUSTRE6AH0YK20101118>, Accessed June 2019

This interpretation is further supported by the ages derived from the Redfish Lake cores⁶³. Thackray indicates that there is a chance in the next few decades for an earthquake event to happen in this fault system based on historical data, and that if it does happen it will be comparable in magnitude to the Borah Peak earthquake.

Table 28) Earthquake hazard ratings for Elmore County and the unincorporated communities of Featherville, Pine, and Prairie. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Earthquake				
Community Rating	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Elmore County	1	1	1	3
Featherville	1	1	1	3
Pine	1	1	1	3
Prairie	1	1	1	3
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

There are several known geologic faults in the northern part of Elmore County all with a northwest to southeast orientation. Peak ground acceleration (pga), expressed in percent g, is a measure of the ground motion, which decreases as distance from the earthquake epicenter increases. The USGS Shaking Hazard maps for the United States are based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from quake sources. Colors on the map show the levels of horizontal shaking that have a 1 in 10 chance of being exceeded in a 50-year period (Figure 24). Shaking is expressed as a percentage of “g” (g is the acceleration of a falling object due to gravity). This map is based on seismic activity and fault-slip rates and takes into account the frequency of occurrence of earthquakes of various magnitudes. Locally, this hazard may be greater than that shown, because site geology may amplify ground motions. As seen in Figure 24, the earthquake probability trends upward from a 10% chance of exceeding a 6-7% pga in southern Elmore County to a 10% chance of exceeding a 15-20% pga in the northern tip of the County over the next 50 years.⁶⁴ No specific jurisdictions or special districts were identified as having differing issues or levels of risk associated with this hazard. In general, communities in northern Elmore County (such as Atlanta, Featherville, and Pine) have a greater risk of experiencing seismic shaking than communities in the Snake River Plain.

⁶³ Crone, A.J., Haller, K.M., and Lewis, R.S., compilers, 2010, Fault number 640, Sawtooth fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>, accessed 06/11/2019

⁶⁴ USGS. 2019 United States National Seismic Hazard Maps. U.S. Geological Survey. U.S. Department of Interior. Available online at <https://earthquake.usgs.gov/hazards/hazmaps/>. September 2019.

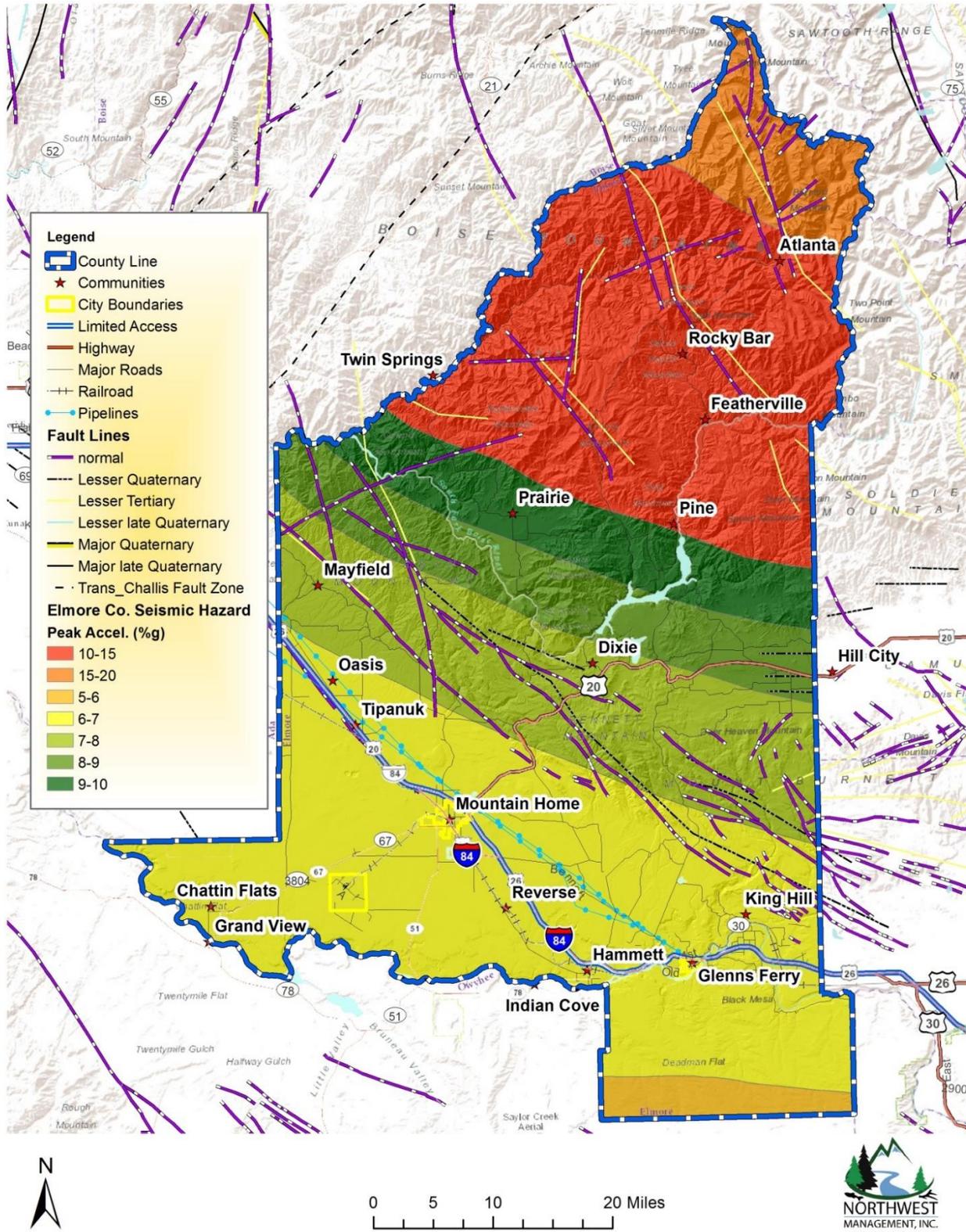


Figure 24) Earthquake probability map for Elmore County, ID.

Impacts of Earthquake Events

Past events suggest that an earthquake in the Elmore County area would cause little to no damage. Nonetheless, severity can increase in areas that have softer soils, such as unconsolidated sediments.

Although unlikely in Elmore County, buildings that collapse can trap and bury people, putting lives at risk and creating cleanup costs. Upgrading existing buildings to resist earthquake forces is more expensive than meeting code requirements for new construction; thus, a high number of structures in Elmore County, particularly those built prior to seismic code requirements, remain at risk. Many critical facilities are housed in older buildings that are not up to current seismic codes.

Communities in Elmore County can expect some structural failure of older multistory unreinforced masonry buildings as a result of even lower intensity earthquakes. Cornices, frieze, and other heavy decorative portions of these types of structures may fail. The potential impacts of a substantial earthquake event are highly variable. Many of the structures and infrastructure throughout the county may not incur any damages at all; however, damage to roads, bridges, unreinforced masonry, chimneys, foundations, water lines, sewer lines, natural gas pipelines, and many other components are at risk. Fires can also be a secondary hazard to structures sustaining earthquake damage. Economic losses to local business may be very high if owners are forced to stop production or close their doors even temporarily.

Structural damage by earthquakes is typically not complete destruction but tends to be subtle cracking or settling that undermines the stability of the structure. These types of repairs can be very costly. Additionally, changes to the water table or topography can significantly impact local municipal and private wells and could result in the loss of traditional land uses.

Elmore County has clearly identified fault lines in the northern portion of the county. Tremors have been recorded and strong earthquakes have happened in the recent past. Considering earthquake history, earthquake risk in Elmore County should not be overlooked. Earthquakes would potentially cause damage to pipelines and pump stations that carry gas through Elmore County. Electric transmission lines, supporting structures, and substations that distribute electricity could be damaged or destroyed by an earthquake. Damage to windmill farms, forests, and buildings could be extensive. There are several bridges in the county that provide critical ingress and egress to remote communities that could become isolated in the event that the bridges are damaged by seismic activity. Refer to Appendix C: Bridge Information for GPS coordinates and photos for each bridge.

Value of Resources at Risk

HAZUS®-MH MR5⁶⁵ is a regional earthquake loss estimation model that was developed by FEMA and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop earthquake loss estimations at a regional scale. In order to estimate potential earthquake losses in Elmore County, HAZUS was used to model a scenario based on the

⁶⁵ FEMA. Hazuz®-MH MR5. Department of Homeland Security. Federal Emergency Management Agency, Mitigation Division. Washington, D.C. September 2019.



parameters of the nearest historic epicenter. The values reported in this section were produced by a 6.3 magnitude earthquake HAZUS simulation for Elmore County, ID. The HAZUS model estimated direct earthquake damages, induced earthquake damage, social impacts, and economic losses. It should be noted that the figures have a high degree of uncertainty and should only be used for general planning purposes.

For the modeled earthquake scenario, the HAZUS software reported no expected damage to essential facilities including hospitals, schools, emergency operations centers, police stations, and fire stations. There are an estimated 12,000 buildings in Elmore County with a total building replacement value (excluding contents) of \$2.41 billion. The software also reported that two buildings would be moderately damaged and 10 would be slightly damaged. Most of the buildings damaged in the simulation were classified as “residential”; damaged residential buildings included both manufactured homes and wood construction homes.

The replacement value of the transportation and utility lifeline systems is estimated to be \$2.74 billion and \$942 million, respectively. HAZUS estimated that no damages to the transportation system, potable water and electric power system, or the utility system facilities would be expected (Table 29 details potential damage to pipeline systems in the county). The HAZUS model also does not project any casualties or sheltering as a result of the earthquake scenario.

Table 29) Summary of Utility System Pipeline Damage from a HAZUS 6.3 magnitude earthquake simulation for Elmore County, ID.

System	Total Pieplines Length	Number of Leaks	Number of Breaks
Potable Water	8,095	15	4
Wastewater	4,857	8	2
Natural Gas	3,238	3	1
Oil	0	0	0
Total	16,190	26	7

Economic losses by sector were also projected by the HAZUS earthquake model. Losses are largely related to structural damage and resulting economic impacts due to loss of service or function and changes in employment. HAZUS estimated that there would be approximately \$200,000 in total economic losses in Elmore County as a result of a 6.3 magnitude earthquake (Table 30).

Table 30) Economic losses (in dollars) reported for a 6.3 magnitude earthquake HAZUS simulation for Elmore County, ID.

Economic Sector	Sub-Sector	Economic Losses
Transportation	Highway, Bus, Airport	\$20,000
Income (Building-Related)	Income Losses, Capital Stock Losses	\$50,000
Utility Systems	Potable Water, Wastewater, Natural Gas, Electrical Power	\$130,000
Total Losses		\$200,000



HAZUS estimated that there are 147 unreinforced masonry structures in all of Elmore County. There are no known publicly accessible unreinforced masonry structures in unincorporated Elmore County.

Unreinforced masonry (URM) structures and unreinforced chimneys of homes will likely be damaged in the event of an earthquake. Damaged or collapsed chimneys could result in the secondary hazard of fire. Nonstructural damage caused by falling and swinging objects may be considerable after any magnitude earthquake. Damage to some older, more fragile bridges and land failure causing minor slides along roadways may isolate some residents.

Landslide Profile

Elmore County covers a large area extending from the Snake River on the south to the North Fork of the Boise River in the north. Elmore County contains irrigated Snake River Plain farmland, vast areas of sagebrush rangeland, and much of the southern Salmon River Mountains, dissected by three forks of the Boise River. The southern third of Elmore County is on the Snake River Plain. Basalt flows and lakebeds (Glenns Ferry and Chalk Hills Formations) make up bluffs above the Snake River. The Lake Bonneville Flood carved this canyon 14,500 years ago and deposited fields of boulders, dubbed "Melon Gravel".

A normal fault bounds the northeast edge of the Snake River Plain, part of the eastern margin of the western Snake River Plain graben. This fault-bounded rift began to subside perhaps 12 million years ago on the shoulder of the Snake River Plain hotspot then located west of Twin Falls, Idaho. East of the normal fault are the Salmon River Mountains, underlain by Cretaceous Idaho batholith granodiorites, and Eocene granite and granodiorite of the Challis magmatic complex. The area is cut by northwest striking faults parallel with Basin and Range trends. The forks of the Boise River; however, flow southwest across this grain and all occupy deep canyons.

Landslides occur primarily in the northern part of Elmore County. Historically this area has supported low populations in the communities of Atlanta, Pine, and Featherville. As these remote communities in the mountains grow in population, landslides will likely occur more frequently, particularly near roadways and new home construction sites. In the past, the main consequence of landslides has been to restrict travel on the few roads that exist in the area. There are several stretches of Primary Forest Route 61 in the Pine and Featherville area that have significant risk to slumps, bank failures, and culvert or bridge blockages during flood events due to the steep topography and unstable soils.

Individual homes in Atlanta are at moderate to high risk to landslide activity. Homes and travel routes that have been constructed at the mouths of drainages and through alluvial deposits are at an increased risk of being affected by landslide activity. These historic deposits are a strong indicator of future debris flows. Furthermore, these deposits tend to be unstable and somewhat prone to movement. Debris flow activity and the resulting alluvial sediment deposition is associated with soil saturation and precipitation events. As landslide events are generally associated with large precipitation events, the probability of a slide occurring during normal weather conditions is quite low. However, landslide risk can become moderate to extremely high during large precipitation events.



Wildland fire can increase the likelihood and severity of landslide events. The community of Atlanta, located just south of the Sawtooth Wilderness boundary, is in an area that is characterized by steep slopes, rising from the Middle Fork of the Boise River and its many tributaries, and mixed conifer forests. Fires in the Atlanta area, such as the 2003 Hot Creek Fire, can result in a domino effect of multiple hazards. Higher intensity fires not only remove most of the vegetation, but they also cause soils to become hydrophobic (water repellent) for a period after the fire. This combination leads to unusually high runoff after rain showers or during the spring runoff season. As streams and rivers begin to reach and exceed flood stage, bank failures and channel migration are common. Road building and other soil disturbances tend to exacerbate this effect leading to even more severe land and soil slides. The James Creek Road was heavily damaged in the years immediately following the Hot Creek Fire with several slides and road bank failures impeding traffic into and out of the community.

Local Event History

Historically, landslides occur primarily in the northern part of Elmore County. The steep mountainous terrain around Atlanta, Pine, and Featherville is conducive to landslides and avalanches. Most damage from landslides is associated with small slides and slumps along roadways, but spring rain, snowpack, and frozen soils can be conducive to significant slide events. In 1997 heavy runoff caused major flooding and triggered mudslides in northern Idaho, resulting in a Federal Disaster Declaration for multiple counties (Elmore County was not included in the declaration). Table 31 provides more information about several significant historical landslides that have occurred in Elmore County.

Table 31) Historic landslides that have occurred in Elmore County, ID since 1986.

Date	Counties Affected	Description
March 1986	Boise, Elmore, Lewis, Nez Perce, Owyhee	Unknown
1989	Elmore	Daws Slide, Blacks Creek Road
March 1997	Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Washington	Northern Idaho received 12 to 18 inches of snow on top of an existing snowpack that exceeded 150 to 170 percent of the average. A subsequent rainstorm caused a rapid snowmelt; resulting mudslides and flooding damaged many public facilities, including county road systems. A Federal Disaster declaration (DR-1177) was issued on June 13, 1997, for Boundary, Bonner, Benewah, Kootenai, and Shoshone Counties.
2000	Elmore	Fall Creek Road Slide, near Anderson Ranch Dam
August 4, 2014	Elmore	Event caused by severe weather; State Disaster Proclamation ID-01-2014
2018	Elmore	IDOT Landslide Repair Project, Stc-3809, Middle Fork Boise River Road, Elmore County along segment 433 between mile post 34 and 40

Of the areas in northern Elmore County that have produced landslides in the past, the Mountain Home Highway District has identified the Daws Slide (1989) on Blacks Creek Road, the Fall Creek Roads Slide (2000) near Anderson Ranch Dam, and the Cow Creek Slide on Prairie Road as areas known to have significant risk to future slides affecting the roadways. Repeated maintenance of Fall Creek Road, Blacks Creek Road, the Pine-Featherville Road, Highway 20, and the Anderson Dam Road is required to keep the travel surfaces clear of rocks and other debris. The Mountain Home Highway District mapped the locales of several chronic slide areas along roads (Figure 25).

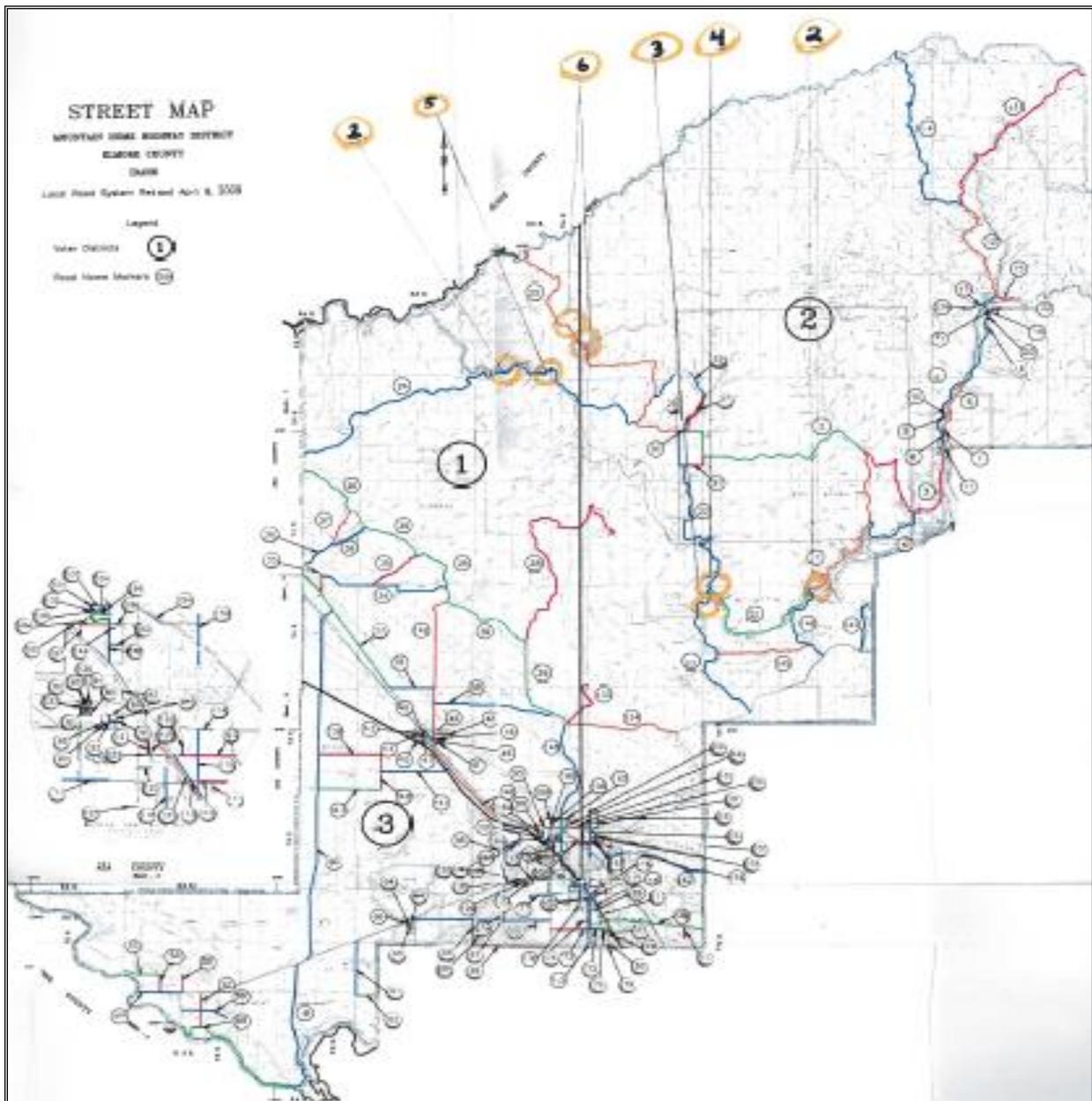


Figure 25) Chronic slide areas in Elmore County, ID.

Probability of Future Occurrence

The planning team recognized landslides as a moderate to high-level risk in the unincorporated areas of the county (Table 32). They are likely to occur and, even though they do not necessarily affect a large part of the physical environment, they can impact a significant number of people living in remote communities by compromising ingress and egress.

Table 32) Landslide hazard ratings for Elmore County and the unincorporated communities of Featherville, Pine, and Prairie. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Landslide				
Community Rating	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Elmore County	4	4	4	12
Featherville	3	2	3	8
Pine	3	2	3	8
Prairie	3	2	3	8
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Landslide potential in the steep canyons along the South and Middle Forks of the Boise River in Elmore County is high. These canyons have a high propensity for slides based on the steeper slopes, unstable soils, and history of occurrence. Wildfires and/or severe storms that saturate the soils could lead to major slide events in these areas. The probability of major, high velocity landslide events in this area, including those caused by severe local storms, is moderate.

Given the generally flat nature of the terrain, the major population centers in Elmore County (Mountain Home and Glens Ferry) have very little risk of experiencing major property damage or loss of life due to landslides. Other communities, such as the unincorporated communities of Grand View and Hammett, are also located in the prairie-region of the county, putting them at low risk for landslides. Other communities located on the prairie-foothill interface in the county, such as the unincorporated community of Prairie, are at moderate risk of landslides.

Impacts of Landslide Events

In Elmore County, minor landslides along toe-slopes and roadways occur annually with minimal impact to residents. Major landslides in northern Elmore County could cause property damage, injury, and death and may adversely affect a variety of resources. For example, water supplies, fisheries, sewage disposal systems, forests, dams, and roadways can be affected for years after a slide event. The negative economic effects of landslides include the cost to repair structures, loss of property value, disruption of transportation routes, medical costs in the event of injury, and indirect costs such as lost timber and lost fish stocks.

Water availability, quantity, and quality can be affected by landslides and would have a very significant economic impact on Elmore County. The loss or redistribution of water would affect agricultural crops grown in certain areas, ranching activities, and personal and municipal wells.

Landslides can also isolate rural communities as debris fields can make roadways impassable. Much of the Atlanta area is at a high risk of landslides, which could damage numerous structures and cut off the James Creek Road or the Middle Fork Road, Atlanta's only ingress/egress routes. Atlanta has been an area of active landslide activity in the geologic past as well as in the present. Factors leading to slope instability have been present in the area since ancient times.

Analysis of Landslide Risk

Soil factors that increase the potential for landslide are soils developed from parent materials high in schist and granite, and soils that are less permeable containing a resistive or hardpan layer. These soils tend to exhibit higher landslide potential under saturated conditions than do well-drained soils. To identify the high-risk soils in Elmore County, the NRCS State Soils Geographic Database (STATSGO) layer was used to identify the location and characteristics of all soils in the County. The specific characteristics of each major soil type within the county were reviewed. Soils information that suggested characteristics pertaining to very low permeability and/or developed a hardpan layer and soils developed from schist and granite parent material were selected as soils with potential high landslide risk. High-risk soils magnify the effect slope has on landslide potential. Soils identified as having high potential landslide risk are further identified only in areas with slopes between 14° and 30° (25-60%). It is these areas that traditionally exhibit the highest landslide risk due to soil characteristics within a given landscape.

To portray areas of probable landslide risk due to slope related factors, slope models were used to identify areas of low, moderate and high risk. This analysis identified the low risk areas as slopes in the range of 20°-25° (36-46%), moderate as 26°-30° (48-60%) and high risk as slopes in the range of 31°-60° (60-173%). Slopes that exceeded 60° (173%) were considered low risk as sliding most likely had already occurred relieving the area of the potential energy needed for a landslide. From the coverage created by these two methods, it is possible to depict areas of assumed risk and their proximity to development and human activity. With additional field reconnaissance the areas of high risk can be further defined by overlaying additional data points identifying actual slide locations, thus improving the resolution by specifically identifying the highest risk areas. This method of analysis is similar to a method developed by the Clearwater National Forest in north central Idaho.⁶⁶

The output of the slope analysis displays areas of extremely high risk in red and high risk in yellow. As discussed earlier, much of the mountainous terrain in the northern portion of the county is at high or extremely high risk of sliding. The southern end of the county is at little to no risk of sliding. Refer to Figure 26 for a map of landslide prone areas in Elmore County.

⁶⁶ McClelland, D.E., et al. 1977. Assessment of the 1995 and 1996 floods and landslides on the Clearwater National Forest Part 1: Landslide Assessment. Northern Region U.S. Forest Service. December 1977.



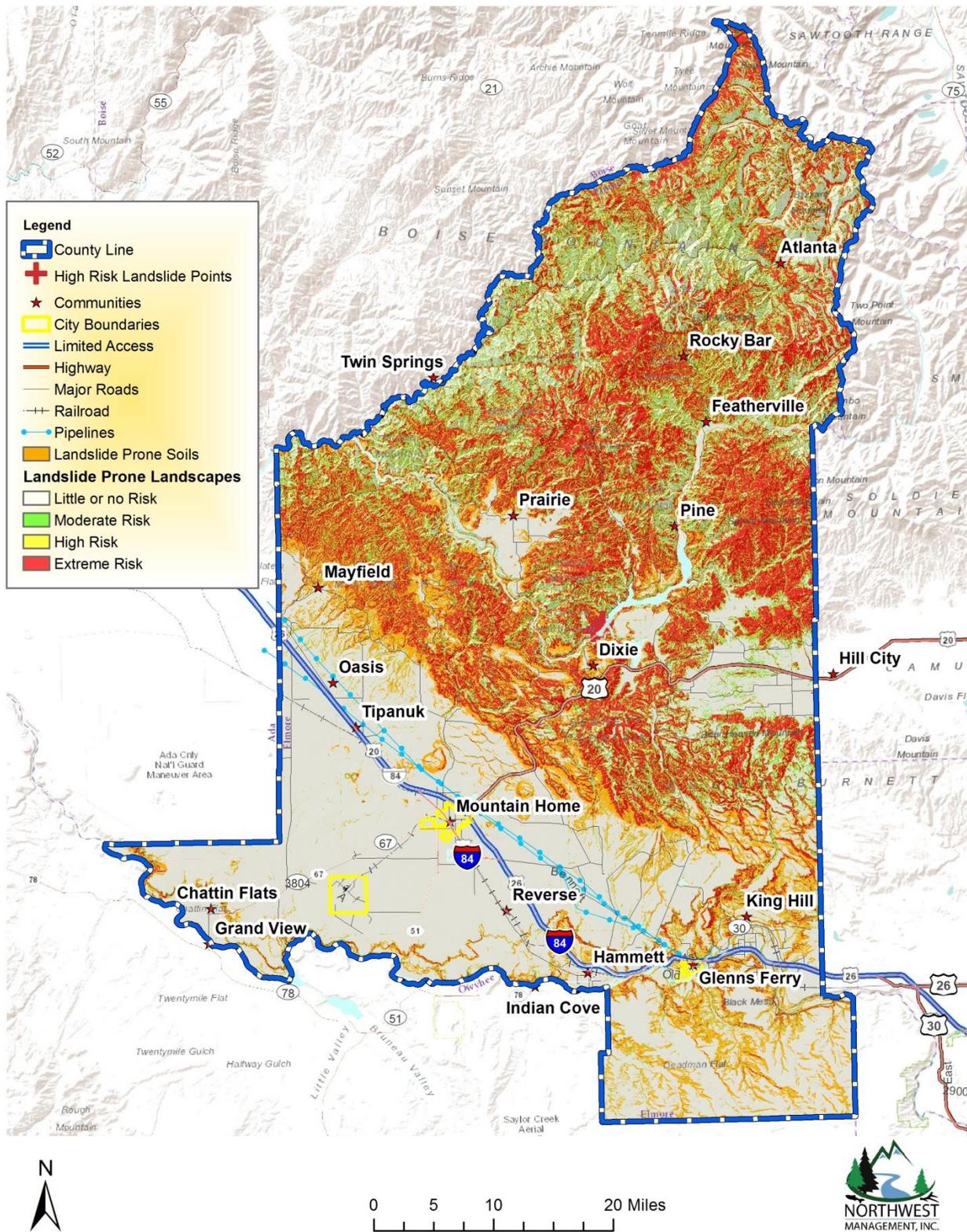


Figure 26) Landslide Prone Landscapes Map of Elmore County, ID.



Figure 27) High-risk landslide corridor (yellow roadway buffer) in Elmore County, ID. The corridor was delineated by members of the Hazard Mitigation Plan planning team.

However, many of the landslide-prone areas displayed in Figure 26 are in wilderness or uninhabited areas. Except for areas in proximity to towns and roadways, most landslides will be of little to no consequence to residents in the county. To better describe landslide-prone areas that are of greatest concern to the county and quantify the value of property at risk, the planning group identified a “landslide impact zone” in the northern end of the county where landslides are likely to have the greatest impact. Unlike the previous version of the plan which contained multiple small impact zones, the group opted to create one large, continuous impact zone in some of the roadway corridors in the northern end of the county. Extending one quarter mile from the road on both sides, the impact zone extends from the Cow Creek Bridge up through Pine and Featherville to Atlanta. From Atlanta, the zone runs along the roadway corridor to the west and ends at the county line. Although the number of structures within the zone could not be determined due to data limitations, the analysis concluded that there are approximately 998 individual parcels within the landslide zone that was delineated by the planning team. Refer to Figure 27 for a map of the landslide risk zone; values of property improvements within the zone are reported in the next section.

Value of Resources at Risk

The cost of cleanup and repairs of roadways is difficult to estimate due to the variable circumstances with each incident including size of the slide, proximity to a state or county shop, and whether the slide occurred on the cut slope or the fill slope. Other factors that could affect the cost of the damage may include culverts, streams, and removal of debris. Due to the nature of landslides and the varying impacts they have on roadway infrastructure, no reliable cost analysis has been performed for damaged or blocked roadways.

As the exact location and extent of a single landslide event is difficult to predict, the planning team elected to delineate a single high-risk landslide zone in select roadway corridors in the northern part of the county. Consequently, in addition to data limitations, it is also likely that there is greater utility in presenting total values at risk as landslides can occur unexpectedly and produce debris fields with unpredictable flows. In total, there are 998 parcels in the landslide zone with 463 total improvements (Table 33). The total value of all improvements is almost \$70 million, with the average improvement value at just over \$150,000. These structural values are based on the county’s assessed value of property improvements and does not reflect the replacement cost of a structure.

Table 33) Valuation of property improvements in the high-risk landslide impact zone (Figure 27) in Elmore County, ID

Landslide Risk Zone Analysis Category	Count/Value
Total Number of Parcels	998
Total Number of Improvements	463
Total Improvement Value of Parcels	\$69,922,455
Lowest Improvement Value	\$200
Highest Improvement Value	\$617,480
Average Improvement Value	\$151,020



Severe Weather Profile

Occurring annually with varying intensities, severe weather in Elmore County ranges from the commonly occurring thunderstorms to hail, high winds, tornadoes, drought, dense fog, lightning, and snowstorms. Severe weather is a general term and definitions can be subjective. Therefore, this section will recognize a specific set of severe weather categories: winter storms, thunderstorms, hail, severe winds, tornados, and drought.

Winter Storms

All of Elmore County is at risk to severe winter weather events which have a high probability of occurring at least every couple of years. Due to topography and climatologic conditions, the higher elevation communities of Atlanta, Featherville, Pine, and Prairie are often the most exposed to the effects of these storms. Commonly, higher elevations in the Boise Mountains will receive significant snowfall, while areas along the Snake River may not. Periodically though, individual storms can generate enough force to impact the entire county at one time. From high winds to ice storms to freezing temperatures, there are all types of winter storms that take place during any given year. Winter conditions can change very rapidly. It is not uncommon to have a snowstorm at night with sunshine the next day.

In Elmore County, ice storms occur when a layer of warm air is between two layers of cold air. Frozen precipitation melts while falling into the warm air layer, and then proceeds to refreeze in the cold layer above the ground. If the precipitate is partially melted, it will land on the ground as sleet. However, if the warm layer completely melts the precipitate, becoming rain, the liquid droplets will continue to fall, and pass through a thin layer of cold air just above the surface. This thin layer of air then cools the rain to a temperature below freezing (0 °C). However, the drops do not freeze, a phenomenon called supercooling. When the supercooled drops strike the ground or anything else below 0 °C, they instantly freeze, forming a thin film of ice that can build up on trees, utilities, roads, and other structures, infrastructure, and personal property.⁶⁷

Thunderstorms

Due to their relative frequency and minimal severity, severe thunderstorms are not well documented in Elmore County. Impacts on residents and communities from thunderstorms are typically limited and are seldom significant. Floods are a possible secondary hazard that can result from heavy rain. Flooding in Elmore County can be significant; for more information refer to the Flood Profile. Exposure to thunderstorms is largely dependent on local and regional geography. Flooding may be a much greater threat to communities and homes located near drainages or steep slopes, winds may be a much more significant threat to communities in large open areas, and other products of thunderstorms, such as hail and lightning, may pose a risk to all communities in the county. In Elmore County, lightning strikes pose a significant wildland fire threat throughout the county.

⁶⁷ Wikipedia. "Ice Storm". Wikimedia Foundation, Inc. March 2011. Available online at http://en.wikipedia.org/wiki/Ice_storm.



Hail

Hail can occur in any strong thunderstorm, which means hail is a threat everywhere. Hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere. Large hail stones can fall at speeds faster than 100 miles per hour. Hail damage in Idaho is minimal in comparison with damage in areas of the central part of the United States. Often the hail that occurs does not reach a size larger than one-half inch in diameter, and the areas affected are usually small. Quite often hail comes during early spring storms, when it is mostly of the small, soft variety with a limited damaging effect. During the summer months, hail can be larger and more widespread as it occurs in conjunction with thunderstorms; crop losses resulting from hail can be significant during summer months.

Severe Wind

Windstorms are frequent in Elmore County and they have been known to cause substantial damage. Under most conditions, the county's highest winds come from the northwest. However, during the summer months lightning and thunderstorms often come from the south to southwest. Due to the abundance of agricultural development in Elmore County, crop damage due to high winds can have disastrous effects on the local economy. In the case of extremely high winds, some buildings may be damaged or destroyed. Wind damages will generally be categorized into four groups: 1) structure damage to roofs, 2) structure damage from falling trees, 3) damage from windblown dust on sensitive receptors, or 4) wind driven wildfires. Structural injury from damaged roofs is not uncommon in Elmore County. Airborne particulate matter increases during high wind events. When this occurs, sensitive receptors including the elderly and those with asthma are at increased risk to complications. The National Weather Service defines high winds as sustained winds of 40 mph or gusts of 58 mph or greater, not caused by thunderstorms, expected to last for an hour or more. Areas most vulnerable to high winds are those affected by a strong pressure difference from deep storms originating over the Pacific Ocean; an outbreak of very cold, Arctic air originating over Canada; or air pressure differences between the Coast Range and southern Idaho.

Elmore County and the entire region are at increased risk to wildfires during high wind events. Ignitions can occur from a variety of sources including downed power lines, lightning, or arson. Once ignited, only wildfire mitigation efforts around the community and scattered homes will assist firefighters in controlling a blaze. Details about wildfire mitigation are discussed in the wildland fire annexes of this plan.

Tornado

A tornado is formed by the turbulent mixing of layers of air with contrasting temperature, moisture, density, and wind flow. This mixing accounts for most of the tornadoes occurring in April and May, when cold, dry air from the north or northwest meets warm, moister air moving up from the south. If this scenario was to occur and a major tornado was to strike a populated area in Elmore County, damage could be widespread. Businesses could be forced to close for an extended period, and routine services such as telephone or power could be disrupted. The National Weather Service defines a tornado as a violently rotating column of air that contacts the ground; tornados usually develop from severe thunderstorms. Areas most vulnerable to tornado are those subject to severe thunderstorms or those with a recurrence



rate of 5 percent or greater, meaning the county experiences one damaging severe thunderstorm event at least once every 20 years.

According to the Tornado Project⁶⁸ and the National Climatic Data Center⁶⁹, there were 2 reports of tornadoes in Elmore County between 1880 and 2000. They occurred in June 1961 (F1) and August 1986 (F1). No injuries or deaths were reported as a result of these events.

Drought

Drought is a condition of climatic dryness that is severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems. Nearly all areas of the State are vulnerable to drought. In every drought, agriculture is adversely impacted, especially in non-irrigated areas such as the dry land farms and rangelands in Elmore County. Droughts impact individuals (farm owners, tenants, and farm laborers), the agricultural industry, and other agriculture-related sectors.

The severity of drought is measured by the Palmer Index in a range of 4 (extremely wet) to -4 (extremely dry). The Palmer Index incorporates temperature, precipitation, evaporation and transpiration, runoff and soil moisture when designating the degree of drought.⁷⁰ Palmer Drought Index maps are updated regularly by the National Oceanic and Atmospheric Administration at Drought.gov⁷¹. Figure 28 an example of a Palmer Drought Index map from September 2019.

Drought affects water levels for use by industry, agriculture, and individual consumers. Water shortages affect firefighting capabilities through reduced flows and pressures. Drought also affects power production. Much of Idaho's power is produced by hydro-electric dams. When water levels drop, electric companies cannot produce enough power to meet demand and are forced to buy electricity from other sources. Oftentimes, drought is accompanied by extreme heat. When temperatures reach 90 degrees and above, people are vulnerable to sunstroke, heat cramps, and heat exhaustion. Pets and livestock are also vulnerable to heat-related injuries. Crops can be vulnerable as well. Drought increases the danger of wildland fires. In Elmore County, fires in rangeland areas are particularly dangerous due to typically high rates of spread and scattered distribution of structures and infrastructure that could be affected.

⁶⁸ Tornado Project. 1999. St. Johnsbury, Vermont. Available online at <http://www.tornadoproject.com/alltorns/watorn.htm#Columbia>.

⁶⁹ National Climatic Data Center. 2010. *Storm Events Database*. NOAA Satellite and Information Service. U.S. Department of Commerce. Available online at <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms>.

⁷⁰ "Drought Monitoring". National Weather Service Climate Prediction Center. NOAA. February 2011. Available online at http://www.cpc.ncep.noaa.gov/products/monitoring_and_data/drought.shtml.

⁷¹ <https://www.drought.gov/drought/data-maps-tools/current-conditions>



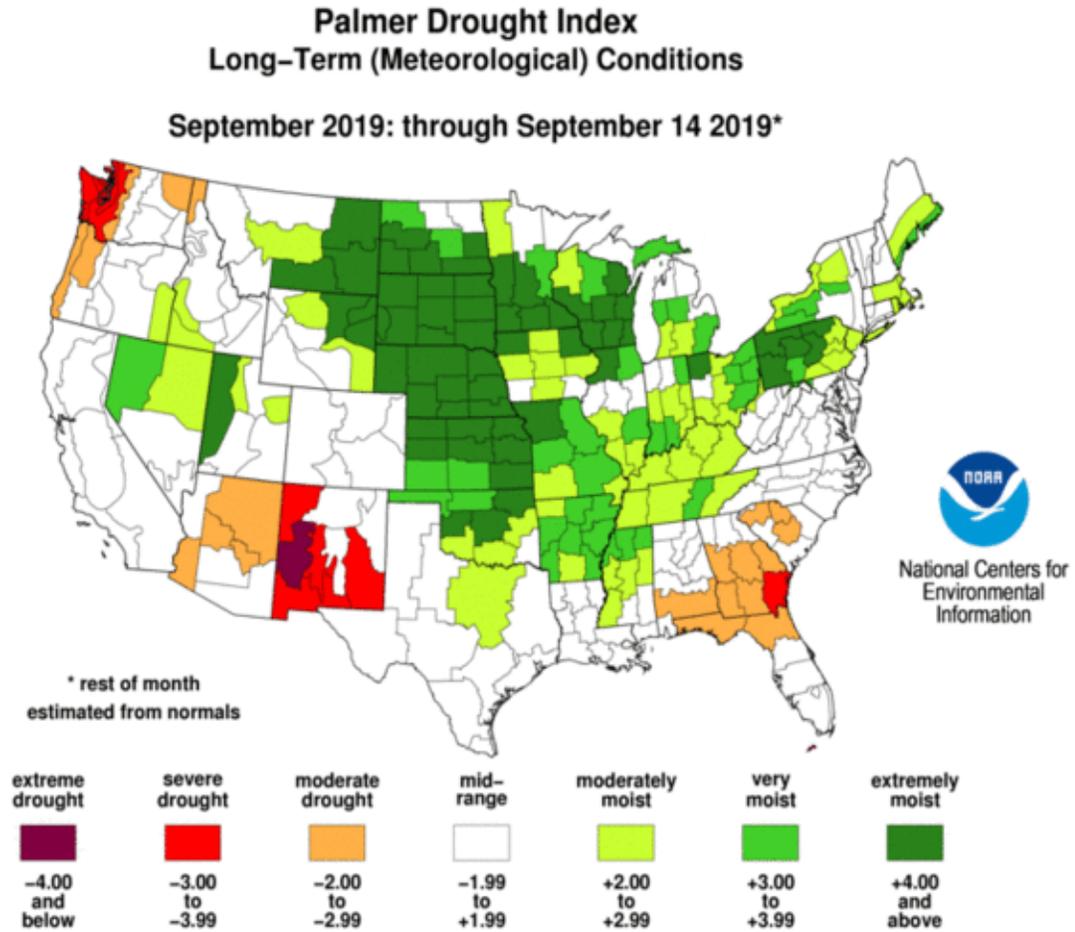


Figure 28) Example of a national Palmer Drought Index map for June 2019.

Local Event History

Considering the number of individual severe weather events that have affected Elmore County, severe weather history was summarized by type of event and total number of each type of event (Table 34). There are 254 severe weather events on record for Elmore County for the period 1997 to 2018; most events (146) are classified as heavy snow, an additional 25 events are also winter related (there may be more as some severe wind events may have occurred during winter months).

Table 34) Historical severe weather events that affected Elmore County (1997 to 2018). Data is from the NCDC Storm Events Database.

Severe Weather Hazard Type	Event Count	Event Information
Avalanche	2	A large mass of rapidly moving snow down a steep mountain slope.
Blizzard	2	A storm lasting about 3 hours or longer with sustained winds 35 mph or greater with frequent gusts to 35 mph or greater; and considerable falling and/or blowing snow frequently reducing visibilities to less than 1/4 mile.
Debris Flow	1	Debris and mud flows are rivers of rock, earth, and other debris saturated with water.



Dense Fog	4	A cloud, with its base on the surface, which reduces visibility to 1/4 of a mile or less.
Extreme Cold / Wind Chill	1	A wind chill factor of 30 degrees or lower on exposed skin will result in frostbite in a short period of time.
Flash Flood	11	A flood that occurs within a few hours (usually less than six) of heavy or excessive rainfall, dam or levee failure.
Flood	7	High flow, overflow or inundation of a normally dry area which causes or threatens damage.
Funnel Cloud	2	A rotating column of air forming a pendant from a cumulus/cumulonimbus cloud with circulation not reaching the ground.
Hail	9	Showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.
Heavy Rain	1	Excessive rainfall over a defined period of time.
Heavy Snow	146	Exceptional snow accumulation
High Wind	23	Sustained wind at greater than 40 miles per hour and/or gusts to greater than 58 miles per hour.
Strong Wind	1	
Thunderstorm Wind	18	Localized winds produced from a thunderstorm.
Tornado	1	A violent rotating column of air, usually forming a pendant from a cumulonimbus cloud with the circulation reaching the ground.
Wildland Fire	7	
Winter Storm	17	
Winter Weather	1	
Total Number of Events	254	

Table 35 outlines all severe weather events that have affected Elmore County since the last plan-update in 2013. In total, there were 62 severe weather events that resulted in \$112,000 in damage, one injury, and one disaster declaration. The injury was a result of a vehicle accident and foggy/icy conditions and the disaster declaration (DR-4310) was made in response to severe winter storms and flooding.

Table 35) Severe weather events that affected Elmore County since the last HMP update (January 1, 2013 to December 31, 2019). Data is from the NCEM Storm Events Database.

Event Type by Year	Number of Events	Damage	Injuries	Disaster Declaration
2013	9	\$10,000	1	0
Dense Fog	1	0	1	0
Flash Flood	1	0	0	0
Hail	2	0	0	0
Heavy Snow	1	0	0	0
High Wind	1	0	0	0
Strong Wind	1	\$10,000	0	0



Thunderstorm Wind	1	0	0	0
Tornado	1	0	0	0
2014	8	0	0	0
Debris Flow	1	0	0	0
Flash Flood	1	0	0	0
Flood	1	0	0	0
Hail	1	0	0	0
Heavy Snow	2	0	0	0
High Wind	1	0	0	0
Thunderstorm Wind	1	0	0	0
2015	8	0	0	0
Heavy Snow	4	0	0	0
Thunderstorm Wind	3	0	0	0
Wildfire	1	0	0	0
2016	3	0	0	0
Heavy Snow	3	0	0	0
2017	13	\$102,000	0	1
Flood	2	\$102,000	0	1
Heavy Snow	10	0	0	0
Thunderstorm Wind	1	0	0	0
2018	6	0	0	0
Heavy Snow	6	0	0	0
2019	15	0	0	0
Hail	2	0	0	0
Heavy Snow	9	0	0	0
Thunderstorm Wind	3	0	0	0
Tornado	1	0	0	0
Total	62	\$112,000	1	1

Probability of Future Occurrence

Overall, the probability of Elmore County experiencing a severe weather event on an annual basis is very high; the area experiences four distinct seasons, all of which produce severe weather that can put residents and infrastructure at risk. The planning group agreed that most severe weather events affect large geographic areas in the county and therefore impact most residents. Severe weather events are likely to occur and tend to be moderate to severe in strength. From the perspective of the county and several small unincorporated communities, severe weather ranks high in terms of overall significance (Table 36).



Table 36) Severe weather hazard ratings for Elmore County and the unincorporated communities of Featherville, Pine, and Prairie. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Severe Weather				
Community Rating	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Elmore County	3	3	3	9
Featherville	3	2	3	8
Pine	3	2	3	8
Prairie	3	3	3	9
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Drought

The Idaho Department of Water Resources reports that meteorological drought conditions (a period of low precipitation) existed in the state approximately 30% of the time during the period 1931-1982. Principal drought in Idaho, indicated by stream flow records, occurred during 1929-41, 1944-45, 1959-61, 1977, and 1987-92.⁷² The probability of Elmore County experiencing a major long-term drought in any given year is low to moderate. While Elmore County does experience droughts, they are usually mild and do not cause long term damage. The impacts of drought on the agricultural sector are mitigated by the availability of irrigation water.

Hail

Elmore County has a moderate probability of experiencing a damaging hailstorm in any given year. These types of events most frequently occur in the spring but can occur throughout the summer as well.

Severe Wind

Wind events are also common in Elmore County and can occur throughout the year. Wind is often associated with winter storms during the winter and thunderstorms during the warmer months but can also occur without additional storm influences. Significant wind events are expected 3-5 times annually.

Thunderstorms

Several major thunderstorms are expected in Elmore County each year between April and September. Risk and damage related to thunderstorms varies with the landscape in the county. Northern reaches of the county, including the region of Atlanta, receives approximately 28 inches of annual rainfall while the

⁷² Idaho Department of Water Resources. 2010. Idaho Drought Emergency Declarations. Available online at <http://www.idwr.idaho.gov/News/drought/drought.htm>.

southern region, like Mountain Home and Glenns Ferry, receive an average of 12 inches of rainfall per year.

Lightning-strike fires can result from a thunderstorm and threaten arid regions of the western interior U.S., especially during the warm season. The landscape in the southern part of Elmore County, where the larger population centers are located, receives less precipitation and is composed of highly degraded rangelands invaded by annual exotic grass species. This part of the county is almost more susceptible to lightning-strike fires as some thunderstorms do not produce rain or the rain evaporates before it reaches the ground, increasing the chance for lightning-caused wildfires in dry areas with light, flashy fuels. Because of the risk associated with lightning, thunderstorms pose a moderate risk to the residents and agriculture/ranching industries in the county.

Tornados

Tornados are relatively rare, but the conditions for a funnel cloud to form are reported in Elmore County several times each year. Nevertheless, based on the historical record of tornadoes in this area, the probability for a small tornado to occur in Elmore County is low. The probability of a higher magnitude tornado occurring in this area is extremely low.

Winter Storms

Extreme cold, snow accumulation, and wind events are common occurrences between November and March. Major winter storms are expected at least twice each year during the winter season; however, these weather patterns rarely last more than a few days. The remote communities of Atlanta, Featherville, Pine, and Prairie receive several feet of snowfall each year. Severe ice storms also occur in Elmore County during the winter months. The probability of this type of event is moderate to high annually.

Impacts of Severe Weather Events

Drought

The impacts of drought are diverse and often ripple through the economy. Thus, impacts are often referred to as either direct or indirect. A loss of yield resulting from drought is a direct or first-order impact of drought. However, the consequences of that impact (for example, loss of income, farm foreclosures, and government relief programs) are secondary or even tertiary impacts. The impacts of drought in Elmore County can be classified into one of three principal types:

- **Economic:** impacts range from direct losses in the broad agricultural and agriculturally related sectors (including forestry and fishing), to losses in recreation, transportation, banking, and energy sectors. Other economic impacts would include added unemployment and loss of revenue to local, state, and federal government.
- **Environmental:** Impacts include damages to plant and animal species, wildlife habitat, and air and water quality; forest and range fires; degradation of landscape quality; and soil erosion. These losses are difficult to quantify but growing public awareness and concern for environmental quality has forced public officials to focus greater attention on them.



- **Social:** Impacts mainly involve public safety, health, conflicts between water users, and inequities in the distribution of impacts and disaster relief programs. As with natural hazards, the economic impacts of drought are highly variable within and between economic sectors and geographic regions, producing a complex assortment of winners and losers with the occurrence of each disaster.

Hail

The potential impacts of a severe hailstorm in Elmore County include crop damage, downed power lines, downed or damaged trees, broken windows, roof damage, and vehicle damage. Hailstorms can, in extreme cases, cause death by exposure. The most common direct impact from ice storms to people is traffic accidents. The highest potential damage from hailstorms in Elmore County is the economic loss from crop damage. Even small hail can cause significant damage to young and tender plants and fruit. Trees can also be severely damaged by hail.

Severe Wind

The impacts of an extreme wind event on a community are usually minimal. However, the area affected by extreme wind events can be widespread making response difficult, especially if resources and emergency response personnel are limited. Utilities and transportation are usually impacted by extreme wind events because of poor road conditions and/or downed trees that block roadways and disrupt power distribution. Damage to structures, mostly the loss of siding and roofing materials, does occur on a more localized scale and is influenced by building materials and age of structure. Depending on the season of the event, severe winds may result in a loss of agricultural crops.

After such an event, it can take communities days, weeks, or longer to return to normal activities. In addition to costly structural damages, windstorms can cause injury or even death.

Thunderstorms

As a result of fire suppression, thunderstorms pose a threat to all areas of the county due to higher fuel loads and degraded ecosystem functioning in both rangeland and forests. Thunderstorms can cause lightning-strike fires which threaten county residents, infrastructure, and the local economy. Ranching families rely on public lands for grazing livestock at least for some portion of the year. Frequent fire and increasing degradation of rangeland plant communities threaten grazing leases, as burned rangeland generally receives post-fire rest, halting livestock grazing on the affected allotment to allow for land recovery. Ranchers are forced to buy feed or find other alternatives and are more likely to discontinue grazing on rangelands that burn frequently. Loss of livestock grazing on these rangelands exacerbates the issue of high fuel accumulation and increases risk of fire. Dry thunderstorms and lightning in the northern portion of the county may also be a threat. Pests, pathogens, and overstocking have contributed to a general decline in forest health and increases in tree mortality. Dead and dying trees contribute to fuel loading in forests and increases the potential for catastrophic wildfires. Uncontrolled wildfires in the



forested areas of the county threaten residents, homes, recreational facilities and infrastructure, wildlife and wildlife habitat, and standing timber.

Tornados

Based on historic information and low occurrence rates, future tornados of similar size would have limited impacts on Elmore County residents. Minor damages may occur as a result of the high winds associated with a tornado.

Winter Storms

Winter storms are common in the mountainous areas of Elmore County. They often produce heavy snowfall that can cause road closures, vehicle accidents, structural damage to homes, frozen pipes, power outages, economic disruptions, and injuries and fatalities. Flooding can also result from spring thaw of snowpack, heavy rainfall, and frozen soil. Living in the mountains during the winter is very difficult so most of the residents of Atlanta, Pine, and Featherville leave the area for the season to avoid the severe winters. Structures in these communities are generally built to withstand heavy snow loads so snow-related damages seldom occur.

Power outages and snow-covered roads are common throughout many parts of the county. The Pine-Featherville Road from Pine to Highway 20 is often closed for days at a time during the winter due to blowing and drifting snow. Residents in this area are working with the county to obtain funds for construction of a snow fence along this stretch to help maintain an ingress/egress route during the winter. Because of the small populations that it services, snowplowing on the Pine-Featherville Road is often delayed as highway district maintenance crews focus on major roadways that service larger population centers. Numerous traffic accidents occur along Interstate 84 and other primary highway routes each year but are particularly common during the winter months due to ice, snowpack, and poor visibility.

Elmore County has experienced several “ice storms” in recent history. The freezing rain from an ice storm covers everything with a heavy layer of ice creating hazardous road conditions and increasing the likelihood of traffic accidents. Trees can be damaged as both small and large branches break under the weight of the ice. The weight of the ice can also break power lines and bring down utility poles. The loss of power during the winter months can last from a few hours to a few days and is particularly dangerous for those relying on electrical heat. The loss of a heat in the home can be dangerous to human health, particularly to sensitive populations, and can cause pipes to freeze and rupture.

Value of Resources at Risk

Due to data limitations, the only values that can be reported are related to the number of private parcels, including both homes and businesses, in the county and improvement values (Table 33). Even though this is a limitation, the variability of severe weather patterns and impacts makes the process of assigning specific values of resources at risk to many of the severe weather-types very difficult.



Table 37) Total parcel counts and valuation of all private property improvements in Elmore County, ID

Severe Weather Analysis Category	Count/Value
Total Number of Parcels	16,503
Total Number of Improvements	9581
Total Improvement Value of Parcels	\$1,637,988,837
Lowest Improvement Value	\$49
Highest Improvement Value	\$16,219,976
Average Improvement Value	\$170,962

Winter Storms

It is difficult to estimate the cost of potential winter storm damages to structures and the economy in Elmore County. Damage to roofs by heavy snow accumulations depends on the moisture content of the snow and the structural characteristics of the buildings. In general, snow in this region tends to have low moisture content because of the low temperatures and arid environment. Additionally, due to the lack of significant topographic features, the wind tends to blow much of the snow accumulation away. Snow plowing in Elmore County occurs from a variety of departments and agencies. The state highways are maintained by the State of Idaho. Plowing of county roads is done by the local highway districts and the road departments of the individual cities. Elmore County has developed a pre-determined list of critical routes in order to prioritize the plowing of arterials and other main access routes. Private landowners are responsible for maintaining their own driveways or other private roads.

Utility supplies are impacted during severe winter storms as power is lost on a regional basis. This has a two-fold impact on Elmore County residents as not only is power cut to homes and businesses, but primary heating is lost for many residents. Gas furnaces and wood stoves supplement electrical heating, but with wood heating the senior population is at a disadvantage. Frozen water pipes are the most common damage to residential and business structures. Older homes tend to be at a higher risk to frozen water pipes than newer ones. More rural parts of the County are sometimes better prepared to deal with power outages for a few days due to the frequent occurrence of such events; however, prolonged failure, especially during cold winter temperatures can have disastrous effects. All communities should be prepared to deal with power failures. Community shelters equipped with alternative power sources will help residents stay warm and prepare food. A community-based system for monitoring and assisting elderly or disabled residents should also be developed. All households should maintain survival kits that include warm blankets, flashlights, extra batteries, nonperishable food items, and clean drinking water.

Emergency response to severe winter storms includes site visits by police or fire department personnel, opening of shelters, or assistance with shopping, medical attention, and communications. The economic losses caused by severe winter storms may frequently be greater than structural damages. Employees may not be able to travel to work for several days and businesses may not open. Damages are seen in the form of structural repair and loss of economic activity. Elmore County schools are occasionally closed during and right after a severe winter storm because of cold temperatures and snow-covered roads.



Drought

Recent drought periods in Elmore County have caused only minor damages and crop losses. There were no threats to any critical facilities. Thus, a minor to moderate drought has a low probability of affecting the county's economy directly due to the availability of water through irrigation systems. An extreme and prolonged drought could result in limited availability of irrigation water causing severe crop losses countywide. In the event of an extended drought cycle, water shortages may lead to crop failures, or at the least, the necessity to plant lower value crops that are less water dependent. A large portion of the population is employed either directly by the agriculture industry or to a service industry dependent on agriculture. Crop losses resulting from extended droughts would likely be considered a disaster for Elmore County. Domestic and municipal water shortages are also likely to occur during an extended drought. Efforts to conserve water resources, including public education on conservation techniques, are encouraged by Elmore County during the summer months. Refer to the Crop Damage Profile for more information.

Hail

Although the financial impacts of hail can be substantial and extended, accurately quantifying these impacts is problematic. Losses from hail affect local farmers as well as the regional economy. Hail typically causes direct losses to structures and other personal property as well as to the extensive agricultural development in Elmore County. Potential losses to agriculture can be disastrous. They can also be localized meaning individual farmers can have significant losses, but the event may not drastically affect the economy of the county. Furthermore, crop damage from hail will also be different depending on the time of year and the type of crop. Most farmers carry insurance on their crops to help mitigate the potential financial loss resulting from a localized hailstorm. Federal and state aid is available for counties with declared hail disasters. Homeowners in Elmore County rarely incur severe damage to structures (roofs); however, hail damage to vehicles is not uncommon. Total cost associated with Elmore County vehicle damage is difficult to estimate because the number of vehicles impacted by a specific hailstorm is unknown. Most hail damage records are kept by various insurance agencies.

Thunderstorms

Thunderstorms affect all counties of Idaho but are generally localized events. Their impacts are various depending on specific conditions of the storm, as well as, factors of the area affected such as land use and climate. Thunderstorms can result in hail, lightning, and flash flooding. Generally, thunderstorms do not significantly affect the communities enough to declare a disaster. The loss potential from flooding as a result of severe thunderstorms can be significant in Elmore County. Additionally, heightened drought conditions and fuel loads, especially in the arid regions of the county provide opportunity lightning caused fires. Impacts of wildland fire affect the community in a variety of way and are very costly. From costs associated with fighting fire to restoration costs for replanting and losses of wildlife habitat, livestock grazing, and recreation, lightning caused fires are difficult to value.



Severe Wind & Tornadoes

It is difficult to estimate potential losses in Elmore County due to windstorms and tornadoes. Construction throughout the county has been implemented in the presence of high wind events, and therefore, the community has a higher level of preparedness to high wind events than many other areas experiencing lower average wind speeds. We have estimated losses based on wind and tornado damage as follows:

- 3% of the buildings damaged causing 50% of value loss (loss could be from downed or damaged trees, damaged outbuildings, damaged fences/poles, damage to siding, damaged landscaping etc.)
- 5% of the buildings received damage to roof (requiring replacement of roof equaling \$3,000)

Damages associated with sensitive receptor irritation have not been estimated. We have also not estimated the potential for a large-scale wildfire event associated with high winds. Based on the data provided by the county, there are 9,581 private parcels with improvements in unincorporated Elmore County with a total value of approximately \$1,637,988,837. Using the criteria outlined above an estimate of the impact of high winds on the County has been made. The potential loss in structure value from wind and tornado damage to all buildings is estimated at approximately \$24.5 million. The estimated damage to roofs is approximately \$1.44 million.

Extended Power Outage Profile

Severe weather events, such as strong winds and ice storms, are the most common causes of power outages in Elmore County. These types of outages are generally short-term (2-12 hours) and do not have a significant impact on residents. However, depending on the time of day, even short-term outages can result in considerable revenue losses for local businesses. A long-term outage in the unincorporated communities of Atlanta, Pine, Featherville, and Prairie in winter months could cause severe damages. The full-time residents in these areas are typically self-sufficient, but a long-term outage could disrupt in-home heating and cause pipes to freeze, cutting off potable water supplies to the home. These communities have very limited sheltering capacity and access to larger generators. In the summer months, an extended outage can cause food spoilage in homes (refrigerators and freezers) as well as in grocery and other stores.

Outages also impact the power supplier, Idaho Power, due to lost revenues from use as well as response and repair costs. It should be noted that power is supplied to Atlanta by a hydroelectric dam that is owned and operated by a company other than Idaho Power. Short term outages can also affect emergency response as communication capabilities are slowed and hospitals are running on backup power supplies. A long-term outage in Elmore County would have significant negative economic impacts.

Elmore County has an extensive history of power outages. The diverse landscape, rural settings, and weather patterns within Elmore County are the triggers for much of the power outages that occur. Rain-on-snow events, periods of extreme wind, and ice accumulations are very typical throughout the county in the spring and late winter. The combination of these types of events can cause significant power outages.



Wildland fires also have the potential to cause extended power outages. During a fire, power companies typically de-energize sections of the power grid in order to prevent arcing from the smoke and to protect firefighters. Power outage extend would be dependent on the location and intensity of the fire. This type of outage could significantly impact communities and rural residents. Without access to a generator, well pumps become inoperable thereby reducing the water availability and severely limiting firefighting capabilities.

Local Event History

A comprehensive list of historical power-outage events in Elmore County could not be found for inclusion in this plan, so a list of major regional power outages is included in Table 38.

Table 38) Major regional power-outages that have affected Elmore County, ID.

Date	Event	Description
1981	Power Outage	On January 8, prisoners on a work assignment burning trash and debris at the Utah State Prison in Draper, Utah accidentally caused a major power failure when something they were burning exploded, causing a fireball that shorted out transmission lines above them. 1.5 million people lost power, in almost all of Utah, as well as parts of southeastern Idaho and southwestern Wyoming
July 2-3, 1996 West Coast	Power Outage	The transmission outage began when a 345-kV line in Idaho overheated and sagged into a tree. A protective device on a parallel transmission line incorrectly tripped that line. Other relays tripped two Wyoming coal plants. For 23 seconds the system remained in precarious balance, until a 230-kV line between Montana and Idaho tripped. Remedial action separated the system into five pre-engineered islands to minimize customer outages. Two million people in the U.S., Canada, and Mexico lost power for minutes to hours.
August 10, 1996 West Coast	Power Outage	The Western Interconnection buckled under the high summer heat of the 1996 Western North America blackouts, causing a cascading power failure affecting nine western states of the United States and parts of Mexico. Four million people were affected. Power was out in some locations for four days
December 14, 2006	Power Outage	Hanukkah Eve Windstorm Caused widespread damage to the power grid throughout Washington state and into parts of Oregon, British Columbia, and Idaho; in some cases, blackouts in the affected area lasted longer than a week.

Probability of Future Occurrence

Power outages have the potential to affect nearly all sectors of society: communications, transportation, banking and finance, commerce, manufacturing, energy, government, education, health, food and water supply, and public safety. The severity of the impact depends on multiple variables including the duration



of the outage⁷³. The probability of short-term power outages continuing to occur relatively frequently in Elmore County, particularly in the remote communities of Atlanta, Pine, Featherville, and Prairie, is very high. The probability of long-term outages of three days or more is very low as Idaho Power typically responds immediately to an outage.

Impacts of Power Outage Events

In general, power outages can affect the ability of county and community-level governments to provide services such as trash pickup, automated traffic control, municipal water, law enforcement, and fire and medical services. Power outages can also complicate operations at facilities such as hospitals and nursing homes where power is necessary for life-support systems and other medical devices needed by patients and residents. The capacity of law enforcement resources may also be exceeded as personnel are needed to control traffic and perform other duties that are typically handled by automated systems.

Some facilities, such as hospitals, sewage treatment plants, schools, etc., should have generators, batteries, or other backup power sources so they can continue to provide basic services during a power outage. Other critical systems, such as communications and computer support, should also be connected to emergency power or be on a system that can be powered by a generator. Federal and state grants are, in some instances, made available to communities in need of support dollars for improving backup power systems. Researching options for grant-funding should continue to be a priority for Elmore County.

Most communities in Elmore County can provide potable water for 1-3 days without electricity to run pumps. However, a backup power source of power should be available to replenish storage tanks in the event of a long-term power outage. Many communities do not have a standby generator to power sewer treatment facilities, which could lead to effluent being backed up and potential contamination of the water supply.

Special needs populations are likely to be at the greatest risk during extended power outages as the services that they depend on, such as life support systems, medication, oxygen, and special transportation, can be offline or disrupted for multiple days. Generally, power companies maintain a list of customers who may be most affected or would require immediate assistance in the event of an outage. This type of information should also be shared with Elmore County Emergency Management and local emergency responders in order to ensure these populations receive adequate support.

Despite advances in computer technology, power outages are a major cause of personal computer and server downtime. An extended outage (defined as an outage lasting longer than the computers uninterruptible power supply) can prevent unprotected computers from initiating their required shutdown procedure. Computer and server operating systems are not designed to support abrupt losses of power known as “hard” shutdowns, but rather rely on a set of processes that prepare a computer for a shutdown such as saving memory, stopping applications, etc. Hard shutdowns can result in lost or

⁷³ State of Idaho Hazard Mitigation Plan 2018, Available online at: <https://ioem.idaho.gov/wp-content/uploads/sites/57/2018/12/Chapter-3.10-Cyber-Disruption.pdf>, Accessed June 2019



corrupted data and a lengthier time-to-recovery after power returns. Computer and data systems such as medical records, assessor's data, and client information may be damaged or lost during an extended outage. Corruption of data and files could have a long-term effect on many local organizations and businesses.

Sections of power line could be damaged or destroyed during a wildland fire in Elmore County. Depending on the scale of the loss, this could cost the power companies millions to fix and have a significant impact on communities. This type of power outage would likely take weeks, as lines would either be rerouted or replaced once the burned area cools, of repair and replacement work to become fully functional again.

Value of Resources at Risk

There is no reliable estimate regarding the total expense and losses that power outages create within Elmore County, but these events are costly. Power outages disrupt emergency functions and commerce, as well as personal lives. Some of these impacts can be quantitatively measured (e.g., lost business) while others, such as general disruption to resident activity, can only be described qualitatively.

Crop damage Profile

The farming industry is at frequent risk of loss due to adverse weather conditions. In Elmore County, severe weather events such as hail, high winds, heavy rain, and drought are all significant sources of crop failures; secondary impacts from pests and disease can contribute to crop losses as well.

According to USAData, the agriculture industry in Elmore County employs approximately 7% of the total workforce in the county. National trends moving in agriculture are moving towards more commercial, large scale farms of higher acreage and declining number of individual operations. This trend is reflected in Elmore County, as over the past 20 years (1997-2017) number of farms has decreased while average acreage of individual operations has increased. According to the 2017 Census of Agriculture there are 340 farms with a total of 358,454 acres in production; the average farm size is 1,054 acres.

Based on agricultural data collected by the state of Idaho, the annual market value of farm products sold by Elmore County farmers and ranchers is \$220,121,000⁷⁴. Agricultural production and land values are an important element of the primary foundation for Elmore County economic prosperity and its value index. Elmore County characteristically has climate like the Columbia Basin region of central Washington, which has prime conditions for production of table and winery grapes. The establishment of Carmela Winery in Glens Ferry near Three Island State Park is a growing attraction in the county. In the northern reaches, aesthetic landscapes in Pine, Featherville and Atlanta, are attracting tourists from all over the United States. Idaho ranks fourth in the nation for publicly held land

The United States is the 5th largest producer of potatoes in the World; Idaho produces almost half of all U.S. potatoes⁷⁵. In Idaho, chemical pesticides and farm subsidies ward off most major potato disasters;

⁷⁴ 2015 data from Elmore County Extension

⁷⁵ <https://www.potatopro.com/united-states/potato-statistics>



however, monocultures of potatoes are still a concern. The most serious potato pests are the green peach aphid (*Myzus persicae*), Colorado potato beetle (*Leptinotarsa decemlineata*), and wireworms (*Elateridae* spp.). All growers practice some elements of integrated pest management such as crop rotation, planting disease free seed, and coordinating pesticide applications. There are multiple disease problems in the field and in potato storage situations. Devastating diseases occurring in the industry include seed piece decay, early blight, late blight (*Phytophthora infestans*), early dying, and potato leaf roll virus. The diseases that occur in storage are pink rot, pythium leak, late blight, fusarium dry rot, and early blight. Silver scurf and bacterial soft rot will follow these diseases infecting the tubers. Seed potatoes can have all the above diseases with potato leaf roll virus being the most serious. Net necrosis of the potato tuber is the result of infection by potato leaf roll virus. Late blight is rated by Idaho potato growers as the most serious pest problem. Weeds and nematodes are listed as serious threats to potatoes in Idaho.⁷⁶

Sugarbeets are a major cash crop in Idaho. In addition to beet sugar, sugarbeets are also used to produce ethanol. Sugarbeets are susceptible to root rot as well as sugar beet blight, powdery mildew, leaf spot, nematodes, and several insects.

Wheat, barley, cereal grains, hay, and bean crops are often treated with chemical pesticides to help control insect damage. However, these types of crops are highly susceptible to weather-related damages at certain times of the year. Heavy rain, hail, and the high winds common in Elmore County can result in at least partial damages. Drought is a major concern for all crop producers; however, in the Snake River valley, the risk of damages due to drought is limited by extensive irrigation systems.

The most significant risk of massive livestock losses is from disease. This risk is elevated in feed lots or corrals where animals are kept together in immediate proximity to one another. Most diseases are species-specific but can be devastating to a herd or geographic area.

Even though some timber is harvested in Elmore County, it is not a significant element of the county's economic profile. The annual allowable cut on federal land will not support a sustainable timber economy in southern Idaho. The most significant risks to forest lands in Elmore County are wildland fire and pests such as bark beetles, moths, and budworm. These risks can be mitigated by maintaining healthy and productive forests that are resilient to these types of hazards.

Local Event History

As of April 2019, the Farm Subsidy Database reported \$15.0 million in disaster payments in Elmore County from 1995-2017 (Figure 29). These payments were made from the following programs: Crop Disaster Program, Non-insured Assistance, Sugar beet Disaster Program, Natural Disaster (1995), Quality Losses Program, Livestock Forage Disaster Program, Livestock Compensation Program, American Indian Livestock

⁷⁶ Bechinski, Ed. et al. "Crop Profile for Potatoes in Idaho." University of Idaho. Moscow, Idaho. June 2000. Available online at <http://www.ipmcenters.org/cropprofiles/docs/idpotatoes.html>.



Feed Program, Emergency Livestock Feed Assistance, the Livestock Emergency Assistance Program, and Emergency Conservation for drought, flood, and other.⁷⁷

Elmore County received \$60.2 million in subsidies from 1995 to 2017. This included \$28.4 million in commodity subsidies, \$11.4 million in crop insurance subsidies, \$5.3 million in conservation subsidies, and \$14.9 million in disaster subsidies.

Subtotal, Disaster Payments in Elmore County, Idaho totaled \$15.0 million from 1995-2017.

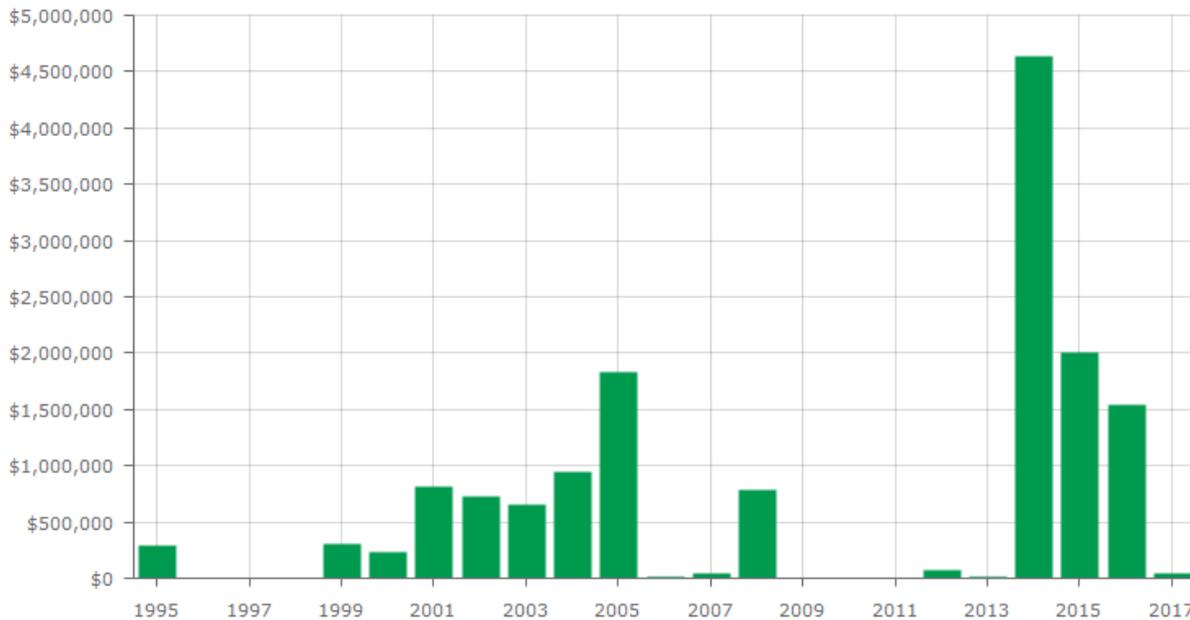


Figure 29) Disaster Payments in Elmore County from 1995-2017 (Data and figure are from the EWG’s Farm Subsidy Database).

Probability of Future Occurrence

The probability of Elmore County experiencing some mass crop failure on an annual basis is low due to the availability of irrigation and the use of pest control products. However, in the absence of irrigation, wide-spread crop failure would have a significant impact on the local economy.

The probability of individual crop failures or failure of individual fields due to pests, hail, or other types of hazard events is high. These types of events are not likely to affect the entire county or all types of crops; thus, they are not likely to have a significant impact on the local or regional economy, but they can have significant impacts on individual farmers.

⁷⁷ Environmental Working Group. 2011 Farm Subsidy Database. Available online at <http://farm.ewg.org/>.



Impacts of Crop Damage

The primary impact of crop damage or failure is economic hardship. Effects can be limited to an individual producer, a community, or extend to a larger geographic area. Most crops are insured so the impact to individuals or small communities is at least partially mitigated by subsidies and disaster assistance programs. The long-term effect of repeated crop failures may be a shift in crops grown in a region, which might result in a need for changes to the local supporting services and infrastructure.

A side effect of crop failures is an increase in the cost of the end products to consumers. This impact is not restricted to local crop failures. For example, failed citrus crops in Florida can increase the price of oranges in the entire United States, including Idaho.

Value of Resources at Risk

Most farm operations within Elmore County are relatively small ranging from 1-9.9 acres in size. The general trend shows an increase in the 20-year time span from 1997-2017 for operations falling within the 10 to 49.9 acre-range. This category has the greatest overall trend in growth. At an average of around 50 operations, farms greater than 1,000 acres in size have remained relatively constant over the past 20 years. The top commodities produced in Elmore County based on acreage are hay and haylage, corn, wheat, potatoes, sugarbeets, and beans, respectively (Figure 30). Figure 31 shows the location agricultural operations in the county. Producers within the county also raise beef and dairy cattle contributing to overall returns to local economy. Elmore County has experienced a 12.6 % increase from 2012 to 2017 in revenue generated from crop sales. Animal and animal product revenue generated is also up 1.2 % over the same 5-year time frame⁷⁸.

Hay, haylage, and corn are all crops supporting the dairy and beef cattle production industry which are large contributors to the Idaho economy, especially in the south-central Magic Valley region. Idaho is ranked high in the nation for alfalfa production, with Elmore County hay yields ranked among the highest of all counties in Idaho.

Wheat and barley are produced via sprinkler irrigation and are often the main rotation crops with potatoes. Idaho continues to rank number one in potato production. Ninety percent of Americans associate the State of Idaho with potatoes. Approximately 85% of potatoes grown in the county are sold on contract to processors, and the remaining potatoes are sold on the open market either as fresh produce or processed product.

Sugarbeets are another important commodity to Elmore County. On an annual basis, Idaho ranks within the top three states for production of sugarbeets. Idaho produces high yields per acre, and in many cases, yields have increased as much as 40% in the last 25 years due to improved irrigation, fertilization, and pest

⁷⁸ USDA National Agricultural Statistics Service 2017 Census, Available online at: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_US_State_Level/, Accessed June 2019



control practices. Beets from Elmore County are processed at the Amalgamated Sugar Plant in Nampa, Idaho⁷⁹.

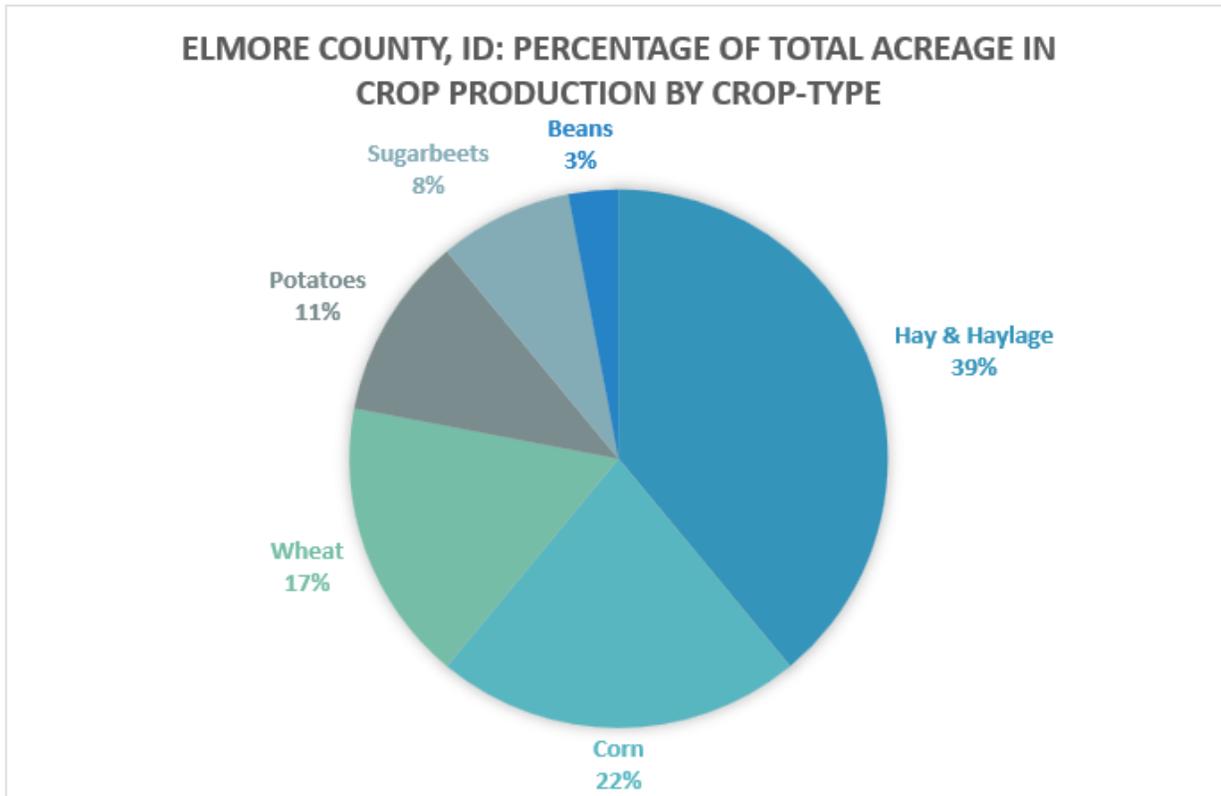


Figure 30: Elmore County Crop Acreage Totals by Percent⁸⁰

Based on agricultural data collected by the State of Idaho, net income of farm operations in Elmore County in 2017 was \$69,297,000, which was more than double net income observed in the 2012 census. Nearly 20% of Idaho agriculture is exported to foreign markets. Top export destinations for Idaho agriculture are Canada and Mexico.

In total, there were approximately 200 operations that generated \$310,574,000 in animal and animal product sales in 2017. Of that total, almost one third was generated from milk sales. Other commodities include poultry and poultry productions, cattle, hogs, sheep and goats (and products), equine, and specialty animals.

⁷⁹ 2015 Economic Impact of Agriculture in Elmore County, Available online at: <https://www.uidaho.edu/-/media/UIDaho-Responsive/Files/Extension/county/Elmore/Ag/2015Economic-Impact-Ag.pdf>, Accessed June 2019

⁸⁰ USDA National Agricultural Statistics Service, Available online at: https://www.nass.usda.gov/Quick_Stats/CDQT/chapter/2/table/1/state/ID/county/039, Accessed June 2019



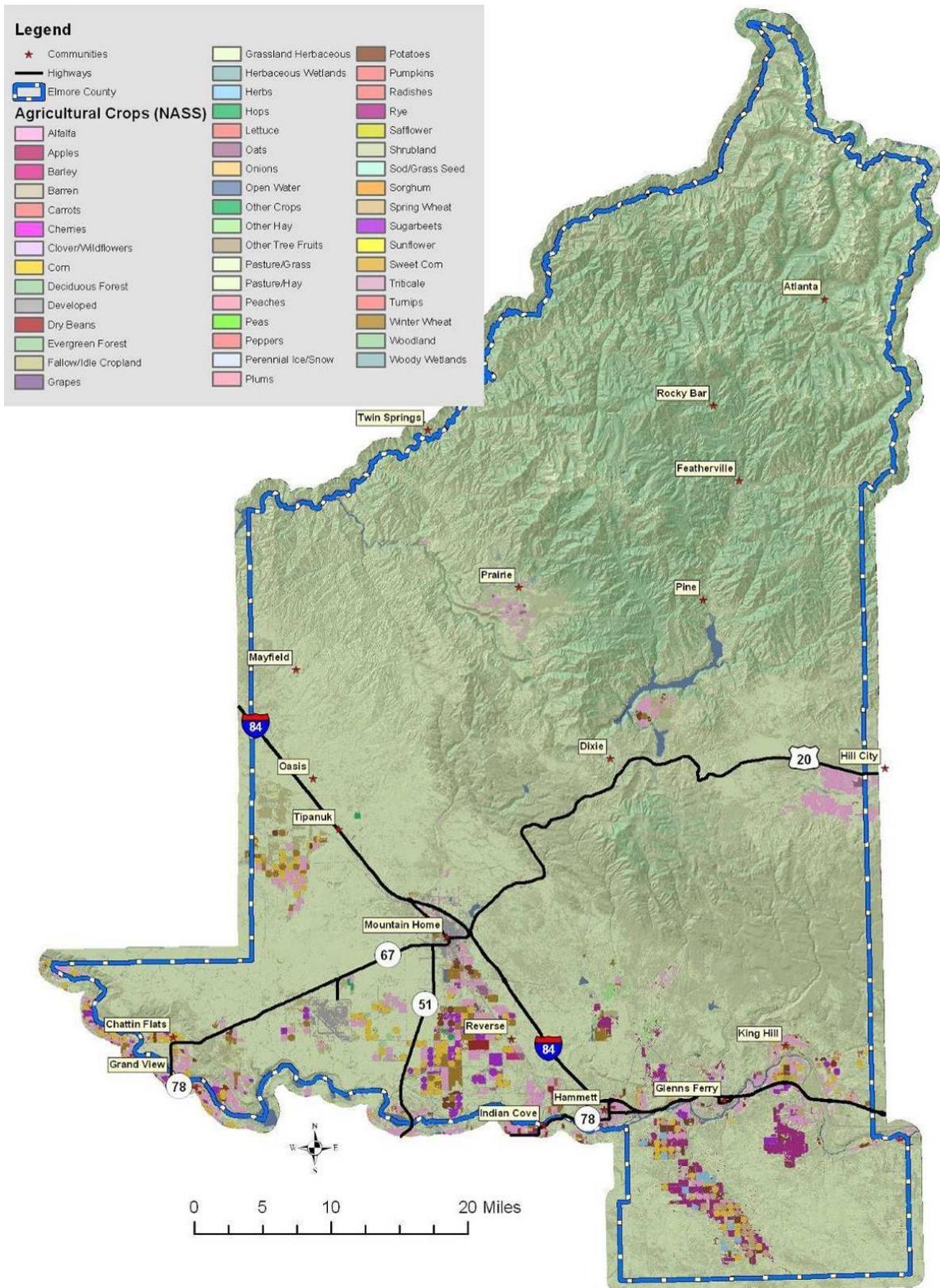


Figure 31) Agricultural map of Elmore County, ID.



Using University of Idaho data, the estimated receipts for the dairy industry in Elmore County would be in excess of \$50 million annually. Estimates are that money generated from dairying would turn over from 3 to 5 times in the local economy, making the dairy industry responsible for \$150-\$250 million of the total economy of the county. Feed expenses for the dairy industry are estimated at \$20.3 million annually. Part of the feed would be produced by local farmers, with the remaining feed being imported. It is estimated that hired labor would be \$5 million annually, herd health expenses (i.e. veterinary, drugs, etc.) nearly \$1.2 million, and the cost of supplies nearly \$2 million. Total annual operating expenses for the dairy industry in Elmore County are estimated to be in excess of \$43.5 million. The sale of Elmore County dairy products is largely outside of the county. As a result of these exports, a large infusion of “new” or “outside” money will be brought into the community that will contribute to the growth of the local economy.

According to USDA/Idaho Forest Service, there is a total of 783,196 forested acres in Elmore County. Primary species of trees harvested in the county are Ponderosa Pine and Douglas fir. The 2000 timber harvest in Elmore County was 11.48 million board feet with a value of \$1,123,675.00, and an additional 1-2 million board feet was cut for firewood. Current statistical data is not currently available, however USDA/IFS reports that these figures are considerably lower today, likely due to forest health degradation.

Wildland Fire Profile (CWPP)

The Wildland Fire Hazard Profile (CWPP) in chapter 4 includes an in-depth assessment of wildland fire risk in Elmore County. This section only provides additional details that are specific to Elmore County and is meant to supplement the Wildland Fire Hazard Profile.

Fuels Assessment

Fuel-types within the county have been grouped into two different plant communities: rangeland and forestland communities. Using the South Fork of the Boise River as the vegetation community divide, grass and shrub fuel types dominate the rolling rangeland that is largely characteristic of the southern half of the county, while forest communities are prominent in the mountainous northern half of the county. Refer to the Landscape Risk Assessments section of the wildfire hazard profile in Chapter 4 for more information about rangeland and forestland communities.

Infrastructure

Excluding larger populated areas in the southern part of the county and sparsely populated roadway corridors in the northern part of the county, most of Elmore County is rural and features very little infrastructure. As most residents of the county are concentrated in small cities and communities, quick response from fire personnel typically prevents any serious damage to Infrastructure as a result of wildfire. Wood utility poles and the Williams Natural Gas Pipeline and the Chevron petroleum pipeline are likely the most vulnerable infrastructure in the county to wildland fire.

Escape

Most communities in the southern part of the county are located just off I-84 which is unlikely to be compromised by wildfire should residents in the I-84 corridor need to evacuate. There are multiple small unincorporated communities in the foothills of southern Elmore County, but the road systems in those



areas are developed enough where most homes and neighborhoods have two ways in and out. The same generalization is true for communities in the northern part of the county. Most homes and small communities are located along main roadways that lead out of the mountains in both directions.

Community Assessment

Refer to the wildland fire profile in Chapter 4 for an assessment of the Elmore County community which includes fire protection jurisdiction maps, a fuels assessment, WUI analysis, and other relevant information.

Potential Mitigation Activities

Homes and structures within and surrounding Elmore County communities vary regarding wildland fire risk. Depending on location, terrain, ingress and egress, and fuel loading all structures range from low to moderate to high risk of loss to wildland fire. Dense tree and shrub fuels pose a moderate to high threat to homes as fire typically spreads quickly through the grasses and burns at relatively high intensities in the brush and forest fuels, especially where declining forest health is a factor. However, many homes are at low risk as fuel reduction and defensible space projects have been performed county-wide to ensure that roads, driveways, and private property are open and accessible to emergency responders.

Unfortunately, there are individual homes that still have a much higher risk to wildland fire loss as non-fire-resistant materials were used to construct many of the homes and most do not have adequate defensible space. Creating defensible space and implementing community wildfire safety programs, such as Firewise, can greatly reduce wildland fire risk in rural communities and reduce the likelihood that individual homes will be destroyed in the event of a wildfire. The amount of fuel modification necessary will depend on the specific attributes of the site. Considering the high spread rates possible in these fuel types, mitigation efforts need to be completed before a wildfire as there is often little time to prepare a home once it becomes apparent that it is in the path of the fire.

Refer to Chapter 6 – Mitigation Strategy for a list of wildland fire mitigation actions for each adopting jurisdiction as well as a list and map of fuels reduction projects that have been identified in the county. Elmore County fuels reduction projects largely concern federal land with various projects taking place on USFS land in the northern part of the county and work for the Paradigm project taking place on BLM land in the southern part of the county.



Local Event History

Firefighters respond to and fight numerous wildland fires in Elmore County every year. Even though fires in the county have exceeded 100,000 acres, local responders handle numerous small fires that may not grow beyond one acre in size. Since many small fires are not recorded in national databases, Table 39 only includes Elmore County wildfires that were at least 100 acres in size and occurred since the 2011 update of this plan.

Table 39) Elmore County wildfires that occurred between 2012 and 2016 that were at least 100 acres in size.

Incident Name	Cause	Year	Total Acres Burned
TWIN SPRINGS	Human	2012	220
TRINITY RIDGE	Human	2012	146,832
MM12 HWY67	Human	2012	178
MM109 I84	Human	2012	816
GRAVEL PIT	Human	2012	497
BENWALK	Natural	2012	29,100
STOUT	Natural	2012	12,768
PONY COMPLEX	Natural	2013	150,000 +
ELK COMPLEX	Natural	2013	130,000 +
LONG TOM	Natural	2013	4,652
DIXIE	Natural	2013	1,500
VILLAGE	Natural	2013	129,730
PIERCE	Natural	2013	1,230
KELLEY	Natural	2013	17,349
LEGGIT	Natural	2013	1,161
LITTLE QUEENS	Human	2013	23,406
CRATER	Human	2013	237
GROOT	Natural	2013	132
MM111 I84	Natural	2013	331
MM99 I84	Natural	2013	320
AIR	Natural	2013	3,309
CANYON	Natural	2013	143
GRAVEL	Natural	2013	266
EAST LOCK	Human	2013	182
MOON	Human	2013	567
MM105 HWY20	Natural	2013	200
MUDD	Natural	2013	135,231
LONGHORN	Natural	2013	591
FLINT MESA	Natural	2013	352
HEAVEN	Natural	2013	676



KING	Human	2014	554
COLD	Natural	2015	1,494
BARRY	Natural	2015	312
20 MILE	Natural	2015	498
MM115 I84	Human	2016	150
KING HILL	Natural	2016	286

Probability of Future Occurrence

Historically, rangelands and forests in Idaho were fire adapted; they burned at regular intervals which ensured ecosystem health and proper function. Depending on the plant community composition, structural configuration, and buildup of plant biomass, wildland fires occurred with varying intensities and extent across the landscape. Shorter return intervals between fire events often resulted in less dramatic changes in plant composition.⁸¹ The fires burned from 1 to 47 years apart, with most at 5- to 20-year intervals.⁸² With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age.⁸³ Native plant communities in this region developed under the influence of fire, and adaptations to fire are evident at the species, community, and ecosystem levels. Fire history data (from fire scars and charcoal deposits) suggest fire has played an important role in shaping the vegetation throughout Elmore County.

Ideally, historical fire data would be used to estimate the annual probability for fires in Elmore County. However, current data are not adequate to make credible calculations because the data for local, state, and federal responsibility areas are not reported by the same criteria. Nevertheless, the data reviewed above provide a general picture of the level of wildland-urban interface fire risk for Elmore County overall. Based on the historical information available, Elmore County has a very high probability of wildland fires occurring on an annual basis. Based on the historical data provided by the U.S. Forest Service and BLM, a fire over 10,000 acres should be expected every other year.

Ignition potential is also high throughout the county. Recreational areas, major roadways, debris burning, and agricultural equipment are typically the most likely human ignition sources. Lightning is also a common source of wildfires in Elmore County. This is supported by the ratings that the planning team

⁸¹ Johnson, C.G. 1998. Vegetation Response after Wildfires in National Forests of Northeastern Oregon. 128 pp.

⁸² Barrett, J.W. 1979. Silviculture of ponderosa pine in the Pacific Northwest: the state of our knowledge. USDA Forest Service, General Technical Report PNW-97. Pacific Northwest Forest and Range Experiment Station, Portland, OR. 106 p.

⁸³ Johnson, C.G.; Clausnitzer, R.R.; Mehringer, P.J.; Oliver, C.D. 1994. Biotic and Abiotic Processes of Eastside Ecosystems: the Effects of Management on Plant and Community Ecology, and on Stand and Landscape Vegetation Dynamics. Gen. Tech. Report PNW-GTR-322. USDA-Forest Service. PNW Research Station. Portland, Oregon. 722pp.



assigned to wildland fire in the county; all representatives of Elmore County and several unincorporated communities consider wildland fire to be of high significance (Table 40).

Table 40) Wildland fire hazard ratings for Elmore County and the unincorporated communities of Featherville, Pine, and Prairie. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Wildland Fire				
Community Rating	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Elmore County	4	4	4	12
Featherville	4	4	4	12
Pine	4	4	4	12
Prairie	4	4	4	12
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Impacts of Wildland Fire

Wildfires are common occurrences in the northern portion of Elmore County, Idaho. This is a mountainous section of the county with heavy forest cover. Many sections of the area contain a heavy fuel load from diseased trees and unharvested timber. Heavy fuel loads lead to high intensity fires that can negatively impacts private property, homes, soil, wildlife habitat, livestock, and wildlife; losses in all categories were incurred as a result of the 2013 Pony and Elk fires. Road closures and evacuation of residents, campers, and other tourist took a heavy toll on ranches and businesses in the area. The US Forest Service (USFS) implemented post-fire rehabilitation through seeding and planting; however, full restoration and ecosystem recovery will likely take decades. Some losses from catastrophic fire may never be recovered as some homes and structures may never be rebuilt and fatalities can permanently scar a community. Additionally, wildfire suppression is costly and places significant financial burdens on the entities responsible for paying for all expenses related to fire.

Community Impacts

Elmore County, like most areas, has sensitive populations, such as elderly residents and children, who may be affected by air quality during a wildland fire. Smoke and particulates can severely degrade air quality, triggering health problems. In areas heavily impacted by smoke, people with breathing problems might need additional care.

Residents with property in the path of wildland fire will likely experience the greatest impacts through loss of structures and/or the value of any timber or agricultural crops on their land. Many fires require an evacuation of nearby residences in order to ensure the safety of citizens. Evacuation procedures require the coordination of law enforcement and fire service organizations and may involve temporary sheltering in extreme cases.



Wildland fires, big and small, are dangerous to both Elmore County residents and emergency response personnel. Wildland fire suppression activities have a very high frequency of injuries, such as heat exhaustion and smoke inhalation, and have caused numerous deaths nationwide. Fire events in Elmore County typically result in a multi-department and agency response effort; thus, coordinating activities and ensuring personnel safety is paramount.

Commerce in Elmore County and the rest of the region may also be interrupted by wildland fires. Transportation corridors will likely be temporarily closed or slowed due to a fire burning in the area. Heavy smoke from a wildfire several miles away could be dense enough to make travel unsafe on roadways. The Williams Natural Gas Pipeline and the Chevron petroleum pipeline may also be at risk to wildland fires. These pipelines run through Oasis and to the north of Mountain Home and Glens Ferry. Fire damage to either of these pipelines could be extremely dangerous and costly. A long-term disruption in the delivery of these products would have significant impacts on almost every economic sector in southern Idaho.

Environmental Impacts

The environmental impacts from a fire are dependent on the vegetation present and the intensity of the fire. Most of the range and forest land present in Elmore County are adapted to wildfire and benefit from periodic, low intensity burns. On the other hand, overcrowded forest conditions or over mature stands of sagebrush with cheatgrass invasion will likely burn much more intensely than occurred historically. These types of fires tend to result in a high rate of vegetative mortality and often have adverse impacts on soil. High intensity fires are also much more dangerous and difficult to suppress.

Elmore County is actively pursuing funds to help with wildland fire mitigation projects and public education programs. While mitigation efforts will significantly improve the probability that a structure will go unharmed during a wildfire, no amount of mitigation will guarantee survival. Refer to Chapter 6: Mitigation Strategy for more information about wildfire mitigation projects that are planned for Elmore County.

Wildland fires conditions and fire behavior can be exacerbated by other natural hazards and environmental damage caused by wildland fires can present danger, post-fire, in the form of other natural hazards. Wildfire danger, both pre-fire and during the fire, can be increased dramatically by severe weather. Drought and extreme temperatures can create exceptionally hot and dry conditions that are conducive to wildland fire ignition. Volatile conditions present a much greater risk regarding ignition sources and rate of spread; small sparks from dragging trailer chains, hot exhaust pipes, and campfires become much greater threats under those conditions which can also promote rapid rates of spread in the event that a fire starts. In addition to drought and extreme temperatures, strong winds and severe storms can cause an active fire to exhibit extreme behavior and present a much greater level of danger to life and property. ***Refer to the following sections for more information about the different relationships between severe weather and wildland fire:***

- ***Chapter 4: Severe Weather Hazard Profile***
- ***Chapter 5: Severe Weather Hazard Risk Assessments in the annex of each adopting jurisdiction.***



Environmental damage resulting from wildland fire can also present danger to life and property in the form of other natural hazards. Extreme fires can damage soils and leave the landscape barren and void of vegetation potentially resulting in landslides, fire debris flows, and flooding. Soil and vegetation play a significant role in controlling runoff produced by heavy precipitation. Soils can become hydrophobic when exposed to extreme temperatures which, in combination with the complete destruction of vegetation, can cause water to be shed from the surface instead of absorbed. When this happens with large volumes of water it can result in landslides, fire debris flows, and flooding. For example, the Trinity Ridge fire created large, barren fire scars that produced landslides at the following locations:

- Castle Creek: Private property was damaged and the road along the dam was closed.
- Cow Creek: Slides occurred all along the road, below the dam, to Cow Creek which damaged culverts and closed the road in certain places.
- Prairie: Landslides occurred along Cow Creek road near Prairie, possibly closing sections.

Some risk associated with these types of impacts can be mitigation through post-fire recovery efforts that focus on planting/reforestation and other types of slope stabilization. ***Refer to the following sections for more information about the different relationships between landslides, floods, and wildland fire:***

- ***Chapter 4: Landslide Hazard Profile***
- ***Chapter 4: Flood Hazard Profile***
- ***Chapter 5: Landslide Hazard Risk Assessments in the annex of each adopting jurisdiction.***
- ***Chapter 5: Flood Hazard Risk Assessments in the annex of each adopting jurisdiction.***

Value of Resources at Risk

It is difficult to estimate potential losses in Elmore County caused by wildland fire due to the unpredictability of wildfire behavior and the nature of ignition sources. It is impossible to forecast the path a wildfire will take and what type of assets and resources, manmade and ecological, will be at risk. Thus, no value estimates were made for this hazard.

Typically, structures located in forested areas without an adequate defensible space or fire-resistant landscaping have the highest risk of loss. Nevertheless, homes and other structures and infrastructure located in the grasslands or agricultural regions are not without wildfire risk. Grass fires are often the most dangerous due to high rates of spread. Fires in this fuel type are considered somewhat easier to suppress given the appropriate resources, but they can also be the most destructive.



Glenns Ferry Annex

Table 41) Natural hazard ratings for Glenns Ferry, ID. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Glenns Ferry				
Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Flood	2	2	2	6
Landslide	1	1	1	3
Earthquake	1	1	1	3
Severe Weather	2	3	3	8
Wildland Fire	1	1	1	3
Terrorism/Civil Unrest	1	1	1	3
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Flood Profile

Glenns Ferry is located on the banks of the Snake River in the southeast corner of the county. Interstate 84 runs along the northern side of the city with the Snake River defining the southern boundary. The Snake River and its tributaries, particularly Little Canyon Creek, are the main sources of flooding in Glenns Ferry. Little Canyon Creek flows southward, from the eastern side of Bennett Mountain where it originates, to Glenns Ferry where it turns west and flows into the Snake River.

Floods in the area are the result of spring runoff, rain-on-snow events, and, to a lesser extent, localized thunderstorms. Rain-on-snow events that affect Glenns Ferry occur when significant snowpack exists within the hydrologic watershed surrounding Glenns Ferry. The boundaries of the watersheds are relatively large, draining the nearby agricultural fields, rangeland, and forested watersheds. Warm rains falling on the snowpack result in a significantly increased rate of snowmelt. Often this melting occurs while the ground is frozen, and the water cannot be absorbed into the soil resulting in increased overland flows. Floodwaters recede slowly as rain-on-snow weather events tend to last for several days.

Thunderstorms can also affect the community. These events are usually localized, but still can have a significant impact. Storms resulting in intense rain fall often occur rapidly and overwhelm the carrying capacity of the nearby streams. The duration of these storms usually lasts only a matter of hours, but the affects can be spread throughout the impact areas of the town site.

There are alternative routes in and around Glenns Ferry that provide for access, but the main routes are Interstate 84 and its associated business loop. The Interstate 84 Bridge over the Snake River is designed to handle 500-year flood events. Roads, bridges, municipal water supplies, and sewer systems would be



the most affected infrastructure in Glens Ferry during flood events. Historically, there has been little long-term flood damage to road systems in the Glens Ferry-area.

Most residents in Glens Ferry are connected to the municipal water system. City water storage tanks are located outside of the floodplain. The city draws its drinking water directly from the Snake River from a newer water plant that was dedicated in 2004. The city’s ability to provide clean drinking water during flood events may be compromised in several ways. First, increased turbidity in the Snake River may reduce or stop operation of the water treatment facility. Second, the water treatment plant is located on the banks of the Snake River and may be compromised by rising floodwaters. A third possibility exists in that during flood events the local electrical power supply may be shut down. The water treatment plant does not have alternative power and cannot provide drinking water without electrical power.

Little Canyon Creek can be diverted upstream from Glens Ferry to Trail and Blair Reservoir (off-stream storage) during major flood events. However, the reservoirs cannot be used to mitigation a 100-year flood because the anticipated volume of water would likely wash out the diversion gates. Even for smaller floods, it is likely that the reservoir would reach capacity and water could not be diverted at the time of peak discharge.

After the 1964 flood, the U.S. Army Corp of Engineers constructed levees between U.S. Highway 30 and the railroad tracks on both sides of Little Canyon Creek in Glens Ferry. There is no maintenance program for these levees, and they are not considered adequate for 100-year flood protection.

Local Event History

The following table includes significant flood events for Elmore County (Table 42). The flood events of 1964, 1971, 1986, 1998, and 2011 had significant impacts on the City of Glens Ferry.

Table 42) Flood event history for Elmore County, ID. Data is from the NOAA National Centers for Environmental Information.

Date	Event	Description
Late December 1964	Flood, Federal Declaration #186	Warm weather combined with heavy rains and melting snow causing flooding along the Payette, Big Wood, Little Wood, Portneuf, Clearwater, and Boise River drainages causing approximately \$21,000,000 in damages. Highway 21 and 15, US 95N and 30E were closed. Over 100 homes were damaged, numerous bridges were washed out, and thousands of acres of farmlands were flooded. Two deaths were attributed to the flood. A state of emergency was declared. Approximately 64 people in the Atlanta logging camps were isolated due to road washouts. Telephone service to 190 people in Glens Ferry and Hammett was cut because of a wet cable.
January 17, 1971	Flooding	Heavy rain and snow over four days caused flooding in southwest Idaho. Streets and basements in Mountain Home were flooded with 10" of water.



February 1986	Flooding	A warming trend melted low elevation snowpack, triggering flooding and mudslides throughout western Idaho. Over \$75,000 was spent on flood control efforts in this area. The dam at Fraser Reservoir broke, washing out roads and telephone lines including a 50' long x 4' deep section of State Highway 67 and another 650' section of road was damaged by Canyon Creek floodwaters. During this event, the Mountain Home Reservoir overtopped which caused severe flooding to areas in Mountain Home. Damage estimates in Mountain Home alone topped \$2.7 million. A State Disaster Declaration was issued in February 1986.
May 26, 1991	Kirby Dam Failure	The collapse of the Kirby dam near Atlanta cut off electrical power to residents and blocked the access bridge to Atlanta. Mine tailings containing arsenic, mercury and cadmium were released into the Middle Fork of the Boise River. A state disaster declaration was issued 9/14/90.
December 31, 1996- January 7, 1997	Flooding, Federal Declaration #1154	Warm temperatures and heavy rain fall caused record flooding and mudslides in the Weiser, Payette and Salmon River drainages of southwestern Idaho. The community of South Banks was condemned because of extensive slide damage. Over 400 miles of roads and several railroad lines were blocked or destroyed, stranding over 10,000 holiday travelers in western Idaho. Rivers were "running like chocolate," carrying huge trees, mud and boulders; the Snake River at Hells Canyon Dam crested at 101,728 cfs January 1, nearly 30,000 cfs over its previous record level on 2/23/82. Governor Batt declared 13 counties a disaster: Gem, Adams, Washington, Idaho, Clearwater, Valley, Payette, Elmore, Latah, Boundary, Bonner, Shoshone and Boise. A Federal disaster was declared on January 4, 1997 with a total of \$65,000,000.00 damages reported.
2003-2005	Flash Flooding	The road to Atlanta along the Middle Fork of the Boise River was washed out 3 times from 2003 through 2005 due to flash floods and debris flows originating on water repellent soils in the 2003 Hot Creek Fire Burn scar. Vegetation has returned to the burn area and the soil is not as water repellent as it was right after the fire
January 2008	Flooding	Repetitive maintenance costs for annual flooding events totaled approximately \$4,600.
June 2009	Flooding	Flooding within the City of Mountain Home in June of 2009 caused multiple road closures. There were 48 parcels without access resulting in over \$20,000 in detour costs. Damages to structures, not including contents, were approximated at \$523,289. The cost of emergency response to this event was approximately \$20,335
2011	Canal Failure	Occurred in Glens Ferry, flooded homes, basements, and streets; damaged a section of main railroad tracks.



May 6- June 16, 2017

Flooding, Landslides,
Mudslides, Federal
Declaration #4310

As in March and April, winter storm melt from record winter snowfall led to flooding in southeast Idaho, especially in the central mountains and along the Big Wood River. Pine Valley flooded within Elmore County. Field flooding caused agricultural damage and many roads and facilities were damaged from the floods as well. The flooded fields led to significant agriculture damage. Many people were without power in the valley. Damage in the county included farms, homes, businesses, roadways, bridges, infrastructure, preserves, and levees. On August 27, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The State requested over \$3.8 million in public assistance. Overall, the State had approximately \$10.3 million in damages from this event.

Probability of Future Occurrence

The probability of flood events in Glens Ferry is high. Flood impacts are mainly limited to disruption of road travel and limited localized flooding of structures, equipment, and businesses. Low magnitude flood events can be expected several times each year. However, flat topography and drainage infrastructure dampen the impacts of these events which usually only amount to minor and temporary traffic issues. Larger magnitude and high impact flood events have occurred but are not likely in any given year. These types of flood events have the highest probability of occurrence in the winter or early spring in Glens Ferry as a result of rain-on-snow events or rapid runoff. Minor flash floods are also common on Little Canyon Creek and several of the small tributaries feeding the main channel near the community.

Impacts of Flood Events

The potential impacts from flooding in Glens Ferry are very similar to the impacts described for Elmore County as a whole. First responders and other volunteers aiding with emergency flood control or cleanup efforts are potentially at risk of injury due to accidents or exposure to contaminated water. Although unlikely, the city's water supply could be affected by contaminated flood waters in the Snake River.

The major impacts from flooding in Glens Ferry are typically concentrated in commercial and residential areas and select streets become inundated. Flooding on the Snake River may affect some structures within city limits with more structures likely to be flooded by the overtopping of Little Canyon Creek (Figure 32) There are numerous bridge and culvert crossings over Little Canyon Creek; they are found both within and outside of city limits.

The availability of food and other supplies is not likely to be impacted or interrupted by a flood event. Furthermore, the delivery of community services such as postal services, health care, law enforcement, and emergency response is also not likely to be impacted by flood events in Glens Ferry except under extreme (100 year plus floods) circumstances. While individual homes and businesses may incur damages as a result of a flood, the economy of the community will not be impacted by this type of hazard.

Environmental damages resulting from a flood event are also unlikely. Scouring and erosion along the banks of Little Canyon Creek in the Glens Ferry area is possible, but due to grass and other vegetation on the stream banks, these impacts will most likely be minimal and localized. Contamination of the riparian area by floodwaters containing chemicals or other pollutants is also a possibility.

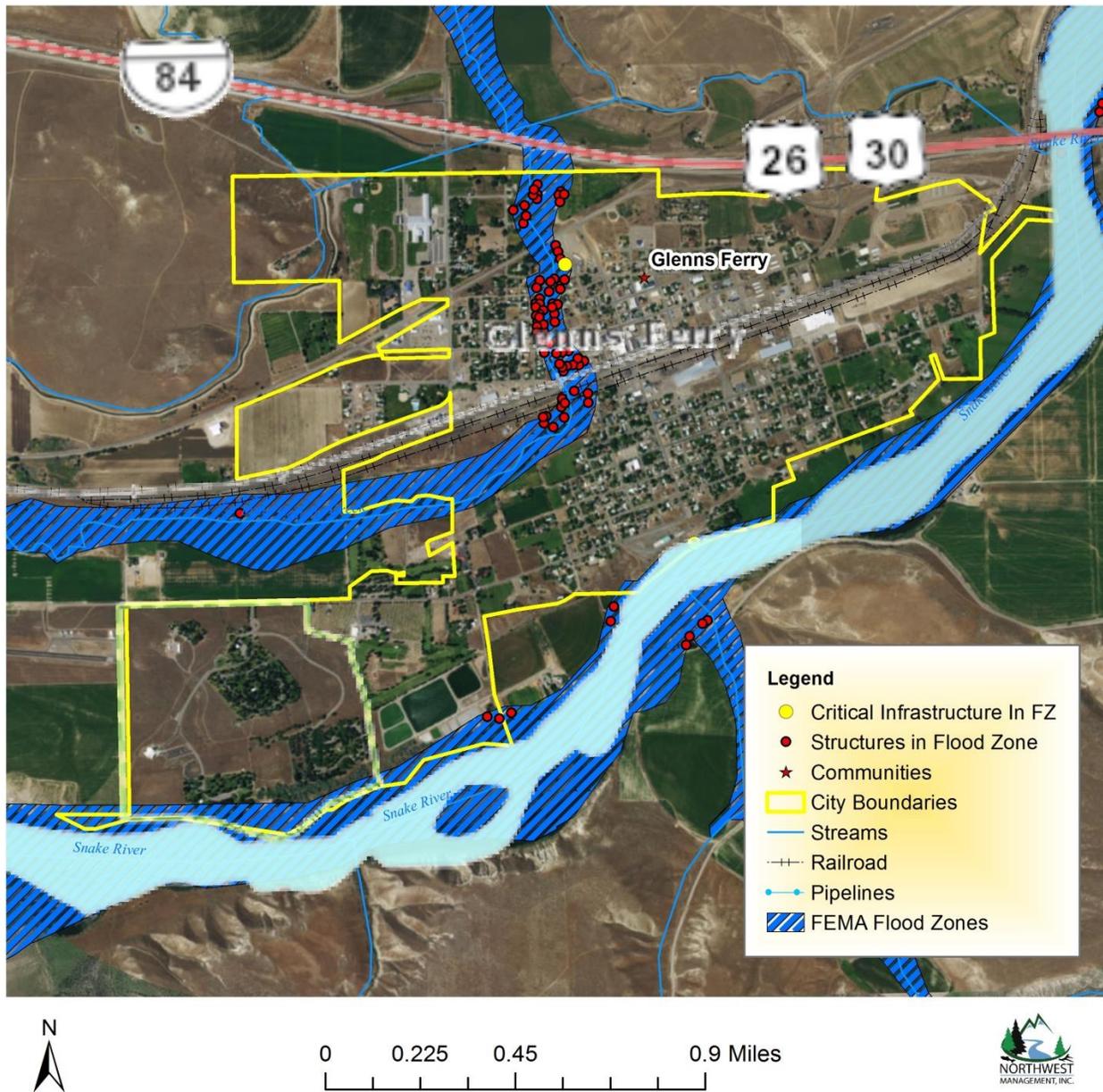


Figure 32) National Flood Insurance Program map for the Glenns Ferry in Elmore County, ID.

Value of Resources at Risk

There are approximately 101 parcels and 55 structures within the FEMA-identified floodplains (100- and 500-year) in Glenns Ferry, yielding a total structure value of more than \$2.8 million. The structural value is based on the County’s assessed value of property improvements and does not reflect the replacement cost of a structure. The average damage to structures was estimated based on the parcel’s location as either completely within or out of the flood zone. The estimated value of contents is ½ the value of the improvements equating to an additional \$1.4 million in potential losses. However, damage will most likely not be equally distributed between buildings based on building materials, building location, and flood location. These estimates only provide a basic approximation.



Critical infrastructure located within the identified floodplain for Glens Ferry includes the Boat Ramp and the Glens Ferry Highway District shop. Currently, there are no repetitive loss properties in Glens Ferry.

Earthquake Profile

Historically, damaging earthquakes have occurred in proximity to Elmore County. However, damage from more recent earthquakes was localized in mountainous communities closer to the epicenter. Damage from the 1983 Borah Peak earthquake was concentrated in the area of Challis and Makay and two deaths were reported in Challis. Communities in the southern part of Elmore County likely only felt shaking from the Borah Peak earthquake; no damage was reported for Glens Ferry. Glens Ferry does not have any differing issues or levels of risk associated with this hazard than Elmore County as a whole.

Local Event History

There are no recorded accounts of Glens Ferry being significantly impacted by an earthquake; however, some minimal shaking has been felt as a result of larger earthquakes elsewhere. Glens Ferry does not have any differing issues or levels of risk associated with this hazard than Elmore County as a whole. Table 43 lists several earthquakes with epicenters in southern Idaho that may have affected Elmore County.

Table 43) Historic earthquakes with epicenters in southern Idaho.⁸⁴

Date	Event	Description
Nov 11, 1905	Near Shoshone, Lincoln	Cracks formed in the walls of the courthouse and schools in Shoshone, and plaster fell from ceilings in almost all the buildings. Felt from Salt Lake City, Utah to Baker, Oregon.
Jan 27, 1963	Clayton, Custer County,	Plaster and windows cracked at Clayton, northeast of Boise. Large boulders rolled down a hill at Livingston Camp, about 22 km south of Clayton. Several aftershocks were felt in the area.
October 14, 1982	Soda Springs Area	In the Soda Springs area, about 45 km southeast of Pocatello, bricks fell from chimneys and cracks formed in the foundation of a house and interior drywalls. Also felt in Utah and Wyoming.
October 28, 1983	Borah Peak Earthquake	The Borah Peak earthquake is the largest ever recorded in Idaho - both in terms of magnitude and in amount of property damage. It caused two deaths in Challis, about 200 km northeast of Boise, and an estimated \$12.5 million in damage in the Challis-Mackay area. A maximum MM intensity IX was assigned to this earthquake on the basis of surface faulting. Vibrational damage to structures was assigned intensities in the VI to VII range.

⁸⁴ Idaho Geological Survey. Historical Earthquakes in Idaho. 2004. Available online at: <https://www.idahogeology.org/historical-earthquakes-idaho>, accessed June 2019

Probability of Future Occurrence

Although infrequent, an earthquake could happen at any time and Glens Ferry could be affected. Ground shaking is the most likely impact from an earthquake; the city has 10% chance of exceeding a 5-6% pga in the next 50 years⁸⁵ (Figure 24). Overall, risk associated with earthquakes is no different for Glens Ferry as it is for the county. Refer to the Elmore County Annex for more information about earthquakes.

Impacts of Earthquake Events

Unreinforced masonry (URM) structures and unreinforced chimneys of homes will likely be damaged in the event of an earthquake. There are several publicly accessible unreinforced masonry structures in Glens Ferry in addition to the numerous homes and other buildings throughout the city with unreinforced chimneys. Damaged or collapsed chimneys could result in the secondary hazard of fire. Nonstructural damage caused by falling and swinging objects may be considerable after any magnitude earthquake. Damage to some older, more fragile bridges and land failure causing minor slides along roadways may isolate some residents.

Several schools and other intensely used un-reinforced masonry buildings have undergone seismic retrofitting to help decrease their risk of experiencing costly structural damage as well as their potential to cause injury or death to occupants or nearby pedestrians. Seismic retrofit of historic buildings is achieved through the reinforcement of structural elements. Such reinforcement may have included anchored ties, reinforced mortar joints, braced frames, bond beams, moment-resisting frames, shear walls, and horizontal diaphragms. Although retrofitting at risk buildings decreases the potential hazard they pose during an earthquake, it is not an easy fix, and damage or injury could still occur.

Value of Resources at Risk

Given the locations and impacts of historical earthquakes in southern Idaho, it seems reasonable to assume that damages in Glens Ferry resulting from ground shaking would be minimal. Although a HAZUS earthquake analysis could not be run specifically for Glens Ferry, a Level 1 analysis was performed at the county-level. Refer to the earthquake section in the Elmore County Annex for more information about the value of structures and infrastructure at risk to earthquakes in the county.

There are approximately 8-10 un-reinforced masonry buildings within the city limits of Glens Ferry. These structures were built prior to the inclusion of articles for seismic stability in the Uniform Building Codes in 1972. The number and value of unreinforced masonry homes or homes with masonry chimneys in Glens Ferry is unknown but estimated to include at least 200 buildings.

Landslide Profile

The City of Glens Ferry has very little risk to landslides as the surrounding terrain is largely flat and there are few areas, if any, in Glens Ferry that have been heavily excavated. Small slumps may occur along some roadways or irrigation canals, but these are not likely to cause significant damage to the community.

⁸⁵ USGS. 2008 United States National Seismic Hazard Maps. U.S. Geological Survey. U.S. Department of Interior. Available online at <http://earthquake.usgs.gov/hazards/products/conterminous/2008/>. October 2009.



Small slumps may occur along some roadways or in irrigation canals, but these are not likely to cause significant damage to the community.

Local Event History

Historically, no significant landslides or land movement events have occurred within the city limits of Glenns Ferry. Refer to the Landslide section of the Elmore County Annex for more information.

Probability of Future Occurrence

The city of Glenns Ferry has a very low probability of experiencing damaging landslides. The few slopes in and around the community are generally less than 10%. While small, low angle slumps may occur on eyebrows of the surrounding rolling hills, these will be infrequent and likely the result of water saturation or a major disturbance such as an earthquake or road construction.

Impacts of Landslide Events

Glenns Ferry may be indirectly affected by landslides that adversely affect a variety of resources such as water supplies, fisheries, sewage disposal systems, forests, dams, and roadways upstream of the community. Water availability, quantity, and quality can be affected by landslides and could have a very significant economic impact on Glenns Ferry. The loss or redistribution of water would affect agricultural crops grown in certain areas, ranching activities, and personal and municipal wells.

Value of Resources at Risk

There are no structures or infrastructure directly at risk from landslides within the city of Glenns Ferry. The cost of cleanup and repairs of roadways is difficult to estimate due to the variable circumstances with each incident including size of the slide, proximity to a State or County shop, and whether the slide occurred on the cut slope or the fill slope. Other factors that could affect the cost of the damage may include culverts, streams, and removal of debris. This type of information is impossible to anticipate; thus, no repair costs for damaged roadways have been estimated.

Severe Weather Profile

The City of Glenns Ferry does not have any differing levels of risk associated with this hazard than Elmore County as a whole. Given the year-round potential for severe weather and magnitude of historic events in the region, severe weather can have a high impact on Glenns Ferry. Although the impacts from most events will be minor, it is reasonable to expect moderate to severe levels of damage from severe weather every couple of years or multiple times over the course of a decade. Moderate to severe damage can result from winter storms and flooding, thunderstorms and lightning, and severe winds.

Local Event History

Weather events are not specifically listed for Glenns Ferry in the NCEM Storm Events Database. Refer to the severe weather section in the Elmore County annex for a summary of historic severe weather events that have affected Elmore County (Table 34 and Table 35).



Probability of Future Occurrence

Given the frequency of severe weather in the region, the probability of a severe weather event occurring in Glenns Ferry annually is very high. However, the probability of future occurrence for an event that causes moderate to severe damage is much lower. These events may only occur once to a few times every decade and typically result in severe flooding (rain-on-snow events) or intense wildland fire behavior (lightning strike fires).

Impacts of Severe Weather Events

Strong winds, heavy precipitation, and lightning are the most common types of severe weather that affect Glenns Ferry, but the impacts of these events on the community are usually minimal. Refer to the Severe Weather section of the Elmore County Annex for more information about the general impacts of severe weather.

Value of Resources at Risk

Winter Storms

It is difficult to estimate the cost of potential winter storm damages to structures and the economy in Glenns Ferry. Damage to roofs by heavy snow accumulations depends on the moisture content of the snow and the structural characteristics of the buildings. In general, snow in this region tends to have low moisture content because of the low temperatures and arid environment. Additionally, snow rarely accumulates for long periods of time due to regular wind events. Frozen water pipes are the most common damage to residential and business structures. Older homes tend to be at a higher risk to frozen water pipes than newer ones. Snow plowing within the city limits road network is accomplished by the city's public works department. Private landowners are responsible for maintaining their own driveways or other private roads.

Utility supplies can be impacted as a result of severe weather; it is not uncommon for power failures to occur throughout the region. This has a two-fold impact on residents as not only is power cut to homes and businesses, but primary heating is lost for many residents. Gas furnaces and wood stoves supplement electrical heating, but special needs populations and people with physical limitations are at a disadvantage when utilizing a wood-burning stove for heating. Emergency response to severe winter storms includes site visits by police or fire department personnel, opening of shelters, or assistance with shopping, medical attention, and communications.

Economic losses and gains are associated with severe winter storms. Severe winter weather and snow events may provide economic benefits for select local business, particularly those concerned with snow removal and winter recreation or tourism. Severe storms losses may be far greater in some cases than economic gains. As a smaller community, some residents of Glenns Ferry may commute outside of city limits for employment. Employees may not be able to travel to work for several days and businesses may not open. Damages are seen in the form of structural repair and loss of economic activity. Elmore County schools are occasionally closed during and right after a severe winter storm because of cold temperatures and snow-covered roads.



Drought

Other than the possibility of domestic and municipal water shortages it is unlikely that drought will have any major *direct* impacts on the City of Glenns Ferry, putting very few resources at risk. Alternatively, drought could have *indirect* impacts on the city. Residents who own agricultural operations outside of the city could be negatively affected by water shortages. However, many fields along the Snake River are irrigated which will reduce the severity of any immediate impacts from drought on local agriculture. Extended periods of drought also increase the risk of fire around Glenns Ferry. It is highly unlikely that the city will be directly affected by the fire because of the high number of natural and human-made fuel breaks in and around the city, but the residents could be affected by smoke and other secondary impacts.

Because the impacts from drought are difficult to identify, measure, and quantify, a total value of resources at risk could not be calculated.

Thunderstorms

Thunderstorms are not likely to be severe enough in Glenns Ferry to cause significant damages. Flooding resulting from a thunderstorm is likely to have the greatest impact on a community like Glenns Ferry. Damage would likely be concentrated or localized to a specific area making it difficult to place a value on potential damage.

Hail

Although the financial impacts of hail can be substantial and extended, accurately quantifying these impacts is problematic. Hail typically causes direct losses to structures and other personal property within Glenns Ferry. The most significant losses are most clearly seen in the agriculture sectors of the economy. Potential losses to agriculture can be disastrous. Crop damage from hail will also be different depending on the time of year and the type of crop. Most farmers carry insurance on their crops to help mitigate the potential financial loss resulting from a localized hailstorm. Homeowners in Glenns Ferry rarely incur severe damage to structures (roofs); however, hail damage to vehicles is not uncommon. The damage to vehicles is difficult to estimate because the number of vehicles impacted by a specific ice storm is unknown. Additionally, most hail damage records are kept by various insurance agencies.

Severe Wind & Tornadoes

It is difficult to estimate potential losses in Glenns Ferry due to windstorms and tornadoes. Construction throughout the county has been implemented in the presence of high wind events, and therefore, the community is at a higher level of preparedness to high wind events than many other areas experiencing lower average wind speeds.

We have estimated losses based on wind and tornado damage as follows:

- 3% of the buildings damaged causing 50% of value loss (loss could be from downed or damaged trees, damaged outbuildings, damaged fences/poles, damage to siding, damaged landscaping etc.)



- 5% of the buildings received damage to roof (requiring replacement of roof equaling \$3,000)

Damages associated with sensitive receptor irritation have not been estimated. We have also not estimated the potential for a large-scale wildfire event associated with high winds. Based on American Community Survey estimates, there are 631 housing units in Glenns Ferry with a total value of approximately \$65 million. Using the criteria outlined above an estimate of the impact of high winds in Glenns Ferry has been made. The potential wind and tornado damage to all buildings is estimated at approximately \$976,000. The estimated damage to roofs is approximately \$95,000.

Power failure often accompanies severe storms. Prolonged failure, especially during cold winter temperatures can have disastrous effects. All communities should be prepared to deal with power failures. Community shelters equipped with alternative power sources will help residents stay warm and prepare food. A community-based system for monitoring and assisting elderly or disabled residents should also be developed. All households should maintain survival kits that include warm blankets, flashlights, extra batteries, nonperishable food items, and clean drinking water.

Extended Power Outage Profile

The city of Glenns Ferry does not have any differing levels of risk associated with this hazard than Elmore County as a whole. Extended power outages will affect Glenns Ferry's ability to provide government and other services such as trash pickup, streetlights, municipal water, law enforcement, and fire and medical services. Glenns Ferry can provide potable water for 1-3 days without electricity to run pumps. The city has access to a portable generator to replenish storage tanks, power sewer treatment facilities, and provide other basic and emergency services.

Local Event History

A list of power-outage events that have affected Glenns Ferry is either unavailable or does not exist. Refer to Table 38 in the Power-Outage section in the Elmore County annex to see a list of regional power-outages that likely affected Elmore County.

Probability of Future Occurrence

The probability of a short-term power outages in Glenns Ferry is very high; they will continue to happen frequently as a result of severe weather. The probability of a long-term outage (three days or more) affecting Glenns Ferry in the future is very low. Response from Idaho Power is usually immediate, meaning that long-term outages are usually only the result of severe weather events that cause significant damage.

Impacts of Extended Power Outage Events

The impacts of power outages on Glenns Ferry are usually minimal and are the same as those described for Elmore County as a whole. Refer to the Power Outage section of the Elmore County Annex for more information about the impacts that a power outage may have on Glenns Ferry.



Value of Resources at Risk

There is no reliable estimate regarding the total expense and losses that power outages create within Glenns Ferry, but these events are costly. Power outages disrupt emergency functions and commerce, as well as personal lives. Some of these impacts can be quantitatively measured (e.g., lost business) while others, such as general disruption to resident activity, can only be described qualitatively.

Crop Damage Profile

The City of Glenns Ferry does not have any differing levels of risk associated with this hazard than Elmore County as a whole.

Local Event History

As individual events are not recorded and listed chronologically, crop failure is best summarized in terms of financial losses. Refer to the Local Event History section in the Elmore County Crop Damage Profile for a summary of financial losses related to crop failure or crop damage in the county.

Probability of Future Occurrence

Just like the county, the probability of Glenns Ferry experiencing some mass crop failure on an annual basis is low due to the availability of irrigation and the use of pest control products. Although there are very few agricultural operations within the city limits of Glenns Ferry, there are numerous operations to the east and west of the city. A crop failure could have significant economic impacts on Glenns Ferry as there are strong economic ties to those nearby operations.

Impacts of Crop Failure Events

Many of the local agricultural producers either live, work, or spend money in Glenns Ferry; thus, a poor crop in any given year may have some effect on the economic stability of the community.

Value of Resources at Risk

There are very few crops grown or livestock within the city limits of Glenns Ferry; thus, there is little value at risk.

Wildland Fire Profile (CWPP)

The Wildland Fire Hazard Profile (CWPP) in chapter 4 includes an in-depth assessment of wildland fire risk in Elmore County. This section only provides additional details that are specific to Elmore County and is meant to supplement the Wildland Fire Hazard Profile.

Fuels Assessment

Glenns Ferry lies on the banks of the Snake River south of I-84. Most of the land surrounding Glenns Ferry, and other communities along the same stretch of the Snake, is pasture or irrigated farmland. The wildland fuels that are present around Glenns Ferry are discontinuous and pose little direct threat to structures or infrastructure within the community. The overall threat to Glenns Ferry from wildland fire is low.



North of the city are vast expanses of rangeland dominated by grass and sagebrush with a significant component of invasive grasses. Much of the land to the north is managed by the BLM. The Snake River Valley is frequently subjected to high winds. Light, flashy rangeland fuels, in combination with high winds, can facilitate devastating wildfires that can quickly burn thousands of acres. Although these fires pose little direct threat to Glenns Ferry, they can threaten homes, structures, farms, and ranches outside of city limits that have significant economic ties to Glenns Ferry.

Infrastructure

High-tension power lines are located north of both Hammett and Glenns Ferry. These lines could be compromised in the event of a rangeland fire, although the potential for such an event is low.

Escape

There are multiple escape routes for most homeowners, visitors, and ranches on the outskirts of Glenns Ferry. Considering the location, construction type, and capacity of primary routes in and out of the city (I-84, Old U.S. 30/Frontage Road) it is unlikely that the main travel routes would be compromised as a result of a wildfire. However, residents living outside of the city should be familiar with the roads around their homes.

Community Risk Assessment

The Glenns Ferry City Fire Department and the King Hill Rural Fire District provide structural fire protection for the City of Glenns Ferry and Community of King Hill, respectively. The Boise District BLM staffs an additional wildland engine at Hammett. In combination, irrigated agricultural operations, the geographical position of the jurisdictions, and the presence of light, scattered fuels result in a low risk of structure damage or casualties in the event of a wildfire. Most homes are buffered by either irrigated agricultural land, pastureland, green grass, or engineered surfaces.

The greatest ignition potential in the vicinity of Glenns Ferry is associated with the roads and travel corridors. Also adding to the potential are other human ignition sources such as fireworks, debris burning, target shooting, and welding.

Potential Mitigation Activities

In addition to the mitigation activities applicable to all communities, these communities should consider improving drafting sites along the Snake River. This may reduce the turn-around time for reloading water tenders, thereby, increasing firefighting effectiveness.

Local Event History

The City of Glenns Ferry has not been directly threatened by wildfire since the last update of this plan. In 2012, the Benwalk Fire forced the temporary closure of Highway 84 between Glenns Ferry and Mountain Home but did not threaten Glenns Ferry directly.

Probability of Future Occurrence

The probability of a wildland fire threatening Glenns Ferry on an annual basis is moderate. Homes and other structures located in the scablands or agricultural fields within or surrounding the community have



a high wildfire risk. Rangeland or grass fires are often the most dangerous due to high rates of spread. Fires in this fuel type are considered somewhat easier to suppress given the appropriate resources, but they can also be the most destructive. Homes along the perimeter of the community would have the highest risk due to their adjacency to flashy fuels.

Impacts of Wildland Fire Events

The potential impacts from a wildfire in Glenns Ferry are very similar to the impacts described for Elmore County as a whole. All fires pose a significant safety risk to residents and emergency service personnel. Individual structures, property, and livelihoods could be severely damaged or lost as a result of a fire; however, the community is not likely to suffer severe or long-term economic losses.

A fire in the grasslands surrounding the community may benefit the ecological environment as nutrients are recycled into the soil. Generally, grass and forbs are rejuvenated by a low intensity fire and grow back quickly; however, heavy rains immediately after a fire could cause erosion.

Smoke from a nearby wildland fire may impact sensitive populations within the community by degrading air quality. Smoke and/or flames will also impact transportation corridors connecting Glenns Ferry to other communities; thus, travel and commerce may be interrupted.

Refer to the Elmore County Wildland Fire Profile for a more detailed discussion of wildland fire impacts, including impacts from secondary hazards that may exacerbate fire conditions (e.g. severe weather) in wildland fuels as well as secondary hazards that may become an increased threat because of wildfire damage (e.g. flooding, landslides, mudflows).

Value of Resources at Risk

It is difficult to estimate potential losses in Glenns Ferry caused by wildland fire due to the unpredictability of wildfire behavior and the nature of ignition sources. It is unlikely that more than a few structures or other properties within the city limits of Glenns Ferry would be lost or damaged by a wildland fire; however, residents in the immediate vicinity may be directly impacted. It is impossible to forecast the path a wildfire will take and what type of assets and resources, manmade and ecological, will be at risk. Thus, no value estimates were made for this hazard.



Mountain Home Annex

Table 44) Natural hazard ratings for Mountain Home, ID. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Mountain Home				
Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Flood	2	2	2	6
Landslide	1	1	1	3
Earthquake	1	1	1	3
Severe Weather	2	3	3	8
Wildland Fire	1	1	1	3
Terrorism/Civil Unrest	1	1	1	3
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Flood Profile

National Flood Insurance Policy statistics for Mountain Home can be found at the beginning of the beginning of the Elmore County Annex.

Mountain Home, the largest community in Elmore County, is located along Interstate 84 about twelve miles north of the Snake River. The primary flood potential in this area stems from several streams draining from the Danskin Mountains into the Snake River Basin, particularly Rattlesnake Creek and Canyon Creek. Rattlesnake Creek flows towards Mountain Home from the north and feeds the Mountain Home Reservoir. In 1986, this excess flow from Rattlesnake Creek caused the Mountain Home Reservoir to overtop and flood the southeastern portion of the city. Much of the Canyon Creek watershed drains into Long Tom Reservoir and, depending on irrigation use, eventually flows into the CJ Strike Reservoir. These reservoirs, built for irrigation storage, may provide some peak flow attenuation, but they are not considered for NFIP purposes. The Snake River itself does not pose any flood risk to the city.

The Rattlesnake Creek and Canyon Creek tributaries drain several hundred square miles. Floods in these watersheds are the result of rapid spring runoff or rain-on-snow events. Warm rains falling on the snowpack result in a significantly increased rate of snowmelt. Often, the melting occurs when the ground is frozen and the water cannot be absorbed fast enough, resulting in increased overland flows. Flood waters recede slowly as these weather events tend to last for several days.

Thunderstorms can also affect the community. These events are usually localized, but still can have a significant impact. Storms resulting in intense rain fall often occur rapidly and overwhelm the carrying

capacity of the nearby streams. The duration of these storms usually lasts only a matter of hours, but the affects can be spread throughout the impact areas of the town site.

Interstate 84 and its associated business loop is the primary access to and from the Mountain Home area. U.S. Highway 20 heading north and State Routes 51 and 67 to the south provide additional access. There are also numerous secondary routes throughout the area. U.S. Highway 20, which leads to Dixie and eventually several other communities in neighboring Camas County, parallels Rattlesnake Creek for several miles. Not only does this increase the risk of potential slides, but the numerous bridge and culvert crossings could also become compromised during high water events. Historically, there has been little damage to roadways in the immediate Mountain Home vicinity due to flooding (although road closures due to flooding are not uncommon). The underpass on State Route 67 in downtown Mountain Home is lower than the surrounding area; thus, water tends to collect on the roadway during rain events. Currently, a pump station helps maintain the stormwater flow from the underpass; however, the city recognizes this area as having flood potential even during minor flood events or periods of intense rainfall.

The city of Mountain Home has identified several areas of critical concern for flood and stormwater damages that will be the focus of several FEMA grant applications in 2019 and subsequent years. These areas include:

- East 8th North and North 10th East Streets
- North 14th East Street
- North 15th East Street and Bledsoe Pond
- East 15th North Street
- American Legion Boulevard
- Tiger Alley
- Gunfighter Subdivision
- South 13th East Street
- Brookside Court
- Foster Subdivision
- Highway 30

During major flood events, there is also a high risk of water backing up the sewer system. Inflow exceeding the pumping capacity of the headworks could lead to a backup that would cause flooding into basements and adjacent properties as well as standing water near transmission lines (Figure 33). The overall impact and damages caused by a sewer backup may be greater than the initial flood event.



Figure 33) Flooding in residential areas of Mountain Home as a result of heavy rainfall.



Local Event History

Of the significant flood events recorded for Elmore County, the events that affected Mountain Home occurred include those that occurred in 1971, 1986, and 2009 (Table 45).

Table 45) Flood event history for Mountain Home, ID. Data is from the NOAA National Centers for Environmental Information.

Date	Event	Description
December 1964	Flood, Federal Declaration #186	Warm weather combined with heavy rains and melting snow causing flooding along the Payette, Big Wood, Little Wood, Portneuf, Clearwater, and Boise River drainages causing approximately \$21,000,000 in damages. Highway 21 and 15, US 95N and 30E were closed. Over 100 homes were damaged, numerous bridges were washed out, and thousands of acres of farmlands were flooded. Two deaths were attributed to the flood. A state of emergency was declared. Approximately 64 people in the Atlanta logging camps were isolated due to road washouts. Telephone service to 190 people in Glens Ferry and Hammett was cut because of a wet cable.
January 17, 1971	Flooding	Heavy rain and snow over four days caused flooding in southwest Idaho. Streets and basements in Mountain Home were flooded with 10" of water.
February 1986	Flooding	A warming trend melted low-elevation snow packs, triggering flooding and mudslides throughout western Idaho. Over \$75,000 was spent on flood control efforts in this area. The dam at Fraser Reservoir broke, washing out roads and telephone lines including a 50' long x 4' deep section of State Highway 67 and another 650' section of road was damaged by Canyon Creek floodwaters. During this event, the Mountain Home Reservoir overtopped which caused severe flooding to areas in Mountain Home. Damage estimates in Mountain Home alone topped \$2.7 million. A State Disaster Declaration was issued in February 1986.
May 26, 1991	Kirby Dam Failure	The collapse of the Kirby dam near Atlanta cut off electrical power to residents and blocked the access bridge to Atlanta. Mine tailings containing arsenic, mercury and cadmium were released into the Middle Fork of the Boise River. A state disaster declaration was issued 9/14/90.
December 31, 1996- January 7, 1997	Flooding, Federal Declaration #1154	New Year's Day floods in the Weiser, Payette and Salmon River drainages of southwestern Idaho caused record flooding and numerous mudslides. Warm temperatures combined with a rainfall 4-6 times the normal amount; the resulting snowmelt triggered devastating floods, mudslides and avalanches, extensively damaging communities and infrastructure throughout Idaho. The community of South Banks was condemned because of extensive slide damage. Over 400 miles of roads and several railroad lines were blocked or destroyed, stranding over 10,000 holiday travelers in western Idaho. Rivers were "running like chocolate," carrying huge trees, mud and boulders; the Snake River at Hells Canyon Dam crested at 101,728 cfs January 1, nearly 30,000 cfs over its previous record level on 2/23/82. Governor Batt declared 13 counties a disaster: Gem, Adams, Washington, Idaho, Clearwater, Valley, Payette, Elmore, Latah, Boundary, Bonner, Shoshone and Boise. A Federal disaster was declared on January 4, 1997 with a total of \$65,000,000.00 damages reported.

2003-2005	Flash Flooding	The road to Atlanta along the Middle Fork of the Boise River was washed out 3 times from 2003 through 2005 due to flash floods and debris flows originating on water repellent soils in the 2003 Hot Creek Fire Burn scar. Vegetation has returned to the burn area and the soil is not as water repellent as it was right after the fire
January 2008	Flooding	Repetitive maintenance costs for annual flooding events totaled approximately \$4,600.
June 2009	Flooding	Flooding within the City of Mountain Home in June of 2009 caused multiple road closures. There were 48 parcels without access resulting in over \$20,000 in detour costs. Damages to structures, not including contents, were approximated at \$523,289. The cost of emergency response to this event was approximately \$20,335
2011	Canal Failure	Occurred in Glens Ferry, flooded homes, basements, and streets; damaged a section of main railroad tracks.
May 6- June 16, 2017	Flooding, Landslides, Mudslides. Federal Declaration #4310	As in March and April, winter storm melt from record winter snowfall led to flooding in southeast Idaho, especially in the central mountains and along the Big Wood River. Field flooding caused agricultural damage and many roads and facilities were damaged from the floods as well. The flooded fields led to significant agriculture damage. Many people were without power in the valley. Damage in the county included farms, homes, businesses, roadways, bridges, infrastructure, preserves, and levees. On August 27, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The State requested over \$3.8 million in public assistance. Overall, the State had approximately \$10.3 million in damages from this event.

Probability of Future Occurrence

The probability of flood events occurring in Mountain Home is moderate to high. Low magnitude flood events can be expected several times each year, particularly within the Rattlesnake Creek and East Side Canal floodplains on the east end of the city. However, due to the flat topography and drainage infrastructure, the impacts of these events are slight and will usually amount to minor and temporary traffic issues. Larger magnitude and high impact flood events have occurred but are not likely in any given year. These types of flood events have the highest probability of occurrence in the winter or early spring in Mountain Home. Minor flash floods are common on the numerous small tributaries feeding Rattlesnake Creek near the community but are not likely to have a significant impact on the channel within the city center.

Furthermore, even though the water level in canals is controlled and closely monitored, there is a significant potential for blockages due to debris or siltation, particularly at bridge or culvert crossings. This could lead to water over roadways or even road failures as the shoulders become saturated.



Impacts of Flood Events

The potential impacts from flooding in Mountain Home are very similar to the impacts described for Elmore County as a whole. First responders and other volunteers aiding with emergency flood control or cleanup efforts are potentially at risk of injury due to accidents or possibly exposure to contaminated water. Although unlikely, the city’s water supply could be affected by contaminated flood waters entering the groundwater supply.

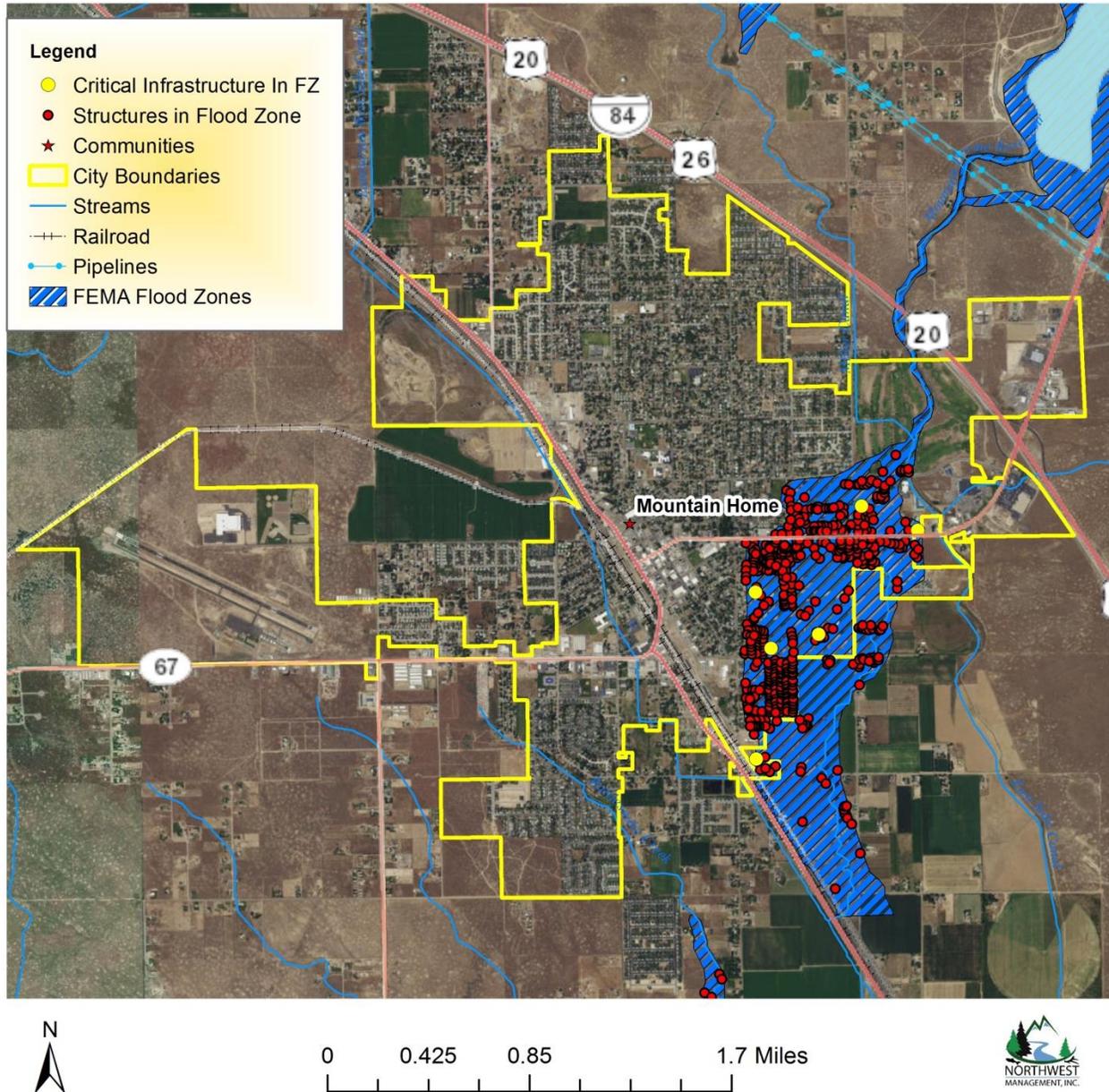


Figure 34) National Flood Insurance Program map for the City of Mountain Home in Elmore County, ID.

The major impacts from flooding in Mountain Home are the restricted use of several streets, commercial, railroad spurs, and residential areas due to overburden of existing drainage facilities. There are numerous



bridge and culvert crossings over Rattlesnake Creek and the East Side Canal throughout its extent within the City and the surrounding area.

The availability of food and other supplies is not likely to be impacted or interrupted by a flood event. Furthermore, the delivery of community services such as postal services, health care, law enforcement, and emergency response is also not likely to be impacted by flood events in Mountain Home. While individual homes and businesses may incur damages as a result of a flood, the economy of the community will not be impacted by this type of hazard.

Environmental damages resulting from a flood event are also unlikely. Rattlesnake Creek occupies a relatively wide floodplain through the community. Scouring and erosion along the banks of the stream is possible, but due to grass and other vegetation, these impacts will most likely be minimal and localized. Contamination of the riparian area by floodwaters containing chemicals or other pollutants is a possibility but is more likely to be realized in the surrounding areas than within the community due to the hydrologic profile of the floodplain.

The impacts of a sewer backup caused by flooding would be more widespread than the property and infrastructure damages caused by this type of event. The combined flow of stormwater and sanitary sewer would create a significant public health concern. Not only could potable water sources be contaminated, but standing water often attracts insects.

Additionally, there could be environmental concerns including wildlife habitat damage and long-term soil impacts in flooded areas due to contaminants in the floodwaters.



Value of Resources at Risk

There are approximately 579 parcels and 500 structures within the FEMA-identified floodplains (100- and 500-year) in Mountain Home, yielding a total structure value of just over \$50.1 million (Figure 34). The structural value is based on the county's assessed value of property improvements and does not reflect the replacement cost of a structure. The average damage to structures was estimated based on the parcel's location as either completely within or out of the flood zone. The estimated value of contents is half the value of the improvements equating to an additional \$25.5 million in potential losses. The damages will most likely not be equally distributed between buildings based on building materials, building location, and flood location. However, these estimates provide a basic approximation.

Critical infrastructure located within the identified floodplain for Mountain Home includes Desert Sage Health Center, Mountain Home Junior and Senior High Schools, the Mountain Home Wastewater Treatment Plant headworks, the Mountain Home Public Works facility, Rost Funeral Home, the Migrant Head Start School, and Cedar Crest Senior Care. Currently, there are no repetitive loss properties in Mountain Home.



Earthquake Profile

Historically, damaging earthquakes have occurred in proximity to Elmore County. However, damage from more recent earthquakes was localized in mountainous communities closer to the epicenter. Damage from the 1983 Borah Peak earthquake was concentrated in the area of Challis and Makay and two deaths were reported in Challis. Communities in the southern part of Elmore County likely only felt shaking from the Borah Peak earthquake; no damage was reported for Mountain Home. Mountain Home does not have any differing issues or levels of risk associated with this hazard than Elmore County as a whole.

Local Event History

There are no recorded occurrences of earthquakes significantly impacting the city of Mountain Home; however, some minimal shaking has been felt as a result of larger earthquakes elsewhere. Mountain Home does not have any differing issues or levels of risk associated with this hazard than Elmore County as a whole. Table 46 presents historic earthquake events in Idaho that have occurred in proximity to Elmore County and may have been felt by residents in the county.

Table 46) Historic earthquakes with epicenters in southern Idaho.⁸⁶

Date	Event	Description
Nov 11, 1905	Near Shoshone, Lincoln	Cracks formed in the walls of the courthouse and schools in Shoshone, and plaster fell from ceilings in almost all the buildings. Felt from Salt Lake City, Utah to Baker, Oregon.
Jan 27, 1963	Clayton, Custer County, ID	Plaster and windows cracked at Clayton, northeast of Boise. Large boulders rolled down a hill at Livingston Camp, about 22 km south of Clayton. Several aftershocks were felt in the area.
October 14, 1982	Soda Springs Area	In the Soda Springs area, about 45 km southeast of Pocatello, bricks fell from chimneys and cracks formed in the foundation of a house and interior drywalls. Also felt in Utah and Wyoming.
October 28, 1983	Borah Peak Earthquake	The Borah Peak earthquake is the largest ever recorded in Idaho - both in terms of magnitude and in amount of property damage. It caused two deaths in Challis, about 200 km northeast of Boise, and an estimated \$12.5 million in damage in the Challis-Mackay area. A maximum MM intensity IX was assigned to this earthquake on the basis of surface faulting. Vibrational damage to structures was assigned intensities in the VI to VII range.

⁸⁶ Idaho Geological Survey. Historical Earthquakes in Idaho. 2004. Available online at: <https://www.idahogeology.org/historical-earthquakes-idaho>, accessed June 2019

Probability of Future Occurrence

Although infrequent, an earthquake could happen at any time and Mountain Home could be affected. Ground shaking is the most likely impact from an earthquake; the city has 10% chance of exceeding a 6-7% pga in the next 50 years⁸⁷ (Figure 24). Overall, risk associated with earthquakes is no different for Mountain Home as it is for the county. Refer to the Elmore County Annex for more information about earthquakes.

Impacts of Earthquake Events

Unreinforced masonry (URM) structures and unreinforced chimneys of homes will likely be damaged in the event of an earthquake. There are several publicly accessible unreinforced masonry structures in Mountain Home in addition to the numerous homes and other buildings throughout the City with unreinforced chimneys. Damaged or collapsed chimneys could result in the secondary hazard of fire. Nonstructural damage caused by falling and swinging objects may be considerable after any magnitude earthquake. Damage to some older, more fragile bridges and land failure causing minor slides along roadways may isolate some residents.

In Mountain Home, there are approximately 30 un-reinforced masonry buildings within the city limits of Mountain Home. These structures were built prior to the inclusion of articles for seismic stability in the Uniform Building Codes in 1972. The number and value of unreinforced masonry homes or homes with masonry chimneys in Mountain Home is unknown but estimated to include at least 1,000 buildings.

Several schools and other intensely used un-reinforced masonry buildings have undergone seismic retrofitting to help decrease their risk of experiencing costly structural damage as well as their potential to cause injury or death to occupants or nearby pedestrians. Seismic retrofit of historic buildings is achieved through the reinforcement of structural elements. Such reinforcement may have included anchored ties, reinforced mortar joints, braced frames, bond beams, moment-resisting frames, shear walls, and horizontal diaphragms. Although retrofitting at risk buildings decreases the potential hazard they pose during an earthquake, it is not an easy fix, and damage or injury could still occur.

Value of Resources at Risk

Given the locations and impacts of historical earthquakes in southern Idaho, it seems reasonable to assume that damages in Mountain Home resulting from ground shaking would be minimal. Although a HAZUS earthquake analysis could not be run specifically for Mountain Home, a Level 1 analysis was performed at the county-level. Refer to the earthquake section in the Elmore County Annex for more information about the value of structures and infrastructure at risk to earthquakes in the county.

Landslide Profile

The city of Mountain Home has very little risk to landslides as the surrounding terrain is largely flat and there are few areas, if any, in Mountain Home that have been heavily excavated. Small slumps may occur

⁸⁷ USGS. 2008 United States National Seismic Hazard Maps. U.S. Geological Survey. U.S. Department of Interior. Available online at <http://earthquake.usgs.gov/hazards/products/conterminous/2008/>. October 2009.



along some roadways or irrigation canals, but these are not likely to cause significant damage to the community.

Local Event History

Historically, no significant landslides or land movement events have occurred within the city limits of Mountain Home. Refer to the Landslide section of the Elmore County Annex for more information.

Probability of Future Occurrence

The city of Mountain Home has a very low probability of experiencing damaging landslides. The few slopes in and around the community are generally less than 10%. While small, low angle slumps may occur on eyebrows of rolling hills that surround the city, these will be infrequent and likely be the result of water saturation or a major disturbance such as an earthquake or road construction.

Impacts of Landslide Events

It is very unlikely that Mountain Home will be directly impacted by a landslide. However, Mountain Home may be indirectly affected by landslides that adversely affect a variety of resources such as water supplies, fisheries, sewage disposal systems, forests, dams, and roadways upstream of the community. Water availability, quantity, and quality can be affected by landslides and could have a very significant economic impact on Mountain Home. The loss or redistribution of water would affect agricultural crops grown in certain areas, ranching activities, and personal and municipal wells.

Value of Resources at Risk

There are no structures or infrastructure directly at risk from landslides within the city of Mountain Home. In the event that a landslide does cause damage, the cost of cleanup and repairs of roadways is difficult to estimate due to the variable circumstances with each incident including size of the slide, proximity to a state or county shop, and whether the slide occurred on the cut slope or the fill slope. Other factors that could affect the cost of the damage may include culverts, streams, and removal of debris. This type of information is very difficult to forecast; thus, no repair costs for damaged roadways have been estimated.

Severe Weather Profile

The City of Mountain Home does not have any differing levels of risk associated with this hazard than Elmore County as a whole. Given the year-round potential for severe weather and magnitude of historic events in the region, severe weather can have a high impact on Mountain Home. Although the impacts from most events will be minor, it is reasonable to expect moderate to severe levels of damage from severe weather every couple of years or multiple times over the course of a decade. Moderate to severe damage can result from winter storms and flooding, thunderstorms and lightning, and severe winds.

Local Event History

Weather events are not specifically listed for Mountain Home in the NCDC Storm Events Database. Refer to the severe weather section in the Elmore County annex for a summary of historic severe weather events that have affected Elmore County (Table 34 and Table 35).



Probability of Future Occurrence

Given the frequency of severe weather in the region, the probability of a severe weather event occurring in Mountain Home annually is very high. However, the probability of future occurrence for an event that causes moderate to severe damage is much lower. These events may only occur once to a few times every decade and typically result in severe flooding (rain-on-snow events) or intense wildland fire behavior (lightning strike fires).

Impacts of Severe Weather Events

Strong winds, heavy precipitation, and lightning are the most common types of severe weather that affect Mountain Home, but the impacts of these events on the community are usually minimal. Refer to the Severe Weather section of the Elmore County Annex for more information about the general impacts of severe weather.

Value of Resources at Risk

Winter Storms

It is difficult to estimate the cost of potential winter storm damages to structures and the economy in Mountain Home. Damage to roofs by heavy snow accumulations depends on the moisture content of the snow and the structural characteristics of the buildings. In general, snow in this region tends to have low moisture content because of the low temperatures and arid environment. Additionally, snow rarely accumulates for long periods of time due to regular wind events. Frozen water pipes are the most common damage to residential and business structures. Older homes tend to be at a higher risk to frozen water pipes than newer ones. Snow plowing in within the city limits is accomplished by the city's public works department. Private landowners are responsible for maintaining their own driveways or other private roads.

Utility supplies are impacted during severe winter storms as power is lost on a regional basis. This has a two-fold impact on residents as not only is power cut to homes and businesses, but primary heating is lost for many residents. Gas furnaces and wood stoves supplement electrical heating, but with wood heating the senior population is at a disadvantage. Emergency response to severe winter storms includes site visits by police or fire department personnel, opening of shelters, or assistance with shopping, medical attention, and communications.

Economic losses and gains are associated with severe winter storms. Severe winter weather and snow events may provide economic gain through snow removal, providing work for local landscaping companies which may experience work shortage in the winter months. Building damage may also support construction companies within the community. Severe storms losses may be greater in some cases than economic gains. Employees may not be able to travel to work for several days and businesses may not open. Damages are seen in the form of structural repair and loss of economic activity. Elmore County schools are occasionally closed during and right after a severe winter storm because of cold temperatures and snow-covered roads.



Drought

Other than the possibility of domestic and municipal water shortages it is unlikely that drought will have any major *direct* impacts on the Mountain Home, putting very few resources at risk. Alternatively, drought could have *indirect* impacts on the city. Residents who own agricultural operations outside of the city could be negatively affected by water shortages. However, many fields to the south of Mountain Home are irrigated which will reduce the severity of any immediate impacts from drought on local agriculture.

Mountain Home Reservoir is often depleted of water during periods of drought, especially as water demands increase as a result of shortages. This will negatively impact residents who use the reservoir for various purposes.

Extended periods of drought also increase the risk of fire around Mountain Home. It is highly unlikely that the city will be directly affected by the fire because of the high number of natural and human-made fuel breaks in and around the city, but fires have burned in the grass/sage brush fuels close to Mountain Home (as was the case with the 2012 Benwalk Fire). Even though it is unlikely that a flaming front will reach the city, residents will likely be affected by smoke and other secondary impacts.

Because the impacts from drought are difficult to identify, measure, and quantify, a total value of resources at risk could not be calculated.

Thunderstorms

Thunderstorms are not likely to be severe enough in Mountain Home to cause significant damages. Flooding resulting from a thunderstorm is likely to have the greatest impact on a community like Mountain Home. Damage would likely be concentrated or localized to a specific area making it difficult to place a value on potential damage.

Hail

Although the financial impacts of hail can be substantial and extended, accurately quantifying these impacts is problematic. Hail typically causes direct losses to structures and other personal property within Mountain Home. The most significant losses are most clearly seen in the agriculture sectors of the economy. Potential losses to agriculture can be disastrous. Crop damage from hail will also be different depending on the time of year and the type of crop. Most farmers carry insurance on their crops to help mitigate the potential financial loss resulting from a localized hailstorm. Homeowners in Mountain Home rarely incur severe damage to structures (roofs); however, hail damage to vehicles is not uncommon. The damage to vehicles is difficult to estimate because the number of vehicles impacted by a specific ice storm is unknown. Additionally, most hail damage records are kept by various insurance agencies.

Severe Wind & Tornados

It is difficult to estimate potential losses in Mountain Home due to windstorms and tornadoes. Construction throughout the County has been implemented in the presence of high wind events, and



therefore, the community is at a higher level of preparedness to high wind events than many other areas experiencing lower average wind speeds.

We have estimated losses based on wind and tornado damage as follows:

- 3% of the buildings damaged causing 50% of value loss (loss could be from downed or damaged trees, damaged outbuildings, damaged fences/poles, damage to siding, damaged landscaping etc.)
- 5% of the buildings received damage to roof (requiring replacement of roof equaling \$3,000)

Damages associated with sensitive receptor irritation have not been estimated. We have also not estimated the potential for a large-scale wildfire event associated with high winds. Based on American Community Survey estimates, there are 6,111 total housing units in Mountain Home with a total value of approximately \$848 million. Using the criteria outlined above an estimate of the impact of high winds in Mountain Home has been made. The potential wind and tornado damage to all buildings is estimated at approximately \$12.7 million. The estimated damage to roofs is approximately \$616,000.

Power failure often accompanies severe storms. Prolonged failure, especially during cold winter temperatures can have disastrous effects. All communities should be prepared to deal with power failures. Community shelters equipped with alternative power sources will help residents stay warm and prepare food. A community-based system for monitoring and assisting elderly or disabled residents should also be developed. All households should maintain survival kits that include warm blankets, flashlights, extra batteries, nonperishable food items, and clean drinking water.

Extended Power Outage Profile

The city of Mountain Home does not have any differing levels of risk associated with this hazard than Elmore County as a whole. Extended power outages will affect Mountain Home's ability to provide government and other services such as trash pickup, streetlights, municipal water, law enforcement, and fire and medical services. Mountain Home can provide potable water for 1-3 days without electricity to run pumps. The city has access to a portable generator to replenish storage tanks, power sewer treatment facilities, and provide other basic and emergency services.

Local Event History

A list of power-outage events that have affected Mountain Home is either unavailable or does not exist. Refer to Table 38 in the Power-Outage section in the Elmore County annex to see a list of regional power-outages that likely affected Elmore County.

Probability of Future Occurrence

The probability of a short-term power outage in Mountain Home is very high; they will continue to happen frequently as a result of severe weather. The probability of a long-term outage (three days or more) affecting Mountain Home in the future is very low. Response from Idaho Power is usually immediate,



meaning that long-term outages are usually only the result of severe weather events that cause significant damage.

Impacts of Extended Power Outage Events

The impacts of power outages on Mountain Home are usually minimal and are the same as those described for Elmore County as a whole. Refer to the Power Outage section of the Elmore County Annex for more information about the impacts that a power outage may have on Mountain Home.

Value of Resources at Risk

There is no reliable estimate regarding the total expense and losses that power outages create within Mountain Home, but these events are costly. Power outages disrupt emergency functions and commerce, as well as personal lives. Some of these impacts can be quantitatively measured (e.g., lost business) while others, such as general disruption to resident activity, can only be described qualitatively.

Crop Damage Profile

The city of Mountain Home does not have any differing levels of risk associated with this hazard than Elmore County as a whole.

Local Event History

As individual events are not recorded and listed chronologically, crop failure is best summarized in terms of financial losses. Refer to the Local Event History section in the Elmore County Crop Damage Profile for a summary of financial losses related to crop failure or crop damage in the county.

Probability of Future Occurrence

Just like the county, the probability of Mountain Home experiencing some mass crop failure on an annual basis is low due to the availability of irrigation and the use of pest control products. Although there are very few agricultural operations within the City of Mountain Home, there are numerous operations to the north and south of the city. A crop failure could have significant economic impacts on Mountain Home as there are strong economic ties to those nearby operations.

Impacts of Crop Failure Events

Many of the local agricultural producers either live, work, or spend money in Mountain Home; thus, a poor crop yield in any given year may have some effect on the economic stability of the community.

Value of Resources at Risk

There are very few crops grown or livestock within the city limits of Mountain Home; thus, there is little value at risk.



Wildland Fire Profile (CWPP)

The Wildland Fire Hazard Profile (CWPP) in chapter 4 includes an in-depth assessment of wildland fire risk in Elmore County. This section only provides additional details that are specific to Elmore County and is meant to supplement the Wildland Fire Hazard Profile.

Fuels Assessment

Grass and sagebrush fuel-types dominant the landscape around Mountain Home. Agriculture and ranching activities increase west of town breaking up the natural continuity of the fuels. The fuels west of North Main Street (Business I-84) in the vicinity of the Simplot Feed Terminal are characterized by continuous expanses of mature sage. A wind-driven fire in these fuels would produce large flame lengths and relatively high intensities. However, these fuels are largely isolated from any homes. The Feed Terminal itself has adequate defensible space to protect it in the event of a wildland fire. To the south and north, fuels are primarily grass with a lesser component of sagebrush.

Infrastructure

The Evander Andrews Power Complex and transfer station are located to the northwest of Mountain Home. The Holley Corporation fuel transfer depot is also located in proximity to Mountain Home. Although there are some wildland fuels surrounding these facilities, they have adequate defensible space with little direct wildland fire threat. Other types of infrastructure are located within or adjacent to wildland areas, such as the airport, but most structures and resources feature adequate defensible space.

Escape

There are multiple escape routes for most homeowners, visitors, and ranches on the outskirts of Mountain Home. Considering the location, construction type, and capacity of primary routes in and out of the city (I-84 business, I-84, Highway 20, Highway 51, and Highway 67) it is unlikely that the main travel routes would be compromised as a result of a wildfire. However, residents living outside of the city should be familiar with the roads around their homes.

Community Risk Assessment

The overall risk of casualties to wildfire within the city limits of Mountain Home is relatively low. However, like many areas throughout the west, Elmore County and Mountain Home have been experiencing some growth in recent years. The number and value of resources at risk continues to increase as more homes are built in the wildland urban interface.

Larger towns, such as Mountain Home, often see the most significant threats from wildfire along the perimeter of the community. With the exclusion of some, most homes along the periphery of Mountain Home have adequate defensible space. Additionally, most homes have also been built using fire-resistant materials, which further reduces the threat of home loss.

The Mountain Home City Fire Department and Rural Fire District provide fire protection for the community. The Department maintains four stations in Mountain Home. Fire protection for the Mountain Home Air Force Base is provided onsite through the Mountain Home Air Force Base Fire Department.



As is typical in the dry uplands throughout Elmore County, water availability is limited in areas outside of Mountain Home. There is no hydrant system north of Interstate 84 or outside of the city limits west of town. Surface water is also scarce. The Mountain Home Reservoir provides support for irrigation of agricultural fields, but this water supply is also limited.

The greatest ignition potential in the vicinity of Mountain Home is associated with the roads and travel corridors. Also adding to the potential are other human ignition sources such as fireworks, debris burning, target shooting, and welding.

Potential Mitigation Activities

In addition to the mitigation activities previously presented, officials should consider establishment of additional dry hydrants or expanding the existing hydrant system. Water storage in this area is comparatively limited during the peak of the wildfire season and would be greatly improved by storage tanks located strategically around the outskirts of the community. In this way, water could be supplied to the lines as needed during fire emergencies without full time maintenance of all the water lines.

Additionally, building codes should be expanded to include fire-resistant building materials and water supplies in high-risk areas.

Local Event History

Although wildfire is common in Elmore County, very few fires have directly impacted the City of Mountain Home. Residents are primarily affected by smoke from fires burning in neighboring states or counties.

The 2012 Benwalk Fire is the only fire, since the last update, to have threatened structures in Mountain Home. Although firefighters were able to knock back the flames, nearby homes and businesses to the north of Highway 84 were evacuated as a precaution. People who were evacuated were able to take shelter at the Elks Lodge in Mountain Home. The fire, reaching approximately 25,000 acres at the time, forced the closure of Highway 84 between Mountain Home and Glenns Ferry.

Probability of Future Occurrence

The probability of a wildland fire threatening Mountain Home on an annual basis is moderate. Homes and other structures located in the grasslands or agricultural fields within or surrounding the community have a high wildfire risk. Rangeland or grass fires are often the most dangerous due to high rates of spread. Fires in this fuel type are considered somewhat easier to suppress given the appropriate resources, but they can also be the most destructive. Homes along the perimeter of the community would have the highest risk due to their adjacency to flashy fuels.

Impacts of Wildland Fire Events

The potential impacts from a wildfire in Mountain Home are very similar to the impacts described for Elmore County as a whole. All fires pose a significant safety risk to residents and emergency service personnel. Individual structures, property, and livelihoods could be severely damaged or lost as a result of a fire; however, the community is not likely to suffer severe or long-term economic losses.



A fire in the grasslands surrounding the community may benefit the ecological environment as nutrients are recycled into the soil. Generally, grass and forbs are rejuvenated by a low intensity fire and grow back quickly; however, heavy rains immediately after a fire could cause erosion.

Smoke from a nearby wildland fire may impact sensitive populations within the community due to degraded air quality conditions. Smoke and/or flames will also impact transportation corridors connecting Mountain Home to other communities; thus, travel and commerce may be interrupted.

Refer to the Elmore County Wildland Fire Profile for a more detailed discussion of wildland fire impacts, including impacts from secondary hazards that may exacerbate fire conditions (e.g. severe weather) in wildland fuels as well as secondary hazards that may become an increased threat because of wildfire damage (e.g. flooding, landslides, mudflows).

Value of Resources at Risk

It is difficult to estimate potential losses in Mountain Home caused by wildland fire due to the unpredictability of wildfire behavior and the nature of ignition sources. It is unlikely that more than a few structures or other properties within the city limits of Mountain Home would be lost or damaged by a wildland fire; however, residents in the immediate vicinity may be directly impacted. It is impossible to forecast the path a wildfire will take and what type of assets and resources, manmade and ecological, will be at risk. Thus, no value estimates were made for this hazard.



Oasis Fire Protection District Annex

Table 47) Natural hazard ratings for Oasis Fire Protection District, ID. This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.

Oasis Fire Protection District				
Hazard	Location (Geographic Area Affected)	Maximum Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Flood	3	3	4	10
Landslide	1	1	1	3
Earthquake	3	2	1	6
Severe Weather	3	3	3	9
Wildland Fire	4	4	4	12
Terrorism/Civil Unrest	1	1	1	3
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

Flood Profile

Several significant creek beds facilitate spring runoff throughout the Oasis District, they are Ditto Creek, Soles Rest Creek and Mud Creek (Figure 35). These creeks, when running, can cause significant road washout and other damage to adjacent lands. Mud Creek has the greatest potential for flooding and is currently listed by the NFIP. Given the recent construction within the district, additional private properties may be subject to flood damage in the future. Caution in the creek areas should be exercised when new construction is being planned.

Local Event History

Oasis did experience flooding during a statewide weather event that took place in early February 2017. Warmer temperatures, snow melt, and ice jams caused extensive flooding, road washouts in the Mud Creek area, and road closures and property damage across Oasis. A concrete bridge had to be built across Soles Rest Creek for access to homes within the Soles Rest Creek subdivision. NOAA listed the flood event as Cleft instead of Oasis on February 8, 2017.

Probability of Future Occurrence

Given the severity of the recent flood event that occurred in 2017 and the presence of two FEMA flood zones, future flooding is likely to occur as a result of a local and or regional weather event.



Impacts of Flood Events

The potential impacts from flooding in Oasis are very similar to the impacts described for Elmore County as a whole. First responders and other volunteers aiding with emergency flood control or cleanup efforts are potentially at risk of injury due to accidents or possible exposure to contaminated water.

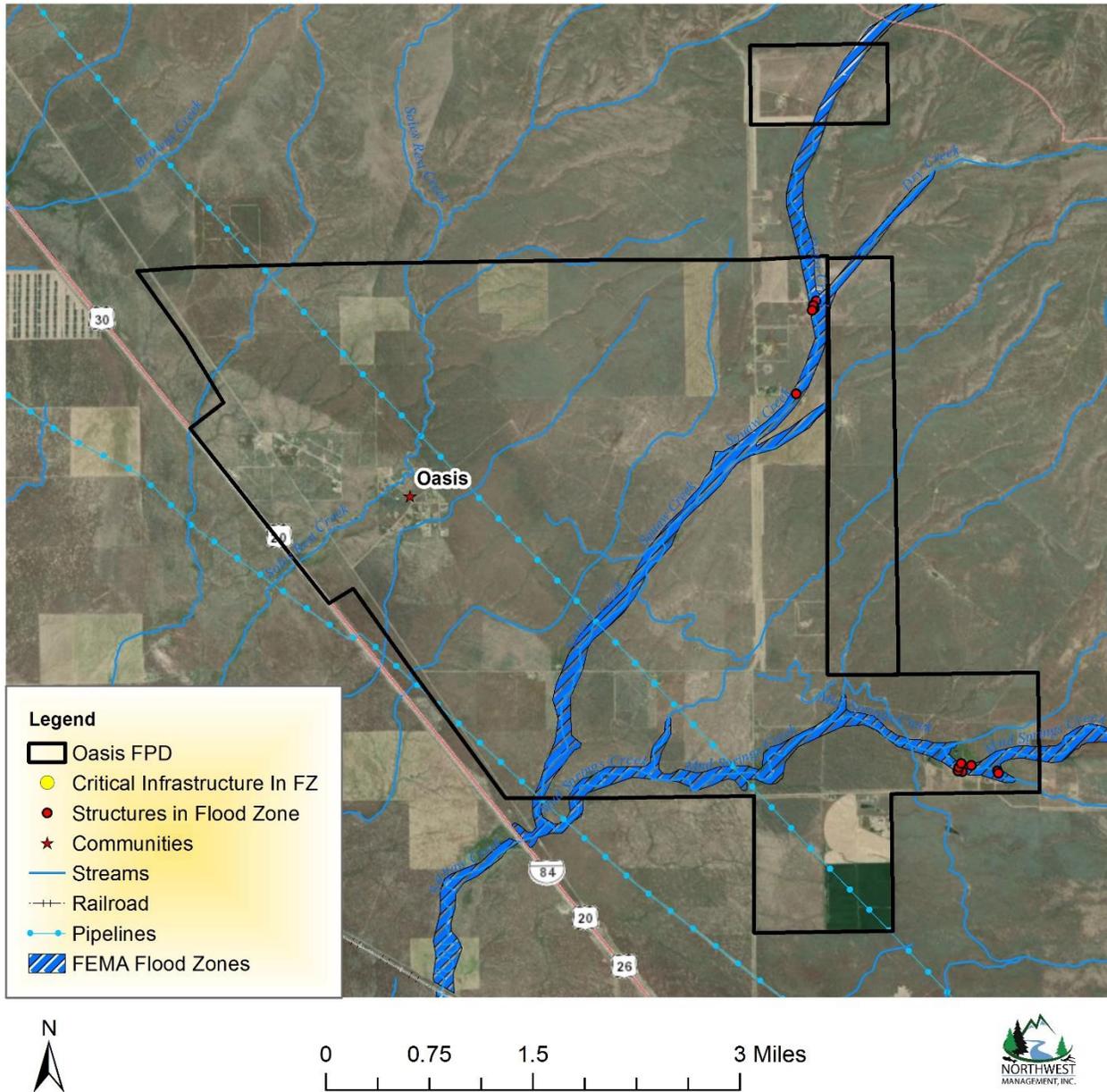


Figure 35) National Flood Insurance Program map for the Community of Oasis in Elmore County, ID.

The availability of food and other supplies is likely to be impacted and/or interrupted by a flood event. This was demonstrated in 2017 and could happen again as a result of future flood-events. The delivery of community services such as postal services, health care, law enforcement, and emergency response are also likely to be impacted by flood events in Oasis. Individual homes and businesses may incur damages as a result of a flood, impacting and affecting the whole community.



Environmental damages resulting from a flood event are probable. Scouring and erosion along the edges of seasonal creek beds is possible, but stones, grass and other vegetation on and along the stream banks will minimize any erosion or deterioration.

Value of Resources at Risk

For this analysis, the average damage to structures was estimated based on the parcel's location as either completely within or partially within the flood zone. It should also be noted that damage will most likely not be equally distributed between buildings based on building materials, building location, and flood location. However, these estimates provide a basic approximation.

Overall, there are approximately 7 parcels and 40 structures within the FEMA-identified floodplains (100- and 500-year) in Oasis, yielding a total structure value of \$3.7 million. The estimated value of contents is half the value of the improvements equating to an additional \$1.85 million in potential losses.

There are approximately 7 parcels and 14 structures that border Soles Rest Creek that were involved in the February 2017 flood in Oasis, yielding a total structure value of \$3.0 million. The estimated value of contents is half the value of the improvements equating to an additional \$1.5 million in potential losses.

Earthquake Profile

There are no recorded occurrences of earthquakes significantly impacting the community of Oasis; however, some minimal shaking has been felt as a result of larger earthquakes elsewhere. Oasis shares the same issues or levels of risk associated with this hazard as the rest of Elmore County. The following table presents historic earthquake events in Idaho that occurred in proximity to Elmore County and may have been felt at some level within the county borders.

Local Event History

The following table presents historic earthquake events in Idaho; epicenters were in proximity to Elmore County and may have been felt at some level within the county borders.

Table 48) Historic earthquakes with epicenters in southern Idaho.⁸⁸

Date	Event	Description
Nov 11, 1905	Near Shoshone, Lincoln County, ID	Cracks formed in the walls of the courthouse and schools in Shoshone, and plaster fell from ceilings in almost all the buildings. Felt from Salt Lake City, Utah to Baker, Oregon.

⁸⁸ Idaho Geological Survey. Historical Earthquakes in Idaho. 2004. Available online at: <https://www.idahogeology.org/historical-earthquakes-idaho>, accessed June 2019



Jan 27, 1963	Clayton, Custer County, ID	Plaster and windows cracked at Clayton, northeast of Boise. Large boulders rolled down a hill at Livingston Camp, about 22 km south of Clayton. Several aftershocks were felt in the area.
October 14, 1982	Soda Springs Area	In the Soda Springs area, about 45 km southeast of Pocatello, bricks fell from chimneys and cracks formed in the foundation of a house and interior drywalls. Also felt in Utah and Wyoming.
October 28, 1983	Borah Peak Earthquake	The Borah Peak earthquake is the largest ever recorded in Idaho - both in terms of magnitude and in amount of property damage. It caused two deaths in Challis, about 200 km northeast of Boise, and an estimated \$12.5 million in damage in the Challis-Mackay area. A maximum MM intensity IX was assigned to this earthquake on the basis of surface faulting. Vibrational damage to structures was assigned intensities in the VI to VII range.

Probability of Future Occurrence

Earthquakes pose a moderate threat to Oasis. Although infrequent, they will continue to impact southern Idaho with varying intensity. Based on the earthquake probability map produced for the county (Figure 24) Oasis has 10% chance of exceeding a 6-7% pga in the next 50 years.⁸⁹

Impacts of Earthquake Events

Homes and structures within the Oasis District vary in age from the 1960's until the present. New construction is continuously being added to the community. Various degrees of damage will occur in the event of an earthquake.

There is currently a fire station/community center within Oasis, and the potential for more publicly accessible structures to be constructed in the future. Community leaders will be vigilant as to how the construction is designed. Unreinforced masonry (URM) structures and unreinforced chimneys of homes will likely be damaged in the event of an earthquake. Damaged or collapsed chimneys could result in the secondary hazard of fire. Nonstructural damage caused by falling and swinging objects may be considerable after any magnitude earthquake. Because of the flat terrain and minimal number of small, concrete bridges it is unlikely that residents of Oasis will become trapped for an extended period within the district.

Value of Resources at Risk

Excluding the fire station, there are no other public unreinforced critical infrastructures in Oasis; most structures are homes, shops, garages, barns, sheds, and other structures used for storage. Because

⁸⁹ USGS. 2008 United States National Seismic Hazard Maps. U.S. Geological Survey. U.S. Department of Interior. Available online at <http://earthquake.usgs.gov/hazards/products/conterminous/2008/>. October 2009.



damage is likely to be light and “random”, a specific value cannot be assigned to any potential damages resulting from an earthquake.

One way to protect vulnerable structures is with seismic retrofits; these types of structural upgrades are usually performed on historical buildings. Such reinforcement may have included anchored ties, reinforced mortar joints, braced frames, bond beams, movement-resisting frames, shear walls, and horizontal diaphragms. Although retrofitting at-risk buildings decreases the potential hazard they pose during an earthquake, upgrades are often expensive, and damage or injury could still occur.

Landslide Profile

The community of Oasis has very little risk associated with landslides as the topography in the immediate area is largely flat with a few canyons of moderate depth. Small slumps might occur along some roadways or irrigation canals, but these are not likely to cause significant damage in the community.

Local Event History

Historically, no significant landslides or land movement events have occurred within the boundary of the Oasis Fire Protection District.

Probability of Future Occurrence

The Community of Oasis has a very low probability of experiencing damaging landslides. Excluding embankments along seasonal creek beds and drainages and low rolling undulations, Oasis is flat. Landslide risk areas nearest to Oasis are at risk not because of steep slopes, but because they feature landslide prone soils. While small, low angle slumps may occur on eyebrows of the rolling hills to the NE, these will be infrequent and likely to be the result of water saturation or a major disturbance such as an earthquake or road construction.

Impacts of Landslide Events

In general, Oasis is highly unlikely to be directly affected by a landslide. However, the community could be indirectly affected by landslides that adversely affect a variety of resources such as water supplies, fisheries, sewage disposal systems, forests, dams, and roadways elsewhere in the county. Water availability, quantity, and quality can be affected by landslides and could affect Oasis. The loss or redistribution of water would affect agricultural crops grown in certain areas, ranching activities, and personal and municipal wells.

Value of Resources at Risk

There are no structures or infrastructure directly at risk from landslides within the city of Oasis. The cost of cleanup and repairs to roadways, which are likely to be the only feature in the fire protection district that could be affected by soil or slope failure, is difficult to estimate due to the variable circumstances with each incident, including: size of the slide, proximity to a state or county shop, whether the slide occurred on the cut slope or the fill slope, the presence of culverts and streams, and removal of debris. Since potential cost can only be estimated after damage occurs, no repair costs for damaged roadways



have been estimated. However, it seems reasonable to assume that costs would be minimal as potential for damage resulting from a landslide is extremely low.

Severe Weather Profile

Oasis shares the same issues and levels of risk associated with this hazard as the rest of Elmore County. Given the year-round potential for severe weather and magnitude of historic events in the region, severe weather can have a high impact on Oasis. Although the impacts from most events will be minor, it is reasonable to expect moderate to severe levels of damage from severe weather every couple of years or multiple times over the course of a decade. Moderate to severe damage can result from winter storms and flooding, thunderstorms and lightning, and severe winds.

Local Event History

Weather events are not specifically listed for Oasis in the NCDP Storm Events Database. Refer to the severe weather section in the Elmore County annex for a summary of historic severe weather events that have affected Elmore County (Table 34 and Table 35).

Probability of Future Occurrence

Given the frequency of severe weather in the region, the probability of a severe weather event occurring in Oasis annually is very high. However, the probability of future occurrence for an event that causes moderate to severe damage is much lower. These events may only occur once to a few times every decade and typically result in severe flooding (rain-on-snow events) or intense wildland fire behavior (lightning strike fires).

Impacts of Severe Weather Events

The impacts of severe weather events to the community are usually minimal and are the same as those described for Elmore County as a whole.

Value of Resources at Risk

Winter Storms

It is difficult to estimate the cost of potential winter storm damages to structures in Oasis. Damage to roofs by heavy snow accumulations depends on the moisture content of the snow and the structural characteristics of the buildings. In general, snow in this region tends to have low moisture content because of the low temperatures and arid environment. Additionally, snow rarely accumulates for long periods of time due to regular wind events. Frozen water pipes are the most common damage to residential and business structures. Older homes tend to be at a higher risk to frozen water pipes than newer ones.

Snow is plowed on the county-maintained roads in Oasis. Private landowners are responsible for maintaining their own driveways or other private roads. Utility supplies are impacted during severe winter storms as power is lost. This has a two-fold impact on residents. Power is cut to homes and businesses in Oasis and would lose the ability to pump water and use medical devices. Primary heating is also lost for many residents. Gas furnaces and wood stoves supplement electrical heating, but with wood heating the



senior population is at a disadvantage. Emergency response to severe winter storms could include site visits by the sheriff or fire department personnel, opening of the community center, or assistance with shopping, medical attention, and communications. Employees may not be able to travel to work for several days. Damages are seen in the form of structural repair and loss of power. Elmore County schools are occasionally closed during and right after a severe winter storm because of cold temperatures and snow-covered roads.

Drought

Other than the possibility of domestic water shortages it is unlikely that drought will have any major *direct* impacts on the Oasis Fire Protection District, putting very few resources at risk. Alternatively, drought could have *indirect* or secondary impacts on residents and property within the district. Residents who own ranching operations in the area could be negatively affected by water shortages which limits drinking water for grazing animals and could affect available forage. There is also an increased risk of rangeland destruction and the loss of livestock or other animals as a result of wildland fire. The two agricultural operations located within the district could also be at risk from water shortages or from the impacts of a wildfire.

Extended periods of drought dramatically increase the risk of wildfire within the OFPD. Because of the wildland-urban interface characteristics of the communities within the district, wildfire poses a significant threat to homes and other structures in the area. However, the rapid response from the Oasis Volunteer Fire Department and the locations of various types of fuel breaks reduce the likelihood that homes will be affected by a flaming front. Because it is never a guarantee that firefighters or fuel breaks will save a home, it is imperative that residents be proactive in creating and maintaining defensible space around their homes to further reduce risk associated with wildfire.

Because the impacts from drought are difficult to identify, measure, and quantify, a total value of resources at risk could not be calculated.

Thunderstorms

Thunderstorms can be severe enough in Oasis to cause significant damage. Being a small WUI residential/agricultural community of approximately 23 square miles surrounded by rangeland, wildland fires ignited by lightning strikes can be a significant hazard.

Hail

Although the financial impacts resulting from damaging hail can be substantial, predicting future expenses and quantifying damage from previous events is difficult. Hail usually causes direct losses to structures and other personal property within a community, but the most significant losses are usually incurred by the agricultural sectors of the economy. Agricultural losses can be mild to significant depending on the time of year and the type of crop. Most farmers carry insurance on their crops to help mitigate the potential financial loss resulting from a localized hailstorm. Homeowners in Oasis rarely incur severe damage to structures (roofs); however, hail damage to vehicles is not uncommon. The damage to vehicles



is difficult to estimate because the number of vehicles impacted by a specific hailstorm is unknown. Additionally, most hail damage records are kept by various insurance agencies.

Severe Wind & Tornadoes

Building codes do not specifically address high wind construction, therefore Oasis is subject to the same potential loss as the rest of the county. Given the variability of damage associated with windstorms and tornadoes, it is difficult to estimate potential financial losses in Oasis. Therefore, the following scenario was used to create an understanding of the potential magnitude of financial losses.

We have estimated losses based on wind and tornado damage as follows:

- 3% of the buildings damaged causing 50% of value loss (loss could be from downed or damaged trees, damaged outbuildings, damaged fences/poles, damage to siding, damaged landscaping etc.)
- 5% of the buildings received damage to roof (requiring replacement of roof equaling \$3,000)

Using the criteria outlined above an estimate of the impact of high winds in Oasis has been made. The potential wind and tornado damage to all buildings is estimated at approximately \$350,000 to \$750,000.

As described previously, wildfire is also a significant threat to Oasis. Wind-driven fires can be incredibly destructive in rural communities such as Oasis. Therefore, the following estimate represents that total value of resources at risk in Oasis to a large-scale wildfire event associated with high winds. There are 190 parcels with improvements within Oasis with a total value of approximately \$19,386,000.00

Extended Power Outage Profile

The community of Oasis does not have any differing levels of risk associated with power outages than Elmore County as a whole. Severe weather can cause power outages anywhere in the county; the specific cause of the outage (a downed powerline, a failed transformer) is often random and unpredictable.

Local Event History

In 2006, wildland fire destroyed power poles leaving Oasis without power for three days. A complete list of power-outage events that have affected Oasis is either unavailable or does not exist. Refer to Table 38 in the Power-Outage section in the Elmore County annex to see a list of regional power-outages that likely affected Elmore County.

Probability of Future Occurrence

The probability of a short-term power outages in Oasis is very high; they will continue to happen as a result of severe weather. The probability of a long-term outage (three days or more) affecting Oasis in the future is very low. Response from Idaho Power is usually immediate, meaning that long-term outages are usually only the result of severe weather events that cause significant damage.



Impacts of Extended Power Outage Events

All homes in Oasis have individual wells that are operated with electric pumps that would be affected by a power outage. There are numerous households that have an occupant dependent upon electricity for medical devices.

Refer to the County Annex for more information about the general impacts of power outages. The impacts to the county are the same as those for Oasis.

Value of Resources at Risk

There is no reliable estimate regarding the total expense and losses that power outages create within Elmore County, but these events are costly. Power outages disrupt emergency functions and commerce, as well as personal lives. Some of these impacts can be quantitatively measured (e.g., lost business) while others, such as general disruption to resident activity, can only be described qualitatively. Overall, power outages do not have major financial or economic impacts on Oasis. Impacts are usually limited to disruption of families and personal lives.

Crop Damage Profile

Large scale crop damage and other agricultural events can occur during large Mormon cricket (*Anabrus Simplex*) infestations. Otherwise, Oasis shares the same issues or levels of risk associated with this hazard as the rest of Elmore County.

Local Event History

As individual events are not recorded and listed chronologically, Crop failure is best summarized in terms of financial losses. Refer to the Local Event History section in the Elmore County Crop Damage Profile for a summary of financial losses related to crop failure or crop damage in the county.

Probability of Future Occurrence

Depending on weather conditions, the probability of future crop failure in the county ranges from low to high. However, there is very little agriculture within the Oasis Fire Protection District, resulting in an extremely low probability of future crop failure.

Impacts of Crop Failure Events

Unless residents in Oasis own farm or ranch land or are employed by the industry, the impacts of a crop failure event are likely to be minimal. Impacts would be limited in scope to individual homeowners and would not likely impact the entire community.

Value of Resources at Risk

Although limited, there are agricultural and ranching resources at risk to failure or loss in the Oasis Fire Protection District. There are two agricultural areas that total 260 acres in size and another large, privately owned parcel that is used for livestock grazing.



Wildland Fire Profile (CWPP)

The Wildland Fire Hazard Profile (CWPP) in chapter 4 includes an in-depth assessment of wildland fire risk in Elmore County. This section only provides additional details that are specific to the Oasis Fire Protection District and is meant to supplement the Wildland Fire Hazard Profile.

Fuels Assessment

Grass and sage plant communities are the predominant fuel types in and around the Community of Oasis. Rangeland is largely continuous throughout the district and on all sides of the community, with only roadways, creek beds, and dozer lines serving as fuel breaks. A wind-driven fire in these fuels would move quickly, produce moderate to large flame lengths, and burn with a relatively high intensity. Although easier to suppress, fires in rangeland fuel types can be very destructive, posing a significant risk to rural communities like Oasis.

Infrastructure

The Williams Gas Pipeline cuts across the SW corner of the Oasis district. The Tesoro Petroleum Pipeline enters the SE corner of the Oasis community at Martha Ave and Ditto Creek Road and runs parallel to the freeway and exits on the NW corner of the district at Desert Wind Road. The Tesoro Petroleum Pipeline and the Williams Gas Pipeline may be at risk during a wildfire.

Escape

Located just to the W/SW of Oasis, Interstate 84 is the largest road system in proximity to Oasis. W Soles Rest Creek Rd serves as the primary means of egress from the Soles Rest Creek Subdivision. Piper Street is the primary means of egress from the Red Baron Estates, both exit onto Desert Wind Road. Desert Wind Rd runs parallel to Interstate 84, residents can drive on Desert Wind Rd either NW to exit onto Simco Road to reach an on-ramp for I-84 or SE on Desert Wind Rd then east on Tilli Road, and South on Ditto Creek Road to leave the Oasis district. Residents of the eastern portion of the district can use Ditto Creek Road to exit to the north or south, also Martha Avenue to the east.

Community Risk Assessment

The Oasis Community is largely residential with a rural atmosphere; it is zoned residential/agricultural. The area consists of 76 homes in the fire district, and another 9 in adjacent areas, and has a population of about 192 residents. It covers 22 square miles with BLM land accounting for approximately 1/3 of the district.

The Oasis Community with OFPD tax revenue, personal donations of money, time and labor has built, maintained and operated with all volunteers a 2640 square foot fire station that has been designated an emergency evacuation site in the area. The Fire Station/Community Center also serves as the polling place during elections. The Community encourages new residents to the area with the same rural purpose in mind who will volunteer and serve as fire fighters to support the Oasis Volunteer Fire Department in the future.



Oasis Fire Protection District

Oasis Fire Protection District Mission Statement:

“To protect life and property by providing fire suppression in a safe and professional manner and to reduce fire risk through community education. To establish residential growth with a rural atmosphere and achieve the goal of becoming a Firewise Community. Encourage new residents to become volunteer fire fighters to support the Oasis Volunteer Fire Department into the future.”

OFPD Description:

The Oasis Fire Protection District (OFPD) covers approximately 22 square miles of primarily grass/sage mix. Approximately 1/3 of this area is government owned, mostly BLM with smaller endowment plats. The remaining is agricultural and residential. There are 69 family structures with various outbuildings and a population of approximately 183 residents. The fire protection district is operated by an all-volunteer staff of 33 people, including the fire chief.

The OFPD recently completed building a 2000 square foot fire station that has been designated an emergency evacuation site for Elmore County. On-site apparatus includes two Type-4 Wildland Engines, one Type-6 Brush Truck with Foam Unit, one Type-2 Structural Engine, and a Suburban Command vehicle. The Fire Station has both UHF and VHF Communication Systems. With a grant from the 911 committee OFPD was able to obtain a repeater.

A grant from Homeland Security/Elmore County enabled OFPD to install security fencing. The lack of security has not been a big problem but there was a theft of a former engine in 2006. The vehicle was recovered with minor damage.

The OFPD Tilli Station provides the ability to house all the district’s apparatus and maintenance equipment. The station is the training center for OVFD Firefighters. It also serves as a Community Center for the Oasis Community, a voting center for Elmore County, and a staging/operations area for the BLM during the wildfire season. In the past there were discussions with the previous Elmore County Sheriff on incorporating a law enforcement substation.

Issues of Concern:

There is a lack of available water resources for fire suppression throughout the District. There is currently no pressurized water system. There are two 6,000-gallon static water storage tanks and one 10,000-gallon storage tank as well as three ponds with limited drafting capabilities depending on the season. The OFPD has recognized that the addition of strategically located water supply stations would act as a force multiplier for both wildland and structural fire protection, particularly in more rural areas.

The mandated change to 700 MHz communications standard will be costly. Any other mandated changes will most likely be cost prohibitive and will put our department in financial distress.

The concern is how to fund these mandated changes. One of the Type-4 Wildland Engines does not have UHF capability. Without substantial aid from outside sources, the district will not be able to function to



the degree expected by Oasis residents. The district has a continuing concern about the age of its fleet. Equipment updates and upgrades will be a priority for several years.

Cooperative Agreements:

Oasis has cooperative agreements with the Bureau of Land Management, Idaho Department of Lands, the Orchard Combat Training Center Fire & Emergency Services, and the Mountain Home Rangeland Fire Protection Association. OFPD has a cooperative agreement with Idaho Firewise and has established an Oasis Firewise Garden at the Tilli Fire Station which is used to exhibit accepted wildland urban interface (WUI) reduced water and fire-resistant plantings to be used around homes in the Oasis Community.

Potential Mitigation Activities

The goal of the Oasis Community is to establish residential growth with a rural atmosphere and achieve the goal of becoming a Firewise Community. Fuel breaks and fire-resistant construction are the primary means of wildfire mitigation currently taking place in Oasis. A Firewise Garden was established at the Tilli Fire Station as an Oasis Community education tool to exhibit reduced water- and fire-resistant plants that are suggested for use in the WUI.

Local Event History

The following information was provided by the Oasis Volunteer Fire Department and includes significant fires that have affected or occurred in proximity to the Community of Oasis since 2012 (Table 49).

Table 49) Wildland fires that have affected the community of Oasis, ID since the 2011 Elmore County HMP update.

Year	# of Fires	Notes
2012	13	The Canale Fire was the largest; it started on July 6, burned 3,073 acres, and threatened homes
2013	14	The largest four fires burned on August 8 and 9; The Mud Fire merged with the Pony Fire and became the Pony Complex (150,146.4 acres) and Elk Creek Complex (131,043.3).
2014	13	The May Fire was the largest; it burned from July 31 to August 1, downing power lines on Ditto Creek Rd and threatened homes.
2015	4	
2016	0	No Fires
2017	3	The largest fires burned on June 26; the Breeze Fire threatened homes in the SRC subdivision, the Ditto Creek Fire threatened homes off DCR. The wind changed three times during the incident. There was one Mutual Aid response to Orchard CTC.



Probability of Future Occurrence

Considering that the Community of Oasis is largely characterized by grassland fuel-types, the probability of a wildland fire threatening Oasis on an annual basis is high. Rangeland or grass fires are often the most dangerous due to high rates of spread. Fires in this fuel type are considered somewhat easier to suppress given the appropriate resources, but they can also be the most destructive. Risk throughout the Community of Oasis is high given the continuity of grassy fuel-types in and around the community.

Impacts of Wildland Fire Events

The potential impacts from a wildfire in Oasis are very similar to the impacts described for Elmore County as a whole. All fires pose a significant safety risk to residents and emergency service personnel. Individual structures, property, and livelihoods could be severely damaged or lost as a result of a fire; however, the community is not likely to suffer severe or long-term economic losses.

A fire in the grasslands surrounding the community may benefit the ecological environment as nutrients are recycled into the soil, however the aftermath of a wildfire encourages the growth of undesirable weeds such as cheat grass, medussa head, Russian thistle, rush skeleton weed, and mustard weed. Generally, grass and forbs are rejuvenated by a low intensity fire and grow back quickly; however, heavy rains immediately after a fire could cause erosion.

Smoke and or flame from a nearby wildland fire may impact sensitive populations within the community due to degraded air quality conditions. Smoke and/or flames will also impact transportation corridors connecting Oasis to other communities; thus, travel and commerce may be interrupted.

Refer to the Elmore County Wildland Fire Profile for a more detailed discussion of wildland fire impacts, including impacts from secondary hazards that may exacerbate fire conditions (e.g. severe weather) in wildland fuels as well as secondary hazards that may become an increased threat because of wildfire damage (e.g. flooding, landslides, mudflows).

Value of Resources at Risk

It is difficult to estimate potential losses in Oasis caused by wildland fire due to the unpredictability of wildfire behavior and the nature of ignition sources. It is very difficult to forecast the path a wildfire will take and what type of assets and resources, manmade and ecological, will be at risk. Thus, no value estimates were made for this hazard.



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Chapter 6:

Mitigation Strategy

IN THIS SECTION:

- Prioritization of Action Items
- Elmore County Annex
- City of Mountain Home Annex
- City of Glenns Ferry Annex
- Oasis Fire Protection District



Chapter 6 – Mitigation Strategy

Administration and Implementation of Action Items

Critical to the implementation of this Multi - Hazard Mitigation Plan will be the identification and implementation of an integrated schedule of action items. These action items are targeted at achieving an elimination of lives lost, a reduction in structures destroyed or compromised, and the preservation of unique ecosystems that serve to sustain the way of life and economy stability in Elmore County, Idaho. Since there are many management agencies and thousands of private landowners in this area, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across all ownerships.

All risk assessments and recommendations were made in consideration of historical events and current conditions. However, the components of risk and the preparedness of county resources are not static. It will be necessary to fine-tune the recommendations in this plan annually to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

Mechanisms to Incorporate Mitigation Strategies

Elmore County and the incorporated cities encourage the philosophy of instilling disaster resistance in normal day-to-day operations. By implementing plan activities through existing programs and resources, the cost of mitigation is often a small portion of the overall cost of a project's design or program. Through their resolution of adoption as well as their participation on the planning committee, each jurisdiction is aware of and committed to incorporating the risk assessments and mitigation strategies contained herein. It is anticipated that the research, local knowledge, and documentation of hazard conditions coalesced in this document will serve as a tool for decision-makers as new policies, plans, and projects are evaluated.

There are several planning processes and mechanisms in Elmore County that will either use the risk assessment information presented in this document to inform decisions or will integrate the mitigation strategy directly into capital improvement, infrastructure enhancement, and training projects; prevention campaigns; and land use and development plans. Although not inclusive, the following is a list of mechanisms available to each jurisdiction for incorporating the mitigation requirements:

- **Elmore County Mechanisms:**
 - Comprehensive Plan
 - Transportation Plan
 - Emergency Operations Plan
 - Building Codes and Ordinances
 - Departmental Budgets
 - Site Master Plans (wastewater treatment, landfill, etc.)
 - Personnel Training Programs



- **Incorporated City Mechanisms:**
 - Transportation Plans
 - City Budgets
 - Building Codes and Ordinances
 - Site Master Plans (airport, business incubators, etc.)
- **Hospital District Mechanisms:**
 - Emergency Operations Plan
 - Annual Budget
 - Board of Directors Bylaws (Operational Protocols)
- **Agencies and other Organization Mechanisms**
 - Annual Budget
 - Prevention Programs
 - Training Programs
 - Long Term Land Use Plans (Forest Plans, Wildlife Management Area Plans, etc.)

The Elmore County Emergency Manager is responsible for educating the Board of Commissioners and other County departments as well as city planners on the contents and incorporation requirements of the Multi-Hazard Mitigation Plan. The Emergency Manager and other planning committee partners should be aware of the risk assessments and mitigation strategies respective to their jurisdictions in order to include them in the planning processes and discussions for other types of projects as they come up. The Elmore County Emergency Manager is responsible for ensuring that each participating jurisdiction as well as other partners has a copy of the Multi-Hazard Mitigation Plan readily available for reference purposes. Furthermore, as previously mentioned, the Elmore County Emergency Manager is responsible for annual and 5-year evaluations of the Multi-Hazard Mitigation Plan. The annual meetings will serve a dual purpose of updating the document and refreshing each jurisdiction’s memory of the contents and mitigation requirements of Multi-Hazard Mitigation Plan. Members of the planning committee are also responsible of educating decision-makers in their own jurisdictions on the use and incorporation of mitigation requirements of this document into other planning mechanisms such as those listed above.

Prioritization of Action Items

The prioritization process includes a special emphasis on benefit-cost analysis review. The process reflects that a key component in funding decision is a determination that the project will provide an equivalent or more in benefits over the life of the project when compared with the costs. Projects will be administered by local jurisdictions with overall coordination provided by the Elmore County Emergency Manager.

County Commissioners and the elected officials of all jurisdictions have evaluated opportunities and established their own unique priorities to accomplish mitigation activities where existing funds and resources are available and there is community interest in implementing mitigation measures. If no federal funding is used in these situations, the prioritization process may be less formal. Often the types of projects a county can afford to do on their own are in relation to improved codes and standards, department planning and preparedness, and education. These types of projects may not meet the



traditional project model, selection criteria, and benefit-cost model. Elmore County will use this Multi-Hazard Mitigation Plan as guidance when considering pre-disaster mitigation proposals brought before the Board of Commissioners by department heads, city officials, fire districts, and local civic groups.

When federal or state funding is available for hazard mitigation, there are usually requirements that establish a rigorous benefit-cost analysis as a guiding criterion in establishing project priorities. Elmore County understands the basic federal grant program criteria which will drive the identification, selection, and funding of the most competitive and worthy mitigation projects. FEMA's three grant programs (the Hazard Mitigation Grant Program, the Flood Mitigation Assistance Program, and Pre-Disaster Mitigation Program) that offer federal mitigation funding to state and local governments all include the benefit-cost and repetitive loss selection criteria.

The prioritization of new projects and deletion of completed projects will occur annually and be facilitated by the Elmore County Emergency Manager and the joint planning committee. All mitigation activities, recommendations, and action items mentioned in this document are dependent on available funding and staffing.

Prioritization Scheme

All action item and project recommendations made in this Plan were prioritized by each respective jurisdiction in coordination with their governing body. Each jurisdiction's representative on the planning committee met with their governing bodies and prioritized their own list of projects and mitigation measures through a group discussion and voting process. Although completed individually, each jurisdiction's mitigation strategy was discussed and analyzed on the merits described in the STAPLEE process including the social, technical, administrative, political, legal, economical, and environmental factors associated with each recommended action item. Projects were ranked on a "High", "Moderate", or "Low" scale with emphasis on project feasibility and the benefit/cost correlation. Once completed, the individual jurisdiction's rankings were discussed and approved at the committee level.

Changes in Prioritization

This section describes how priorities regarding the nature of mitigation projects have changed for adopting jurisdiction. If there have been any, these changes are indicative of the types of natural hazards that currently present the greatest levels of risk within the jurisdiction.

Elmore County

Several ongoing projects were carried over and reanalyzed for a priority ranking. More details were added to include proposed costs and any new potential resources. No carried over projects saw a change in priority ranking. Many projects were deferred due to lack of funding, so the priority remained the same, but the target completion date shifted. Some ongoing projects have been started but will require multiple years to complete or they are annual in nature.

Some new projects have been added to this plan update, but most projects are either still being completed or have yet to be started. Some projects that were deferred have been revised (such as EC-14) to better explain the intent and details of the project. Some projects were deemed no longer applicable or



necessary during the review process and these projects were dropped from the mitigation strategy. The main potential funding sources for all action items are also the organizations responsible for implementing them. Alternative or additional potential funding sources are listed along with other kinds of resources as well.

Glenns Ferry

Many projects were deferred due to lack of funding from the past plan and have been retained for this plan update without any changes in priority. Only three new projects (GF-3, GF-6, GF-7) were developed for the 2020 plan update. Many projects have been started but not completed or are ongoing or annual projects in nature. The priorities of those projects have remained the same as well. The projects were all updated to include proposed costs and GF-5 was revised with new details added to it. A few projects were cut from the list for 2020 because they no longer reflect the current goals and objectives of the city of Glenns Ferry. The main potential funding sources for all action items are also the organizations responsible for implementing them. Alternative or additional potential funding sources are listed along with other kinds of resources as well.

Mountain Home

Many projects were deferred due to lack of funding from the past plan and it was determined that they should be retained for this plan update without any changes in priority. Many projects have been started but not completed or are ongoing or annual projects in nature. The priorities of those projects have remained the same as well. The projects were all updated to include proposed costs and MH-8 was revised with new details added to it. Several new projects have been added to the 2020 plan update (MH-2, 6, 7, 9, 10, 11, 14, 18).

A few projects were cut from the list for 2020 because they no longer reflect the current goals and objectives of the city of Mountain Home. The main potential funding sources for these action items are also the organizations responsible for implementing them. Alternative or additional potential funding sources are listed along with other kinds of resources as well.

Proposed Cost

The value in the cost field in each table is an estimate of a cost range that is likely to be associated with each project. Because of the number of variables that contribute to the overall cost of a project, the planning team elected to use cost ranges instead of specific values; it made the request more accessible to individuals who participated in the planning process. The cost ranges that were used for this process are as follows:

- Low: \$1 to \$25,000
- Medium: \$25,000 to \$100,000
- High: \$100,000 or more



Jurisdictional Mitigation Strategies

The following tables outline each participating jurisdictions’ mitigation strategies for at least the next five-year period. All action items from the 2011 Plan were carried into the updated mitigation strategies; however, the committee thoroughly reviewed and discussed each proposed project, and in some cases, chose to revise the action item or delete it altogether. The “2020 Status” column in each table highlights the current state of each action item.

Elmore County Annex

Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-1	General	Develop and implement public education programs.	Goal #1,3,4 Priority Ranking: Moderate	Cooperative effort including Elmore County, cities of Mountain Home and Glens Ferry, Southwest Idaho RC&D, Idaho Bureau of Homeland Security, federal and state agencies	This is a continuous effort; the next phase to be completed by 2021	Idaho Office of Emergency Management, Bureau of Land Management, US Forest Service, Southwest Idaho RC&D, Idaho Department of Lands, USDA Natural Resources Conservation Service	LOW
EC-2	General	Provide funding for a full time Geographic Information System position.	Goal #1,4 Priority Ranking: Moderate	Elmore County Commissioners, Planning and Zoning, and Assessor’s office	Partially Completed (GIS tasks have been added to existing job descriptions); 2024	Each jurisdiction is responsible for incorporating GIS responsibilities into job descriptions.	MEDIUM



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-3	General	Obtain funding for permanent, high-visibility address signs for rural homes and properties. Missing or low visibility address signs make it difficult for emergency responders to find homes and properties.	Goal #1,4 Priority Ranking: Moderate	Elmore County Emergency Management, Sheriff's Office, Fire Districts and Departments	New Project; to be completed by 2024	Idaho Office of Emergency Management	HIGH
EC-4	General	Continue to repair and replace rural road markers, weight ratings on bridges, and other signage.	Goal #1,4 Priority Ranking: Moderate	Elmore County Highway Districts	In progress; unknown completion date	Idaho Office of Emergency Management	MEDIUM
EC-5	General	Develop a partnership program with the Union Pacific Railroad that will provide information regarding the contents of rail cars carrying hazardous materials through Elmore County.	Goal #1,4 Priority Ranking: High	Elmore County Commissioners and Emergency Management, cities of Mountain Home and Glens Ferry, and the Union Pacific Railroad	New Project in 2013. Deferred; 2024	Idaho Office of Emergency Management	LOW TO MEDIUM
EC-6	General	Fully review and revise Multi-Hazard Mitigation Plan to satisfy IOEM and FEMA requirements.	Goal #1,4 Priority Ranking: High	Elmore County Commissioners, Emergency Management, Bureau of Homeland Security, and cities of Mountain Home and Glens Ferry	To be started in 2023 and completed in 2025.		MEDIUM



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-7	General	Continue to work with the US Forest Service on the replacement of several critical forest routes.	Goal #1,4 Priority Ranking: Low	Elmore County Commissioners, Highway Districts, and US Forest Service	Deferred due to lack of funding; 2024	US Forest Service	HIGH
EC-8	General	Complete the Elmore County Transportation Plan.	Goal #1,3,4 Priority Ranking: Moderate	Elmore County Commissioners, Highway Districts, cities of Mountain Home and Glenns Ferry, US Forest Service, and BLM	Deferred due to lack of funding; 2024	Idaho Transportation Department	MEDIUM
EC-9	General	Replace the two Rattlesnake Bridges on Long Gulch Road with two lane structures.	Goal #1,4 Priority Ranking: High	Mountain Home Highway District	Deferred due to lack of funding; 2024	Idaho Transportation Department, US Forest Service	HIGH
EC-10	General	Replace the Neal Bridge crossing on the South Fork of the Boise River on Blacks Creek Road with a two-lane structure.	Goal #1,4 Priority Ranking: Moderate	Mountain Home Highway District	Deferred due to lack of funding; 2024	Idaho Transportation Department, US Forest Service	HIGH
EC-11	General	Replace the Cow Creek Bridge crossing the South Fork of the Boise River on Prairie Road with a two-lane structure.	Goal #1,4 Priority Ranking: High	Mountain Home Highway District	Deferred due to lack of funding; 2024	Idaho Transportation Department, US Forest Service	HIGH



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-12	General	Obtain funding for new handheld radios for the Mountain Home Highway District.	Goal #1,4 Priority Ranking: Moderate	Mountain Home Highway District and Elmore County Emergency Management	Deferred due to lack of funding; 2024	Idaho Office of Emergency Management, Fire Assistance grants	HIGH
EC-13	General	Obtain funding for compliant radios in order to improve interoperability with surrounding counties and partner agencies such as the fire department, BLM, US Forest Service, and law enforcement.	Goal #1,4 Priority Ranking: High	Elmore County Emergency Management and local emergency service organizations	Just started; ongoing project	Idaho Office of Emergency Management, Fire Assistance grants	MEDIUM
EC-14	General	Develop an emergency access plan for Atlanta, particularly for winter conditions when road closures restrict access.	Goal #1,4 Priority Ranking: High	Elmore County Commissioners, Atlanta community, and US Forest Service	Deferred in 2011 due to lack of funding; 2024	US Forest Service	MEDIUM
EC-15	General	Through partnerships, complete a Watershed Management Plan for the Atlanta community.	Goal #1,4 Priority Ranking: Moderate	Elmore County Commissioners, Atlanta community, US Forest Service, and BLM	Deferred due to lack of funding; 2024	US Forest Service, USDA Natural Resource Conservation Service	MEDIUM
EC-16	Flood	Encourage residents to participate in the National Flood Insurance Program.	Goal #1,3,4 Priority Ranking: Low	Elmore County Commissioners and Emergency Management	In progress; Annual Project	FEMA, Idaho Office of Emergency Management	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-17	Flood	Work with FEMA to update the Elmore County Flood Insurance Rate Maps.	Goal #1,4 Priority Ranking: High	Elmore County Commissioners and Emergency Management	From previous plan update; to be started by 2022	FEMA, Idaho Office of Emergency Management	LOW
EC-18	Flood	Obtain resources to provide National Flood Insurance Program training to County staff and elected officials.	Goal #1,3,4 Priority Ranking: High	Elmore County Commissioners and Emergency Management	From previous plan update; to be started by 2022	FEMA, Idaho Office of Emergency Management	LOW
EC-19	Flood	Obtain resources and materials to develop a National Flood Insurance Program outreach program for residents.	Goal #1,3,4 Priority Ranking: Moderate	Elmore County Commissioners and Emergency Management	From previous plan update; to be started by 2022	FEMA, Idaho Office of Emergency Management	MEDIUM
EC-20	Flood	Continue program to evaluate bridge and culverts as well as road profiles along all primary access routes identified in a floodplain.	Goal #1,4 Priority Ranking: High	Highway Districts and Idaho Department of Transportation	On-going; Annual Project	Idaho Transportation Department	MEDIUM
EC-21	Earthquake	Inspect public facilities, particularly un-reinforced masonry, for seismic stability.	Goal #1,4 Priority Ranking: Low	Elmore County Building Department	From previous plan update; to be completed by 2024	Idaho Office of Emergency Management	HIGH
EC-22	Landslide	Stabilize the Cow Creek slide located along Prairie Road to prevent future slides from plugging the creek and washing out the road.	Goal #1,4 Priority Ranking: Low	Mountain Home Highway District	From previous plan update; to be completed by 2024	Idaho Transportation Department, US Forest Service	HIGH



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-23	Landslide	Evaluate the avalanche danger along Fall Creek Road, Blacks Creek Road, Pine-Featherville Road, and Anderson Dam Road.	Goal #1,4 Priority Ranking: High	Mountain Home Highway District	From previous plan update; to be completed by 2022	Idaho Transportation Department, US Forest Service	MEDIUM
EC-24	Landslide	Stabilize the Fall Creek Road slide area.	Goal #1,4 Priority Ranking: Moderate	Mountain Home Highway District	From previous plan update; to be completed by 2024	Idaho Transportation Department, US Forest Service	HIGH
EC-25	Landslide	Complete project to stabilize the Daws Slide on Blacks Creek Road and widen the travel surface of the road where it was impacted by the slide.	Goal #1,4 Priority Ranking: Low	Mountain Home Highway District	From previous plan update; to be completed by 2026	Idaho Transportation Department, US Forest Service	HIGH
EC-26	Severe Weather	Educate the public on appropriate "Shelter-in-Place" procedures.	Goal #1,3,4 Priority Ranking: Moderate	Elmore County Emergency Management	Annual project; next phase to be completed by 2021	National Fire Protection Association, Idaho Office of Emergency Management	LOW
EC-27	Severe Weather	Install a snow fence from the top of hill along Forest Route 61 south of Pine to Highway 20.	Goal #1,4 Priority Ranking: Moderate	Elmore County Emergency Management and Glens Ferry Highway District	From previous plan update; to be completed by 2023	Idaho Transportation Department, US Forest Service	MEDIUM



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-28	Wildland Fire	Develop a year-round water storage tank for the Oasis Volunteer Fire Department.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	From previous plan update; to be completed by 2022	Bureau of Land Management	MEDIUM
EC-29	Wildland Fire	Develop a map of available water resources as well as potential hazards (i.e. limited bridge crossings, etc.) throughout the County.	Goal #1,4 Priority Ranking: High	Elmore County Emergency Management and local fire departments and state and federal agencies	From previous plan update; to be completed by 2022	US Forest Service, Bureau of Land Management	MEDIUM
EC-30	Wildland Fire	Encourage development of a targeted grazing program as an additional tool to reduce wildland fire risk on BLM-managed public lands.	Goal #1,3,4 Priority Ranking: High	Elmore County Commissioners	From previous plan update; to be completed by 2022	Bureau of Land Management, local ranchers	LOW
EC-31	Wildland Fire	Continue to support efforts to manage noxious and invasive species at a landscape scale.	Goal #1,4 Priority Ranking: High	Elmore County Commissioners	From previous plan update; next phase to be completed by 2021	Bureau of Land Management, Southwest Idaho RC&D	LOW TO HIGH
EC-32	Wildland Fire	Continue to develop and implement hazardous fuels reduction projects to protect individual homes, subdivisions, communities, and critical infrastructure.	Goal #1,4 Priority Ranking: High	Elmore County CWPP Planning Committee	From previous plan update; this project is evaluated annually	Idaho Department of Lands, Bureau of Land Management, US Forest Service	LOW TO HIGH



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-33	Wildland Fire	Obtain funding to establish additional water supply capabilities and storage facilities for fire suppression in strategic locations throughout Elmore County.	Goal #1,4 Priority Ranking: High	Elmore County Emergency Management and rural fire districts	From previous plan update; to be completed by 2023	Idaho Office of Emergency Management, Bureau of Land Management	MEDIUM TO HIGH
EC-34	Wildland Fire	Educate citizens in the Pine-Featherville about the dangers of residing outside of an existing structural fire protection district as well as state and federal policies regarding structural fire suppression.	Goal #1,3,4 Priority Ranking: Moderate	Elmore County Emergency Management and USFS	From previous plan update; this project is evaluated annually	US Forest Service, Mountain Home Rural Fire District, Oasis Volunteer Fire Department	LOW
EC-35	Wildland Fire	Obtain funding to purchase a brush truck and a structural fire engine for the Prairie QRU and Fire District.	Goal #1,4 Priority Ranking: High	Prairie QRU and Fire District	From previous plan update; to be completed by 2024	Fire Assistance grants, Bureau of Land Management, US Forest Service, Idaho Department of Lands	HIGH
EC-36	Wildland Fire	Obtain funding to purchase basic equipment and supplies such as radios, personal protective equipment, and fire shelters for the Prairie QRU and Fire District.	Goal #1,4 Priority Ranking: High	Prairie QRU and Fire District	From previous plan update; to be completed by 2024	Fire Assistance grants, Bureau of Land Management, US Forest Service, Idaho Department of Lands	LOW TO MEDIUM
EC-37	Wildland Fire	Obtain funding to purchase land and construct a fire station for the Prairie QRU and Fire District.	Goal #1,4 Priority Ranking: High	Prairie QRU and Fire District	From previous plan update; to be completed by 2024	Fire Assistance grants	HIGH



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-38	Wildland Fire	Continue to provide both youth and adult wildland fire education and prevention programs.	Goal #1,3,4 Priority Ranking: Moderate	Elmore County Emergency Management, fire departments and districts, BLM, and USFS	From previous plan update; this project is evaluated annually	Bureau of Land Management, US Forest Service, Idaho Department of Lands	LOW
EC-39	Wildland Fire	Continue to provide high quality training to fire department staff and volunteers.	Goal #1,3,4 Priority Ranking: High	Elmore County Emergency Management and local fire departments and state and federal agencies	From previous plan update; this project is evaluated annually	Idaho Fire Chiefs Association, Bureau of Land Management, US Forest Service, Idaho Volunteer Fire & Emergency Services Association	LOW TO MEDIUM
EC-40	Extended Power Outage	Obtain a portable generator for the communities of Pine, Featherville, and Oasis.	Goal #1,4 Priority Ranking: Moderate	Elmore County Emergency Management and citizens of Pine, Featherville, and Oasis	From previous plan update; to be completed by 2022	Idaho Office of Emergency Management	LOW TO HIGH
EC-41	Extended Power Outage	Obtain three portable generators for use during power outages and other hazard events.	Goal #1,4 Priority Ranking: High	Elmore County Commissioners, Sheriff's Office, and Emergency Management	Deferred due to lack of funding; 2023	Idaho Office of Emergency Management	LOW TO HIGH
EC-42	Wildland Fire	Complete construction of EMS/Fire Services building (Site Address TBD – Meadow Creek Rd, Prairie, ID). This building will house EMS/Fire Equipment (Refer to EC 35, 36, & 37).	Goal #1,4 Priority Ranking: High	Prairie QRU and Fire, Inc.	NEW; to be completed in 2021 (if funding is available)	Contractor, Prairie Residents, local tradesmen, community assistance.	



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-43	Wildland Fire	<p>Atlanta Fire Access Road Improvements- the following roads need to be improved for fire suppression purposes:</p> <p>1) Wilderness Gate Road: runs from the Atlanta Airstrip to Sawtooth Wilderness Gate on the Middlefork of the Boise.</p> <p>2) China Basin Road: from Atlanta Airstrip to Queens River Road.</p> <p>3) Yuba Road: Runs from Middlefork Road to Trail Creek.</p>	<p>Goal #1,4</p> <p>Priority Ranking: High</p>	Atlanta Rural Fire District	NEW; to be completed by the Fall of 2022	Possible Federal funding, Boise National Forest, Sawtooth National Forest	HIGH
EC-44	Wildland Fire	<p>Paradigm Project: Create fuel breaks along highway corridors in Elmore County (the project covers highway corridors from Boise to Twin Falls). Fuel breaks are created by mowing and planting along roadways. Refer to the BLM website for more information about the Paradigm Project.</p>	<p>Goal #1,4</p> <p>Priority Ranking: High</p>	Bureau of Land Management	Ongoing; this project is continued every year. The next phase of the project will be completed by the end of 2021	Funding: Federal sources	In total, the project will cost nearly \$6 million.



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2020 Status; Projected Completion	Potential Resources	Proposed Cost
EC-45	Wildland Fire	Highway Fuel Breaks: This project both mirrors and compliments the BLM’s Paradigm Project. The objective of the project is to create continuity between BLM fuel breaks by establishing and maintaining fuel breaks along roadways within the Mountain Home Highway District jurisdiction.	Goal #1,4 Priority Ranking: High	Mountain Home Highway District, Glenns Ferry Highway District, Bureau of Land Management	Ongoing; this project is continued every year. The next phase of the project will be completed by the end of 2021	Funding: Federal sources	LOW to MODERATE

The following projects were listed in the 2011 version of the HMP and completed since its adoption:

1. Elmore County completed an update of their Comprehensive Plan in 2014. The Comprehensive Plan contains specific language regarding growth and development in hazardous areas.
2. Elmore County has developed an active Local Emergency Planning Committee that meets regularly.
3. In 2015, Elmore County adopted the updated International Building Codes.
4. The highway districts in Elmore County have standardized practices for excavation, construction, and grading of roads; they follow all Idaho Transportation Department standards as well as the road standards adopted by Elmore County and the Mountain Home and Glenns Ferry city councils
5. The new Elmore County Sheriff’s Office facility incorporated a space for training exercises and a 911 Dispatch Center. The old Forest Service facility is currently being converted into an Emergency Operations Center.
6. The highway districts in Elmore County have mapped and identified landslide prone areas along federal and state, and county routes. This program is continually updated.
7. Obtain funding for additional equipment and supplies for the South Fork of the Boise River Senior Center to function as an official shelter.
8. Address road surface and infrastructure capacity issues related to the increased use resulting from the windmill project.
9. Work with local partners to establish a repeater site on Dog Mountain.
10. Replace the Pine Bridge on the Pine-Featherville Road with an adequate structure.
11. Obtain funding to hire a contractor to remove debris from bridge abutments along the South Fork of the Boise River.
12. Obtain funding to update the Mountain Home Rural Fire District 5,000-gallon water tender and 4 brush units.



City of Glens Ferry Annex

Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
GF-1	General	Develop and implement public education programs.	Goal #1, 2, 4 Priority Ranking: Moderate	Cooperative effort including Elmore County, Cities of Mountain Home and Glens Ferry, Southwest Idaho RC&D, Idaho Office of Emergency Management, federal and state agencies	Annual Project	Idaho Office of Emergency Management, School District, Southwest Idaho RC&D, Elmore County, EMS, Mountain Home FD, GFFD, EC Sheriff.	LOW
GF-2	General	Develop a partnership program with the Union Pacific Railroad that will provide information regarding the contents of rail cars carrying hazardous materials through Elmore County.	Goal #1, 2, 4 Priority Ranking: High	Glens Ferry City Council, Elmore County Commissioners and Emergency Management, City of Mountain Home, and the Union Pacific Railroad	New Project; 2020	Idaho Office of Emergency Management	LOW TO MEDIUM
GF-3	General	Asses and hardwire GFFD, and other emergency facilities for use with a portable generator.	Goal #1, 3 Priority Ranking: High	Glens Ferry City Council, Elmore County Emergency Management, Elmore County Rural Development	Deferred to lack of funding; 2014. Seeking funding-2020.	Idaho Office of Emergency Management, EPA, DEQ, DOC	LOW
GF-4	General	Through partnerships, complete a Watershed Management Plan for the Glens Ferry Community.	Goal #1, 2, 5 Priority Ranking: High	Glens Ferry City Council and Elmore County Emergency Management	Deferred due to lack of funding; 2024.	Idaho Department of Ecology	LOW TO MEDIUM



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
GF-5	General	Continue to participate in the completion of an Elmore County Transportation Plan, specifically to address railroad crossings and emergency access in Glens Ferry.	Goal #1, 2, 3, 4, 5 Priority Ranking: High	Glens Ferry City Council, Union Pacific Railroad, Highway Districts, and Elmore County Commissioners.	Revised Action Item; 2024.	Idaho Transportation Department., DOC.	LOW
GF-6	General	Obtain funding for second water storage tank and delivery system for the City of Glens Ferry to increase storage capacity in case of power outage.	Goal #1, 2 Priority Ranking: High	Glens Ferry City Council	New Project: 2020	EPA, DEQ, DOC, USDA RD	MEDIUM
GF-7	General	Obtain funding to update all emergency communications equipment.	Goal #1 Priority Ranking: High	Glens Ferry City Council, King Hill Rural Fire Department, EMS, EC Sheriff	New Project: 2020	DOJ, Department of Homeland Security, FEMA.	LOW TO HIGH
GF-8	Flood	Attend “Managing Floodplain Development through the NFIP” training provided by FEMA.	Goal #2, 5 Priority Ranking: High	Glens Ferry City Council	Action Item: 2020.	Glens Ferry City Council, Elmore County	LOW
GF-9	General	Develop an NFIP public outreach campaign using city water bills as well as letters sent to local realtors, insurance agents, mortgage lenders, and developers.	Goal #1, 2 Priority Ranking: Moderate	Glens Ferry City Council	To begin in 2020 and occur annually	Glens Ferry City Council	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
GF-10	Flood	Encourage residents to participate in the NFIP by educating them on the risks, advantages of flood insurance through flyers, and mailings, and in the local newspapers. "Notice the Public: Flood Hazard Information".	Goal #1, 2, 5 Priority Ranking: Moderate	Glenns Ferry City Council	Ongoing; Annual Project	Glenns Ferry City Council	LOW
GF-11	Flood	Research participation in the Community Rating System in order to reduce insurance premiums under the NFIP.	Goal #2, 3, 5 Priority Ranking: High	Glenns Ferry City Council	Projected Date: 2019-2020	Idaho Office of Emergency Management, Federal Emergency Management System.	LOW
GF-12	Flood	Continue to work with US Army Corps of Engineers and Idaho Department of Water Resources to develop solutions for chronic flooding issues and reconstruction of the Little Canyon Creek levees.	Goal #1, 3, 5 Priority Ranking: High	Glenns Ferry City Council, US Army Corps of Engineers, Idaho Department of Water Resources, Elmore County Emergency Management.	Ongoing	Idaho Department of Water Resources, Idaho Office of Emergency Management, US Army Corps of Engineers, Elmore County Commissioners.	HIGH
GF-13	Earthquake	Inspect public facilities, particularly un-reinforced masonry, for seismic stability.	Goal #1, 3 Priority Ranking: Moderate	Glenns Ferry City Council and Idaho Bureau of Homeland Security	Deferred due to lack of funding; 2015	Elmore County	LOW TO MEDIUM
GF-14	Wildland Fire	Obtain funding for Glenns Ferry Rural Fire District facility to accommodate larger emergency vehicles.	Goal #1, 3 Priority Ranking: Moderate	Glenns Ferry City Council, King Hill Rural Fire District	Projected 2021	Idaho Department of Lands, Bureau of Land Management, USDA RD	LOW TO MEDIUM



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
GF-15	Wildland Fire	Obtain funding to furnish a permanent water supply at the Glenns Ferry Airport.	Goal #1, 3, 5 Priority Ranking: High	Glenns Ferry City Council	2020 Grant Input	Economic Development, Idaho Office of Emergency Management, USDA RD	LOW TO MEDIUM
GF-16	Wildland Fire	Encourage participation in a cooperative wildland fire training program for local landowners.	Goal #1, 2 Priority Ranking: High	Glenns Ferry City Council, BLM	RFPA mobilized 2014. Ongoing.	Idaho Department of Lands, BLM, US Forest Service	LOW
GF-17	Wildland Fire	Hammett and King Hill, Idaho Fire Station/Community Center: Construct two 3,200 sq. ft buildings consisting of a 1,600 sq ft fire station and a 1,600 sq. ft community center. These stations will benefit both communities not only for fire protection but also a facility for the communities to gather in case of emergencies. It can also be used for polling places as well as be used for family functions.	Goal #1,4 Priority Ranking: High	King Hill Rural Fire District	NEW; to be completed by the end of 2021 (or at least started before the end of the year)	Source of Funding: IDL, KHRFD, Community Assistance. Contractor, local residents, local tradesmen, community assistance.	HIGH

The following projects were listed in the 2011 version of the HMP and completed since its adoption:

1. The City of Glenns Ferry adopted the 2009 International Fire and Building Codes in December 2010. International Building Codes were adopted as they are more stringent.
2. A Transportation Plan for the City of Glenns Ferry was completed in 2013.-
3. Obtain Funding and assistance to improve the runway surface at the Glenns Ferry Airport. Funding was awarded in 2018, the project is in progress.
4. A Master Plan for the City of Glenns Ferry airport was completed in 2010.



City of Mountain Home Annex

Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-1	General	Develop and implement public education programs.	Goal #1,2,7,8,9 Priority Ranking: High	Cooperative effort including Elmore County, cities of Mountain Home and Glens Ferry, Southwest Idaho RC&D, Idaho Bureau of Homeland Security, federal and state agencies	Ongoing; Annual Project	City of Mountain and other partners	LOW
MH-2	General	Develop a partnership program with the Union Pacific Railroad that will provide information regarding the contents of rail cars carrying hazardous materials through Elmore County.	Goal #1,2,3,7,9 Priority Ranking: Moderate	Mountain Home City Council, Elmore County Commissioners and Emergency Management, City of Glens Ferry, and the Union Pacific Railroad	New Project; 2020	City of Mountain Home, Elmore County, Idaho Bureau of Homeland Security, Union Pacific Railroad	LOW TO MEDIUM
MH-3	General	Provide funding for a full-time Geographic Information System position.	Goal #1,2,5,7 Priority Ranking: Moderate	Mountain Home City Council	Partially Completed (GIS tasks have been added to existing job descriptions); In Progress; 2024	City of Mountain Home	MODERATE
MH-4	General	Assess and hardwire emergency facilities and shelters for use with a portable generator.	Goal #1,2,3,7 Priority Ranking: Moderate	Elmore County Emergency Management and Mountain Home City Council	Deferred due to lack of funding; 2024	City of Mountain Home, Idaho Bureau of Homeland Security, Idaho Department of Environmental Quality	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-5	Flood	Encourage residents to participate in the National Flood Insurance Program.	Goal #1,2,7,8,9 Priority Ranking: High	Mountain Home City Council	Ongoing; Annual Project	City of Mountain Home	LOW
MH-6	Flood	Complete the Tiger Alley, South 14 th East, and East 12 th South Stormwater Corridor Improvement Project (2011 FEMA grant application).	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2024 (Depending on FEMA funding)	City of Mountain Home, Idaho Bureau of Homeland Security	HIGH
MH-7	Flood	Add underground stormwater collection capacity at East 8 th North from North 6 th East to North 3 rd East and North 6 th East to East 10 th North.	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2025	City of Mountain Home, Idaho Bureau of Homeland Security	HIGH
MH-8	Flood	Continue to monitor and evaluate potential flood areas and flood control infrastructure at East 8 th North between North 3 rd East and Sunset Strip, Silverstone Pond, East 8 th North east of North 18 th East, North 14 th East above East 10 th North, South 5 th West at Sawtooth Street, and Airbase Road at Jerome intersection.	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	Ongoing; Revised Action Item	City of Mountain Home	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-9	Flood	Expand catch basin capacity at Baker Pit Stormwater Pond (North 14 th East in Dry Creek #2 subdivision).	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2025	City of Mountain Home	MEDIUM TO HIGH
MH-10	Flood	Install overflow for sanitary sewer system at Foster Pond and East 4 th North.	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2026	City of Mountain Home	MEDIUM TO HIGH
MH-11	Flood	Acquire easement and install overflow and piping at Gunfighter Pond.	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2024	City of Mountain Home, Idaho Bureau of Homeland Security	MEDIUM TO HIGH
MH-12	Flood	Attend “Managing Floodplain Development through the NFIP” training provided by FEMA. 4 people have attended to date.	Goal #1,2,3,4,5 Priority Ranking: High	Mountain Home City Council and Public Works	Ongoing Project; 2022	City of Mountain Home	LOW
MH-13	Flood	Schedule another Community Assistance Visit.	Goal #1,2,3,4 Priority Ranking: High	Mountain Home City Council and Public Works	Ongoing Project; 2024	City of Mountain Home	LOW
MH-14	Flood	Continue to create a build fund for a floodplain study.	Goal #1,2,3,4 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2021	City of Mountain Home	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-15	Flood	Continue NFIP public outreach campaign via City water bills as well as letters sent to local realtors, insurance agents, mortgage lenders, and developers.	Goal #1,2,3,4,8 Priority Ranking: Moderate	Mountain Home City Council and Public Works	Ongoing; project to resume in 2020 and occur annually	City of Mountain Home	LOW
MH-16	Flood	Continue posting NFIP information in “Notice to the Public: Flood Hazard Information” notices in local papers.	Goal #1,2,3,4,8 Priority Ranking: Moderate	Mountain Home City Council and Public Works	Ongoing; project to resume in 2020 and occur annually	City of Mountain Home	LOW
MH-17	Flood	Continue working on the Community Rating System to improve the City’s overall flood insurance rating.	Goal #1,2,3,4,8 Priority Ranking: High	Mountain Home City Council and Public Works	Ongoing; project to resume in 2020 and occur annually	City of Mountain Home, Idaho Office of Emergency Management	LOW
MH-18	Flood	Expand South 10 th East Stormwater corridor project	Goal #1,2,3,4,6,7 Priority Ranking: High	Mountain Home City Council and Public Works	New Project; 2023	City of Mountain Home, Idaho Office of Emergency Management	MEDIUM TO HIGH



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-19	Wildland Fire	Expansion to Rural Fire Protection facility at 550 South Main Street, Mtn Home Idaho. Add 231oundar. 3,000 sq ft to front of existing building to allow indoor parking of Rural Fire apparatus that is now being housed in a City Fire facility.	Goal #1,4 Priority Ranking: High	Mountain Home Rural Fire Protection District	New Project; completion date is dependent on funding.	Funding: IDL, MHRFPD, Grants. Mountain Home Rural Fire Department and contractors.	HIGH
MH-20	Wildland Fire	Purchase of a new Wildland Urban Interface pumper to replace the 20 year old pumper currently in service. This unit will allow us better access on our wildland urban areas that are growing rapidly between the City and Rural areas. Currently we can either do pump and roll brush trucks or structure pumpers. We do not have the capability of a unit that would be able to do both.	Goal #1,4 Priority Ranking: High	Mountain Home Rural Fire Protection District	New Project; project completion date is dependent on funding	Funding: IDL, MHRFPD, Grants. Mountain Home Rural Fire Department and contractors.	MEDIUM to HIGH



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-21	Wildland Fire	West End Fire Break expansion: From the solar panel array, parallel to the railroad spur to Air Base road. The current fuel break a joint county BLM project is 27 feet wide plus the railroad spur width. BLM interests need a widening of this break to A minimum of 100 feet to protect the city from a running wildfire. Replanting with Forage Kochia in fall as allowed by weather to match first project. Replanting the following fall if necessary.	Goal #1,2,3,4,6 Priority Ranking: High	Elmore County Commissioners, BLM, SW Idaho RC&D Mountain Home city and Rural fire department, Mountain Home Rural Fire commissioners, contractor.	New project; project to be completed by June 2023	Funding: Elmore County, Idaho Department of lands US Bureau of Land Management, US Dept of Agriculture, Idaho Cattleman's Association	LOW to MODERATE



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-22	Wildland Fire	Hampton / Edgemoad Fire break: Starting perpendicular to Hot Creek road along the Idaho Army Guard detachment eastern fence line extending to the interstate fence, linking with the fuels reduction program along the interstate. Create a fuel break to prevent a running wildfire from impacting the city infrastructure by the north side of exit 95 on Interstate 84. The fuel break will be 100 feet wide made by mechanical means and replanted with Forage Kochia in fall as allowed by weather. Replanting the following fall if necessary. Projected plan is on BLM ground. A back up plan is on private ground and expanding up to Edgemoad south fence and around that perimeter to Hot creek road.	Goal #1,2,3,4,6 Priority Ranking: High	Elmore County Commissioners, BLM, SW Idaho RC&D Mountain Home city and Rural fire department, Mountain Home Rural Fire commissioners, contractor, Idaho Army National Guard Bureau.	New project; project to be completed by June 2024	Funding: Elmore County, Idaho Department of Lands US Bureau of Land Management, US Dept of Agriculture, Idaho Cattlemans Association, assisted by SW Idaho RC&D	LOW to MODERATE
MH-23	Wildland Fire	Airbase Rd to Vera Firebreak: Beginning with lot next to Idaho Metals property on Air Base road heading east parallel to Highway 51 across to SW Vera ST. Construct a Fire break 100 Ft wide starting at Air Base Road eastward through private ground connecting with SW Vera Street.	Goal #1,2,3,4,6 Priority Ranking: High	Private land owners, Contractors, Elmore County Commissioners, BLM, SW Idaho RC&D Mountain Home city and Rural fire department, Mountain Home Rural Fire commissioners	New project; project to be completed by June 2025	Funding: Elmore County, Idaho Department of Lands US Bureau of Land Management, US Dept of Agriculture, Idaho Cattlemans Association, assisted by SW Idaho RC&D	LOW to MODERATE



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
MH-24	Wildland Fire	Wildfire Quickhit: Employ 1 full time day time firefighters to be able to make quicker assessment and fire attack on a wildfire for both the City and Rural districts, as well as ensuring all firefighting equipment is in proper working order and in service. Additional duties would be to do wildfire assessments for fire prevention and additional fuels reduction projects, and community wildfire awareness.	Goal #1,3,4 Priority Ranking: High	Mountain Home City and Rural Fire Departments	New project; project to be completed by December 2022	Funding: City Mountain Home, Mountain Home Rural Fire Department, FEMA safer grant, US BLM, Idaho Volunteer and Emergency Services Association retention grant.	MODERATE
MH-25	Wildland Fire	Hazardous Materials Response Readiness: Conduct a Community Risk Assessment for Hazardous Materials releases. Construct response plans based on that assessment. Bring the City Fire Department Members up to an Operations Level for Hazardous Materials response with added specialties as needed. Additionally procure equipment to support such operations.	Goal #1,3,4 Priority Ranking: High	Mountain Home City and Rural Fire Departments, Idaho Department of Homeland Security, Mountain Home police Department, Idaho Department of Emergency Management	New project; project to be completed by December 2023	Funding: City of Mountain Home, Mountain Home Rural Fire commissioners, Federal and Id Department of Homeland Security, Idaho fire service training and their FEMA awarded grant program, Local business owners, Dept of railroads, Union Pacific railroad, Chemical manufacturers association, Insurance Industry, Idaho department of Health, Idaho Volunteer and Emergency Services Association.	LOW



The following projects were listed in the 2011 version of the HMP and completed since its adoption:

1. Enlarge South 5th West Pond and expand detention capacity. Completed by 2015.
2. Expand inlet capacity at American Legion near First Class Realty. Completed by 2014.
3. Complete the East 8th North Stormwater Corridor Improvement project. FEMA grant for \$444,448 awarded in 2010.



Oasis Fire Protection District Annex

Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
OA-1	General	Continue to develop and implement public education programs.	Goal #1, 2, 3, 5 Priority Ranking: Moderate	Oasis Community	Ongoing; Annual Project	Idaho Bureau of Homeland Security, Bureau of Land Management, US Forest Service, Southwest Idaho RC&D, IDL, USDA Natural Resources Conservation Service	LOW
OA-2	General	Adoption and enforcement of International Building Codes and/or more stringent hazard-related building code provisions.	OFPD and Elmore County adopted the updated International Building Codes in 2011.		Ongoing; Annual Project	OFPD, Elmore County	LOW
OA-3	General	Implement land-use and development policy to reduce exposure to hazards	Oasis and Elmore County completed an update of their Comprehensive Plan in 2014. The Comprehensive Plan contains specific language regarding growth and development in hazardous areas.		Ongoing; Annual Project	OFPD, Elmore County	LOW
OA-4	General	Obtain funding for new handheld radios.	Goal #1,4 Priority Ranking: Moderate	Oasis FPD, Elmore County Emergency Management	Ongoing; Annual Project	Idaho Bureau of Homeland Security, Fire Assistance grants	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
OA-5	General	Obtain funding for compliant radios in order to improve interoperability with surrounding partner agencies such as the fire department, BLM, US Forest Service, and law enforcement.	Goal #1,4 Priority Ranking: High	Oasis FPD, Elmore County Emergency Management and local emergency service organizations	Ongoing; Annual Project	Idaho Bureau of Homeland Security, Fire Assistance grants	LOW
OA-6	General	Obtain funding for drain field and septic tank at fire station.	Goal #1,4 Priority Ranking: High	Oasis FPD, Elmore County Emergency Management	New Project; 2024	Oasis FPD, Elmore County Emergency Management RC&D, Idaho Bureau of Homeland Security, Fire Assistance grants	LOW TO MEDIUM
OA-7	General	Obtain funding for interior improvements to fire station.	Goal #1,4 Priority Ranking: Moderate	Oasis FPD, Elmore County Emergency Management	Ongoing; Annual Project	Oasis FPD, Elmore County Emergency Management RC&D, Idaho Bureau of Homeland Security, Fire Assistance grants	LOW TO MEDIUM
OA-8	Flood Profile	Educate the public on the availability and usage of sandbags stored at the Oasis fire station for use in an emergency.	Goal #1,2,3,5 Priority Ranking: Moderate	Oasis FPD, Elmore County Emergency Management	New Project; 2020	Idaho Bureau of Homeland Security, Fire Assistance grants	LOW
OA-9	Severe Weather	Educate the public on appropriate "Shelter-in-Place" procedures.	Goal #1,2,3,5 Priority Ranking: Moderate	OFPD, Elmore County Emergency Management	New Project; 2020	National Fire Protection Association, Bureau of Homeland Security	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
OA-10	Wildland Fire	Obtain a year-round 10,000 to 12,000 underground water storage tank with a minimum 250 gallon per minute pump to support fire suppression at the Oasis Volunteer Fire Department station.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	New Project; 2024	Oasis FPD, Elmore County Emergency Management RC&D, Bureau of Land Management, Idaho Bureau of Homeland Security, Fire Assistance grants	HIGH
OA-11	Wildland Fire	Develop a map of available water resources as well as potential hazards (i.e. limited bridge crossings, etc.) throughout the Community.	Goal #1,2,3,5 Priority Ranking: High	Oasis Fire Protection District	Ongoing; Annual Project	OFPD Maps	LOW TO MEDIUM
OA-12	Wildland Fire	Obtain funding for a heating system into the Oasis Volunteer Fire Department station.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	New Project; 2020	Idaho Office of Emergency Management	LOW TO MEDIUM
OA-13	Wildland Fire	Obtain funding for a generator as a backup power system to support fire suppression at the Oasis Volunteer Fire Department station.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	New Project; 2021	Idaho Office of Emergency Management	LOW
OA-14	Wildland Fire	Assess and hardwire fire station for use with a portable generator.	Goal #1,4 Priority Ranking: High	Oasis, Elmore County Commissioners, Sheriff's Office, and Emergency Management	New Project; 2021	Idaho Office of Emergency Management	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
OA-15	Wildland Fire	Continue to develop and implement hazardous fuels reduction projects to protect individual homes, subdivisions, communities, and critical infrastructure.	Goal #1,2,3,4,6 Priority Ranking: High	OFPD, Elmore County AHMP/CWPP Planning Committee	Ongoing	Idaho Department of Lands, Bureau of Land Management, US Forest Service	LOW TO HIGH
OA-16	Wildland Fire	Obtain funding to establish additional water supply capabilities and storage facilities for fire suppression in strategic locations throughout Oasis.	Goal #1,3,4 Priority Ranking: High	OFPD, Elmore County Emergency Management	New Project; 2024	Idaho Bureau of Homeland Security, Bureau of Land Management	LOW TO MEDIUM
OA-17	Wildland Fire	Adopt "Title 6 Elmore County Zoning and Development Ordinance, Chapter 12 – Fire Prevention and Wildfire Mitigation Standards and Regulations Applying to all Districts".	The "Title 6" ordinance was adopted by Elmore County in May of 2009.	Oasis FPD	Ongoing	OFPD, Elmore County	LOW
OA-18	Wildland Fire	Obtain funding to purchase basic equipment and supplies such as radios, personal protective equipment, and fire shelters for the Oasis Fire District.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	Ongoing	Fire Assistance grants, Bureau of Land Management, US Forest Service, Idaho Department of Lands	LOW
OA-19	Wildland Fire	Obtain hazardous materials and vehicle extrication capabilities and training for the Oasis Volunteer Fire Department.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	Ongoing	Fire Assistance grants	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
OA-20	Wildland Fire	Continue to improve the Oasis Volunteer Fire Department fleet by updating aging rolling stock.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	Ongoing	Fire Assistance grants, Bureau of Land Management, US Forest Service, Idaho Department of Lands	MEDIUM
OA-21	Wildland Fire	Obtain funding for a 3000-gallon water tender for the Oasis Volunteer Fire Dept.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	New Project; 2020	Fire Assistance grants, Bureau of Land Management other fire agencies	MEDIUM
OA-22	Wildland Fire	Obtain funding to add a multi-function fire station/community center/law enforcement substation/BLM staging facility for the Oasis Volunteer Fire Department.	Goal #1,3,4,5 Priority Ranking: High	Oasis Volunteer Fire Department and Southwest Idaho RC&D	Ongoing	Idaho Bureau of Homeland Security, Bureau of Land Management, Idaho Department of Lands, US Forest Service, Fire Assistance grants	HIGH
OA-23	Wildland Fire	Continue to provide high quality training to fire department staff and volunteers.	Goal #1,3,4 Priority Ranking: High	Elmore County Emergency Management and local fire departments and state and federal agencies	Ongoing; Annual Project	Idaho Fire Chiefs Association, Bureau of Land Management, US Forest Service, Idaho Volunteer Fire & Emergency Services Association	LOW
OA-24	Wildland Fire	Continue to provide both youth and adult wildland fire education and prevention programs.	Goal #1,2,3,4,5,6 Priority Ranking: Moderate	OFPD, Elmore County Emergency Management, fire departments and districts, BLM, and USFS	Ongoing; Annual Project	Bureau of Land Management, US Forest Service, Idaho Department of Lands	LOW



Strategy ID	Hazard	Action Item	Goals Addressed	Responsible Departments or Organizations	2019 Status; Projected Completion	Potential Resources	Proposed Cost
OA-25	Wildland Fire	Encourage development of a targeted grazing program as an additional tool to reduce wildland fire risk on BLM-managed public lands.	Goal #1,3,6 Priority Ranking: High	OFPD, Elmore County Commissioners	Ongoing; Annual Project	Bureau of Land Management, local ranchers	LOW
OA-26	Wildland Fire	Construct an addition to the south side of the existing Oasis Fire Station. OFPD’s CWPP action plan #23 is to obtain a 3,000-gallon water tender for the Oasis Fire Department. The water tender will need to be housed in the addition.	Goal #1,4 Priority Ranking: High	Oasis Fire Protection District	New project for 2021. To be completed by the end of 2021 if funding is available	IDL, OFPD, Community Assistance	HIGH

The following projects were listed in the 2011 version of the HMP and completed since its adoption:

1. The district obtained a portable generator for the fire station to support operations during power outages.
2. In 2011, funding was obtained to build a security fence around the fire station.
3. Improvements were made to the Oasis Volunteer Fire Department fleet in 2017; its current structural engine was put in-service at that time.
4. In 2018, funding was obtained for a well and pump to support fire suppression at the Oasis Volunteer Fire Department station site.



Fuels Reduction Projects (CWPP)

Most major fuels reduction projects in Elmore County have taken place on or are planned for either BLM or USFS land while many smaller projects have been completed or planned around cities and communities. General descriptions of the fuels reduction projects that have been identified during this plan update can be found below (specific projects are described in Table 50). Maps of some of the larger fuels reduction and fuel break projects can be found in Figure 36, Figure 37, and Figure 38.

- USFS: Fuels reduction efforts primarily include prescribed burning, stand thinning, salvage harvests, mastication, etc. Most project areas serve to reduce fire risk around rural communities and roadways identified as the primary means of ingress and egress for residents in rural locations. Most project areas are located around the communities of Prairie, Pine, Featherville, Rocky Bar, and Atlanta. The project areas identified in Figure 36 are in various stages of planning and completion with different areas being targeted for treatment each year.
- BLM (Paradigm Fuel Breaks Project; EC-44 in Table 50): The Paradigm project is a multi-year, multimillion-dollar project that extends across southern Idaho. The aim of the project is to disrupt the current fire regime in southern Idaho by mowing, discing, and planting fuel breaks along roadways and at other strategic points in order to address the most fire-prone landscapes in the contiguous United States. In addition to Federal land, fuel breaks will also be constructed on state and private land in order to make fuel breaks as continuous as possible. This project is being completed in stages with different areas being targeted each year.
- Highway Districts (EC-45 in Table 50): Through the BLM Wildland Urban Interface Community Fire Assistance program, the Mountain Home Highway District, Glens Ferry Highway District, and BLM are conducting fuels treatments that complement the Paradigm project. The goal of this additional work by the Highway Districts is to reduce risk of wildland fires adjacent to county roads by enhancing the continuity of fuel breaks created for the Paradigm project. The Highway Districts have detailed maps of treatments areas; the maps are too large to include in this plan.
- Mountain Home (MH-21 to MH-23 in Table 50): Through this planning process, three different fuel treatment areas have been identified near Mountain Home. All three project areas are fuel breaks that would protect the city, specifically areas that are largely residential, from advancing flaming fronts. The Mountain Home and Mountain Home Rural Fire Departments aim to have all three fuel breaks constructed by the summer of 2025.

Table 50) Fuels reduction projects identified in Elmore County, ID (projects were identified as a part of the 2020 CWPP update).

Strategy ID	Project Name	Project Location	Project Characteristics	Sources of Funding	Organizations Involved	Projected Completion Date
EC-44	Paradigm Project	Highway corridors in Elmore County including I-84, Idaho State Highways, County roads, etc.	Create fuel breaks along highway corridors in Elmore County (the project covers highway corridors from Boise to Twin Falls). Fuel breaks are created by mowing and planting along roadways. Refer to the BLM website for more information about the Paradigm Project.	Federal Sources	Bureau of Land Management	Ongoing; The next phase of the project will be completed by the end of 2021
EC-45	Highway Fuel Breaks	Efforts are coordinated with the BLM so 2021 project areas will be conducted in conjunction with BLM target areas.	This project both mirrors and compliments the BLM's Paradigm Project. The objective of the project is to create continuity between BLM fuel breaks by establishing and maintaining fuel breaks along roadways within the Mountain Home Highway District jurisdiction.	Federal Sources	Mountain Home Highway District, Glens Ferry Highway District, Bureau of Land Management	Ongoing; The next phase of the project will be completed by the end of 2021
MH-21	West End Fire Break expansion	From the solar panel array, parallel to the railroad spur to Air Base road.	The current fuel break a joint county BLM project is 27 feet wide plus the railroad spur width. BLM interests need a widening of this break to A minimum of 100 feet to protect the city from a running wildfire. Replanting with Forage Kochia in fall as allowed by weather to match first project. Replanting the following fall if necessary.	Elmore County, Idaho Department of lands US Bureau of Land Management, US Dept of Agriculture, Idaho Cattlemans Association	Elmore County Commissioners, BLM, SW Idaho RC&D Mountain Home city and Rural fire department, Mountain Home Rural Fire commissioners, contractor.	June 2023

Strategy ID	Project Name	Project Location	Project Characteristics	Sources of Funding	Organizations Involved	Projected Completion Date
MH-22	Hampton / Edgemoad Fire break	Starting perpendicular to Hot Creek road along the Idaho Army National Guard detachment eastern fence line extending to the interstate fence, linking with the fuels reduction program along the interstate.	Create a fuel break to prevent a running wildfire from impacting the city infrastructure by the north side of exit 95 on Interstate 84. The fuel break will be 100 feet wide made by mechanical means and replanted with Forage Kochia in fall as allowed by weather. Replanting the following fall if necessary. Projected plan is on BLM ground. A back up plan is on private ground and expanding up to Edgemoad south fence and around that perimeter to Hot creek road.	Elmore County, Idaho Department of Lands US Bureau of Land Management, US Dept of Agriculture, Idaho Cattlemans Association, assisted by SW Idaho RC&D	Elmore County Commissioners, BLM, SW Idaho RC&D Mountain Home city and Rural fire department, Mountain Home Rural Fire commissioners, contractor, Idaho Army National Guard Bureau.	June 2024
MH-23	Airbase Rd to Vera Firebreak	beginning with lot next to Idaho Metals property on Air Base road heading east parallel to Highway 51 across to SW Vera ST.	Construct a Fire break 100 Ft wide starting at Air Base Road eastward through private ground connecting with SW Vera Street.	Elmore County, Idaho Department of Lands US Bureau of Land Management, US Dept of Agriculture, Idaho Cattlemans Association, assisted by SW Idaho RC&D	Private land owners, Contractors, Elmore County Commissioners, BLM, SW Idaho RC&D Mountain Home city and Rural fire department, Mountain Home Rural Fire commissioners	June 2025



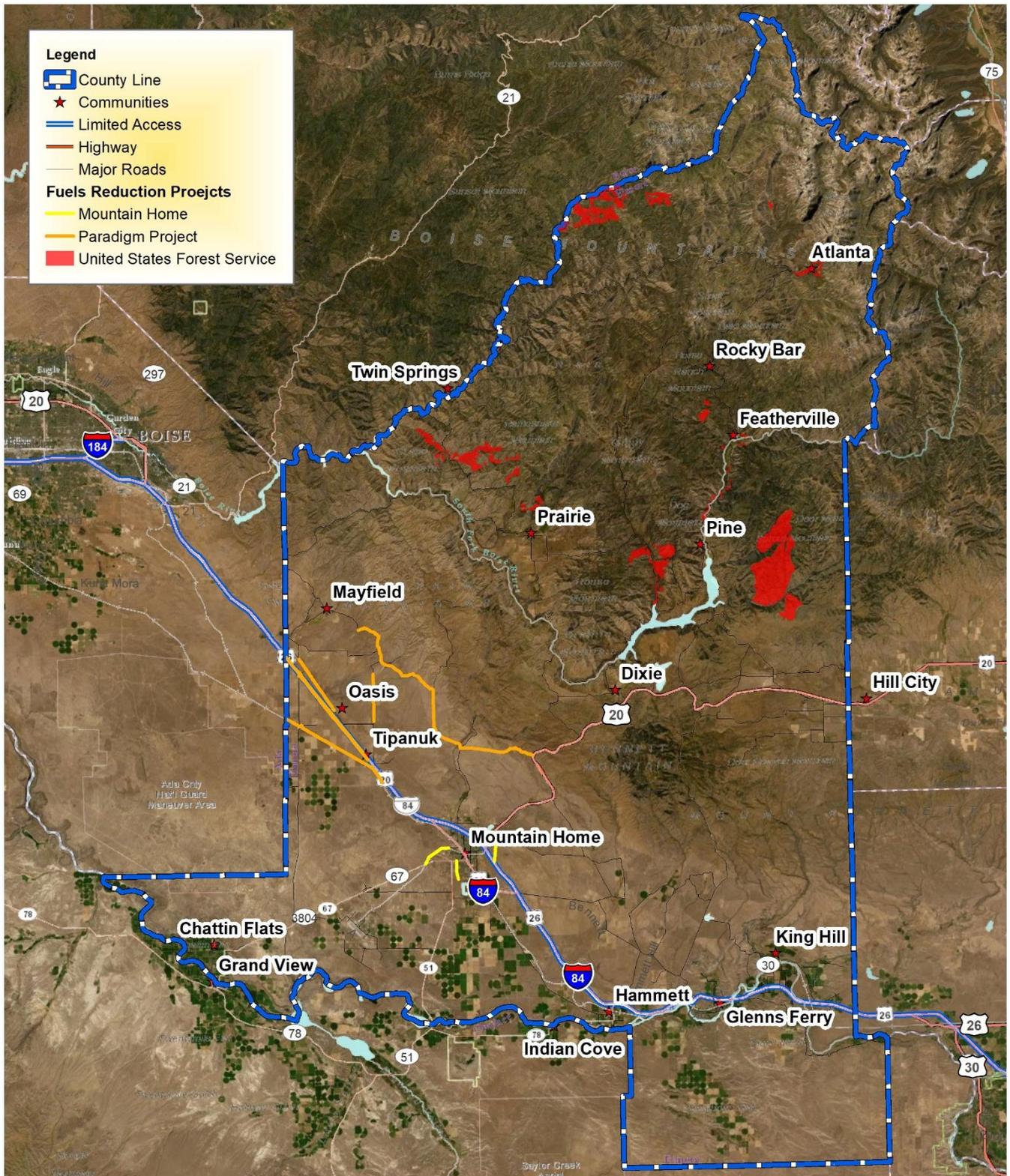


Figure 36) Fuels-reduction projects in Elmore County, ID. The Paradigm Project (EC-44) and Mountain Home fuel breaks (MH-21 to 23) are described in the projects table. The USFS fuels reduction projects are described at the very beginning of this section.



Figure 37) Fuels-reduction projects in Elmore County, ID. The Paradigm Project (EC-44) and Mountain Home fuel breaks (MH-21 to 23) are described in the projects table above.



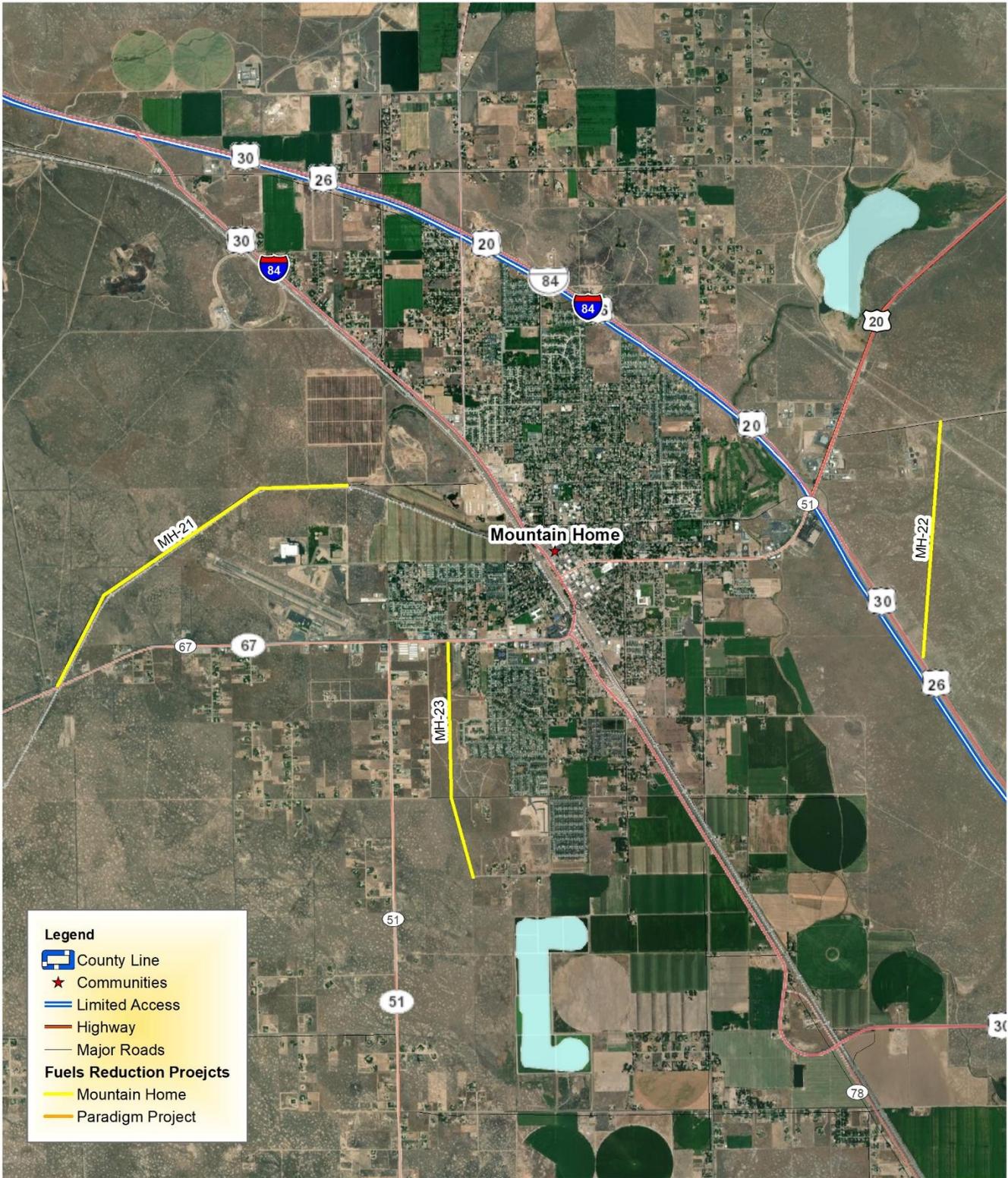


Figure 38) Fuels reduction projects in Mountain Home, Idaho. Projects are described in detail in the table above (MH-21 to 23).



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Chapter 7: Appendices

IN THIS SECTION:

- Prioritization of Action Items
- List of Tables
- List of Figures
- Record of Local Adoptions
- Planning Committee Minutes
- Record of Meeting Attendance
- Record of Published Articles
- Public Meeting Slideshow
- Literature Cited



Chapter 7 – Appendices

Appendix A: Documentation of Participation

Record of Planning Team Participation

February 28, 2019 Agenda & Sign-In Sheet

A G E N D A	Elmore County Hazard Mitigation Plan Thursday, February 28, 2019 10:00 a.m. – 12:00 p.m. Elmore County Search and Rescue Meeting Room Mountain Home, Idaho	
10:00 a.m.	OPEN – Introductions	
10:15 a.m.	GROUP MEETING I. Overview ✓ County Efforts To-Date ✓ Overview of HMP presentation II. Build the Planning Team ✓ Planning Team i. Who’s Missing? ii. Planning Team Responsibilities ✓ Stakeholders III. Exercises ✓ Hazards Summary Worksheet IV. Chapter Review ✓ Chapter 1 Review V. Communications Plan ✓ Establish Primary Points of Contact ✓ Interacting with the Planning Team VI. Timeline ✓ Meeting Schedule VII. Homework ✓ Data and Information Request	NMI/Group
11:45 a.m.	OPEN DISCUSSION	Group
12:00 p.m.	ADJOURNMENT	

MEETING SIGN-IN SHEET

Project: Elmore County Hazard Mitigation Plan Update
 Date: February 28, 2019
 Facilitator: Northwest Management, Inc. Place: Elmore County Search & Rescue Meeting Room

Name	Title	Company	Phone	Email	Hours To-Date	Hourly Rate	Miles To-Date
Heidi Nwlich	sc/sw AFO	DEM	208-657-3158	hnwlich@ind.com; delogov NA	NA		
Lorrie Pahl	Mitigation Planner	IDEAM	208-258-1652				
Steve Winings	Management	ECM	208-997-7614	swinings@ecm.com			
Beth Bresnahan	Director, Land Use Division	EC	208-587-2142	bbresnahan@elmorecounty.org			
Alan Roberts	Elmore Chief	Elmore Rescue	208-587-3236	aroberts@elmoremindspring.com			
Gene Palmer	Struct Supt.	CMH	208-599-1412	gpalmer@cmh-inc.com			
Max Moore	Fire Chief	MHFD	208-367-1411	maxmoore@mhb.com			
Mike Holmstead	Sheriff	CCSO	208-587-3370	mholmstead@elmorecounty.org			
Leo Gillette	MANAGER EAS	EAS	208-743-2500	gillette@slhs.org			
Bob Ruth	FIRE CHIEF	OASIS VFD	208-869-7898	prop110@slhs.org			
Jolene Hobley	OFP/ Sec	OVPD	208-756-2236	07345ytk@hotmail.com			
Terra Ryan	JO 70- Firefighter	DVFD	208-796-2165	j.hobley@rcinet.com			
Renny Meyers	District Administrator	MHFD	208-513-8505	TLUV@ERMISE.COM			
			208-587-3211	pmeyers@elmoremindspring.com			

March 26, 2019 Agenda & Sign-In Sheet

A G E N D A	Elmore County, ID Hazard Mitigation Plan Tuesday March 26, 2019 2:00 p.m. – 4:00 p.m. Elmore County Search and Rescue Meeting Room, Mountain Home, ID	
2:00 p.m.	OPEN – Introductions	Carol Killian
2:15 p.m.	GROUP MEETING I. Old Business ✓ Review of the last meeting ✓ Hazard rating forms –who are we missing forms from? ✓ HMP mission statement and planning goals – changes? ✓ Any other Comments? II. Plan Draft: Chapter 2 ✓ Comments about plan update or plan review process? ✓ Any other comments? III. Plan Draft: Chapter 3 ✓ Any comments about community profiles? (Population, etc.) ✓ Changes in Development Trends or Capabilities? ✓ Oasis: Need community description, population data, etc. IV. Plan Draft: Chapters 4 and 5 ✓ Overview of chapter contents ✓ Hazard Maps: Are there any changes that need to be made? ✓ Hazard Maps: Oasis community ✓ Data/informational needs. V. Timeline ✓ Next Committee Meeting? VI. Homework ✓ “Soft” deadline for Chapter 1, 2, 3 edits? ✓ Deadline for first round of data for chapters 4 and 5 ✓ Oasis information/profile	NMI/Group
3:45 3.m.	OPEN DISCUSSION	Group
4:00 p.m.	ADJOURNMENT	

Contact Info:

Brad Tucker, Project Manager tucker@northwestmanagement.com NMI Office: 208-883-4488	Eric Nelson nelson@northwestmanagement.com	Vaiden Bloch bloch@northwestmanagement.com
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MEETING SIGN-IN SHEET							
Project: Elmore County Hazard Mitigation Plan Update		Date: MARCH 26 (1 of 2)					
Facilitator: Northwest Management, Inc.		Place:					
Name	Title	Company	Phone	Email	Hours To-Date	Hourly Rate	Miles To-Date
Brian Chevalier	Supervisor	Pine Fertilizer Gms	208-590-3784	CHEVALIER@MSM.COM			102.0
CAROL KILLIAN	ELMORE COUNTY DIRECTOR EC	EMORE	208-590-0067	CKILLIAN@EMORE.CO			
Beth Bresnahan	land use building	Elmore Co.	208-587-2125	bresnahan@elmorecountygov.org			2 mi
MARK MOORE	Chief	Fire Dept.	208-861-1461	m.moore@northwestmanagement.com			2 mi
Luis Lasuz	Fireman	NHHD	208-587-3211	llasuz@northwestmanagement.com			
Michael Brady	DFMO	USFS	208-859-4700	MBrady@elkbl.us			
Gyan Erne	DAFMO	USFS	208-587-7857	erne@fs.fed.us			
Gene Haught	Chief	Atlanta	208-964-2170	gghaught@yale.edu			240
ALAN ROBERTS	CHIEF	Elmore Rescue	208-590-2423	aroberts@elmorecountygov.com			2
MIKE HOLMSTAD	Sheriff	EC50	208-587-5570	mholms@elmorecountygov.org			0
FARRELL RAMSEY	EC50-STAFF LT.	EC50	208-587-2100	framsey@elmorecountygov.org			
Richard Guidi	Dir. Pest-Work	CAH	507-2107	rguidi@northwestmanagement.com			
TELLERBYAN	Volunteer	OASIS FIRE PROTECTION DISTRICT	208-513-8505	ITELLERBYAN@AOL.COM			39

Elmore County (Meeting Name & Date)					MARCH 26 (2 of 2)	
Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal grant?	Signature	
Bob Ruth	Fire Chief	OASIS State P.D	38	NO		
Jolene Hobbley	Sec/Treas	Oasis FPD	32	NO		
Randy Myers	District Administrator	MTHHD	12	NO		
LEO GILBRIDE	MANAGER ELMORE AMBULANCE Elmore County	EAS	0	NO		
STAC DIMMS	Emergency Manager	Pine-Featherville Ems	0			
Brian Chevalier			102	NO		
Jesse Cobas	Lieutenant	MHPD				
DEKJ JANUSEK	Fire Chief	GFFD	50	NO		
Mandy White	Mayor	Kearsferry	50	NO		



April 23, 2019 Agenda & Sign-In Sheet

A G E N D A	Elmore County, ID Hazard Mitigation Plan Tuesday April 23, 2019 2:00 p.m. – 4:00 p.m. Elmore County Search and Rescue Meeting Room, Mountain Home, ID	
2:00 p.m.	OPEN – Introductions	Carol Killian
2:15 p.m.	GROUP MEETING I. Old Business <ul style="list-style-type: none"> ✓ Review of the last meeting. ✓ Hazard rating forms –who are we missing forms from? ✓ HMP mission statement and planning goals – changes? ✓ Any comments about chapters 1-3? II. Plan Draft: Chapter 4 – Hazard Profiles <ul style="list-style-type: none"> ✓ Any comments about the Hazard Profiles? ✓ Are there any other maps or data that should be included? ✓ Layout of severe weather section. ✓ Need to make sure Oasis is thoroughly incorporated. III. Plan Draft: Chapter 5 – Elmore County Annex <ul style="list-style-type: none"> ✓ Yellow Highlights: Questions for the group. ✓ Blue Highlights: Data updates that NMI needs to make. ✓ Layout of the chapter. ✓ We'll need to build an annex for Oasis. IV. Timeline <ul style="list-style-type: none"> ✓ The next step in the planning process. ✓ Next Committee Meeting? V. Homework <ul style="list-style-type: none"> ✓ Review chapter 4 – Hazard Profiles. ✓ Review chapter 5 – Elmore County Annex. ✓ Other jurisdictions: think about information that you want included in your jurisdiction's annex. ✓ Continue to work on Oasis information/profile. 	NMI/Group
3:45 p.m.	OPEN DISCUSSION	Group
4:00 p.m.	ADJOURNMENT	

Contact Info:

Brad Tucker, Project Manager tucker@northwestmanagement.com NMI Office: 208-883-4488	Eric Nelson nelson@northwestmanagement.com
Vajden Bloch, GIS Lead bloch@northwestmanagement.com	Adam Herrenbruck herrenbruck@northwestmanagement.com

Elmore County
(Meeting Name & Date)

Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal grant?	Signature
Tricia Chevalier	Supervisor	Pine/Feather v. civ	102.0	Yes	[Signature]
Jim Colvich	Supervisor	Glenn S Ferry Highway Dist	1hr		[Signature]
HAUGHT	ATLANTA Chief	ATLANTA FIRE DISTRICT	4HRS 135M	No	[Signature]
FARRELL RAMSEY	STAFF LT. ECSSO	ELMORE CO. SHERIFF	—	No	[Signature]
MURK MOORE	CHIEF	MHF D	1		[Signature]
JOSH REUZ	M.T ED	BOISE BLM	90	Yes	[Signature]
BOB RUTH	Chief	OASIS VFD	38	No	[Signature]
Jolene Hobley	Soc Treas	C.V.F.D	32	no	[Signature]
TEBB Ripon	Firefighter	Oasis VFD	38	no	[Signature]
ALBERT GILMAN	EMER. MANAGER	ZACNE CO MAN	—	—	[Signature]
MIKE HOLMSTAD	EE Sheriff	ECSSO	—	—	[Signature]

**Elmore County
(Meeting Name & Date)**

Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal grant?	Signature
Bob Ruth	Fire Chief	OASS Wake P.D	38	NO	
Jolene Hobbley	Sec/Tress	Oasis FPD	32	NO	
Renny Merges	District Administrator	MTHD	12	NO	
BO GILBRIDE	MANAGER ELMORE COUNTY EMERGENCY MANAGEMENT	EAS	0	NO	
Stacy Dennis	EMERGENCY MANAGER	Five-Featherville Cons	0		
Brian Charalies			102	NO	
Jesse Cobos	Lieutenant	MHPD			
Eric Jandusek	Fire Chief	GFFD	50	NO	
Mandy White	Mayor	GENAS FERRY	50	NO	



May 23, 2019 Agenda & Sign-In Sheet

A G E N D A	Elmore County, ID Hazard Mitigation Plan Thursday May 23, 2019 10:00 a.m. – 12:00 p.m. Elmore County Search and Rescue Meeting Room, Mountain Home, ID	
10:00 a.m.	OPEN – Introductions	Carol Killian
10:15 a.m.	GROUP MEETING I. Old Business <ul style="list-style-type: none"> ✓ Review of the last meeting. ✓ Hazard rating forms –are we missing anyone? ✓ Comments about chapters 1-4? ✓ Comments or edits for Chapter 5: Elmore County Annex? ✓ Current state of the HMP draft II. Community Wildfire Protection Plan Draft <ul style="list-style-type: none"> ✓ Yellow Highlights: Items that need to be addressed ✓ Mitigation Action Items ✓ Proposed Planning Areas ✓ USFS Maps ✓ List firefighting resources? III. Timeline <ul style="list-style-type: none"> ✓ The next step in the planning process. ✓ Next Committee Meeting? IV. Homework <ul style="list-style-type: none"> ✓ Review CWPP –think about project areas! ✓ Review Chapter 5: Elmore County Annex ✓ Continue to work on Oasis information/profile. 	NMI/Group
11:45 a.m.	OPEN DISCUSSION	Group
12:00 p.m.	ADJOURNMENT	

Contact Info:

Brad Tucker, Project Manager tucker@northwestmanagement.com NMI Office: 208-883-4488	Eric Nelson nelson@northwestmanagement.com
Vajden Bloch, GIS Lead bloch@northwestmanagement.com	Adam Herrenbruck herrenbruck@northwestmanagement.com



Elmore County (Meeting Name & Date)					
Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal grant?	Signature
Beth Bresnahan	Director, Elmore Co Land Use Building Environmental Planning	Elmore County	2	NO	Beth Bresnahan
Brad Tucker	Dept. Manager Environmental Analyst	Northwest Management	N/A	N/A	Brad Tucker
ERIC NELSON		Northwest Management	N/A	N/A	Eric Nelson
Natalie Martin	Project manager ^{assistant}	Northwest Management	N/A	N/A	Natalie Martin
Mark Moore	Chief	Mtn. Home F.D.	N/A	N/A	Mark D. Moore
ALAN ROBERTS	Director Elmore Co Emergency SWS	Elmore Co.	N/A	N/A	Alan Roberts
BOB RUTH	CHIEF	OASIS VFD	38	NO	Bob Ruth
Joleen Hobbley	Sec/Treas	Oasis VFD	32	NO	Joleen Hobbley
JIM R HOBLEY	FIRE	Oasis VFD	32	NO	Jim R Hobbley
Gene Haught	Chief	ATLANTA FIRE	140	NO	Gene Haught
Lisa Bistefeldt	Emergency Manager	St. Lukis	40	no	Lisa Bistefeldt
Brian Chevalier	Pine/Featherville EMS SUPERVISOR	Pine/Featherville EMS	102	NO	Brian Chevalier
Steve Williams	EM	EC OEM	2	NO	Steve Williams

Elmore County (Meeting Name & Date)					
Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal grant?	Signature
Rich Arguidi	Dir of Public Works	City of MA			Rich Arguidi
CAROL KILIAN	ENER. MAN.	ELMORE Co.			Carol Kilian

June 20, 2019 Agenda & Sign-In Sheet

A G E N D A	Elmore County, ID Hazard Mitigation Plan Thursday June 20, 2019 10:00 a.m. – 12:00 p.m. Elmore County Search and Rescue Meeting Room, Mountain Home, ID	
10:00 a.m.	OPEN – Introductions	Carol Killian
10:15 a.m.	GROUP MEETING I. Old Business <ul style="list-style-type: none"> ✓ Review of the last meeting – CWPP ✓ Comments about the CWPP? ✓ Hazard rating forms –Mountain Home, Glenns <u>Glenns</u> Ferry ✓ Current state of the HMP draft II. Chapter 5: Glenns <u>Glenns</u> Ferry, Mountain Home, Oasis Annexes <ul style="list-style-type: none"> ✓ Check descriptions and narrative for accuracy ✓ Are there any historic events that should be highlighted? ✓ Values of Resources sections have not been updated. ✓ Community Landslide Zones (landslide map handout) ✓ Agricultural data for the county III. Mitigation Action Items <ul style="list-style-type: none"> ✓ Review Elmore County MAI's ✓ Update project status, projected date of completion, etc. IV. Homework <ul style="list-style-type: none"> ✓ Review CWPP –think about project areas ✓ Read city or community annex from chapter 5 ✓ Review and update jurisdiction action items ✓ County parcel data and values 	NMI/Group
11:45 a.m.	OPEN DISCUSSION	Group
12:00 p.m.	ADJOURNMENT	

Contact Info:

Brad Tucker, Project Manager tucker@northwestmanagement.com NMI Office: 208-883-4488	Eric Nelson nelson@northwestmanagement.com
Vajden Vajden Bloch, GIS Lead bloch@northwestmanagement.com	Adam Herrenbruck herrenbruck@northwestmanagement.com



Elmore County (Meeting Name & Date)					6/20/19
Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal grant?	Signature
CAROL KILLIAN		Elmore Co EREC MAJ		506	<i>Carol Killian</i>
Brian Chevrolet		Pinefork The Vill. EMS 102			<i>Brian Chevrolet</i>
BOB RUTH		OASIS VFD	38	NO	<i>Bob Ruth</i>
Jolene Hobbs		" "	32	NO	<i>Jolene Hobbs</i>
TERRI RYAN		" "	38	NO	<i>Terri Ryan</i>
MARK MOORE		M.H.F.D.		NO	<i>Mark D. Moore</i>
ALAN ROBERTS		Elmore Co Em. Svs		NO	<i>Alan Roberts</i>
Randy Mcleland	Senior Planner	CENT DIST HLTH DEPT	55	Yes	<i>Randy Mcleland</i>
Jared Jablonski	File Intranetion	BLM	55	Yes	<i>Jared Jablonski</i>
Adam Hembrock	Planner/Writer	Northwest Management, Inc.			<i>Adam Hembrock</i>
ERIC NELSON	"	"			<i>Eric Nelson</i>
John Wiggins		Elmore County Emergency Management			<i>John Wiggins</i>
Penny Meyers	District Administrator	MHAD	12	NO	<i>Penny Meyers</i>

July 25, 2019 Agenda & Sign-In Sheet

A G E N D A	Elmore County, ID Hazard Mitigation Plan Thursday July 25, 2019 10:00 a.m. – 12:00 p.m. Elmore County Search and Rescue Meeting Room, Mountain Home, ID	
10:00 a.m.	OPEN – Introductions	Carol Killian
10:15 a.m.	GROUP MEETING I. Old Business ✓ Review of the last meeting – MAI’s/Risk Assessment ✓ Comments or questions? ✓ Hazard rating forms – Glenns Ferry ✓ Current state of the HMP draft II. Committee Comments and Feedback ✓ Chapters 1 through 4 ✓ Chapter 5: Jurisdictional Risk Assessments ✓ Mitigation Action Items III. Landslide Risk Map ✓ Revisit landslide risk corridor ✓ Look at aerial map of the county IV. Wildland Fire Fuels Treatment/Projects Map ✓ Review map of USFS projects ✓ Any other projects that should be added? V. Public Meetings ✓ How many meetings? Where? When? ✓ Press releases -which media outlets? VI. Homework ✓ Chapter 5 Risk Assessments? ✓ Mitigation Action Items? ✓ Remain on standby for information/input requests	NMI/Group
11:45 a.m.	OPEN DISCUSSION	Group
12:00 p.m.	ADJOURNMENT	

Contact Info:

Brad Tucker, Project Manager tucker@northwestmanagement.com NMI Office: 208-883-4488	Eric Nelson nelson@northwestmanagement.com
Vajden Bloch, GIS Lead bloch@northwestmanagement.com	Adam Herrenbruck herrenbruck@northwestmanagement.com



Elmore County (Meeting Name & Date)					
Name	Title	Agency	If you traveled to this event, what is the estimated mileage	Are you Federally funded or funded via Federal Grant?	Signature
Alan Roebers	Elmore Co. Emergency Svs Dir Elmore Co.	Elmore Co.			<i>Alan Roebers</i>
Stan Wings	Emergency Management Pine-Featherville Cms Supervisor	PINEFEATHERVILLE EM >	104		<i>Stan Wings</i>
Brian Chevalier					<i>Brian Chevalier</i>
Jim Hobbley	Op Chief	Oasis VFD	32	No	<i>Jim R Hobbley</i>
Jolene Hobbley	Sec/Talon	>	32	NO	<i>Jolene Hobbley</i>
TERRI RYAN	OAFD - ^{FIRE} WATER ^{FLIGHT} FLIGHT	OASIS VFD	38	NO	<i>Terri Ryan</i>
Bob Ruth	Chief Chief	OASIS VFD	38	no	<i>Bob Ruth</i>
Gene Haught	Chief Director, EC	ATLANTA FIRE	110	No	<i>Gene Haught</i>
Beth Bresnahan	Unalised Building	Elmore County	1	NO	<i>Beth Bresnahan</i>
Muel D. Moore	Mtn. Home Fire Chief	Mtn. Home Fire ^{City} County	1	NO	<i>Muel D. Moore</i>
CAROL KILHAM	EMER MAN	EMER CO	1	YES	<i>Carol Kilham</i>

July

January 21, 2021 Attendance and Meeting Description

The information in this section concerns the Elmore County Community Wildfire Protection Plan meeting that was held with the Idaho Department of Lands. The IDL had reviewed the plan and had several comments and concerns that needed to be addressed before the plan could be approved. The purpose of the January 21 meeting was to discuss those comments and the information that needed to be included in the plan so it could be approved. Below is a list of meeting attendees (Table 51) and the original email invitation that was sent to the Elmore County Planning Team.

Table 51) Individuals who participated in the January 21 Elmore County CWPP meeting with the IDL.

Name	Title	Organization
Carol Killian	Emergency Manager	Elmore Co. Emergency Management
Alan Lawler	Fire Captain	Mountain Home Fire
Alan Roberts	Chief	Elmore Rescue
Bob Ruth	Fire Chief	Oasis Volunteer Fire Department
Jim R. Hobdey	Fire	Oasis Volunteer Fire Department
Gene Haught	Chief	Atlanta Fire
Eric Nelson	Planning Associate	Northwest Management Inc.
Brad Tucker	Env. Planning Dept. Manager	Northwest Management Inc.
Tyre Holfeltz	Wildfire Risk Mitigation Program Mgr.	Idaho Department of Lands

Planning Team Email Invitation and Meeting Description

This is a final call for the inclusion of wildfire-related projects (mitigation, education, planning, capacity building) in the Elmore County Community Wildfire Protection Plan (CWPP). The CWPP has been reviewed by the IDL and is close to being finalized. The current list of projects in the plan is inadequate and needs to be improved. This is an opportunity for all planning partners to include projects in the plan that could qualify for Federal or State funding. ***If you do not include your projects in the plan your projects will no longer qualify for Federal or State funding, unless the plan is amended by approval of the county.*** One last meeting will be held with the IDL on January 21st at 9:30 AM after the LEPC meeting (it may be pushed back to 10:30 if the weather is bad) to help with the finalization of projects and to address any other questions from planning partners about the CWPP. Participants will be able to attend the meeting in-person or over Zoom. Please mark the date on your calendar; more information will be sent out in the coming weeks.

As you begin to draft your projects for the CWPP you **MUST** provide a project name, location, characteristics/description, funding source(s), list of responsible organizations, and a projected completion date. You are welcome to use the following format (or something similar) in Microsoft Word for submission (the information will be entered into a table in the CWPP by the contractor that is updating the plan):

1. *Project name (i.e. New Plymouth SE Fuelbreak)*
2. *Project location (i.e. Beginning at the intersection of 1st North and Main running due east to 3rd west and Main)*



3. *Project Characteristics (i.e. create fuelbreak that is 100 ft wide on both sides of the Main Street, through mechanical means, followed by weed control and planting if needed)*
4. *Sources of Funding to implement project (i.e. IDL - WSFM, NRCS – EQIP, BLM – Community Assistance, etc...)*
5. *Organizations involved with project (i.e. Lead - Payette SWCD, IDL, New Plymouth VFD, BLM, NRCS, etc...)*
6. *Projected completion date (i.e. October 2022)*

Please let me know, as soon as possible, if you have questions or need assistance with projects but will be unable to attend the meeting as arrangements can be made to meet with individual planning partners **BEFORE January 29th** which is the final day to submit projects. We will be working with the IDL to finalize the plan shortly after the project due date. To summarize:

- **January 21st:** Meeting with the IDL to finalize projects for the CWPP (this is the same date as the January LEPC meeting). The meeting is at 9:30 AM (or 10:30 AM if the weather bad) at the old forest service building located at 2340 American Legion Blvd in Mountain Home.
- **January 29th:** Final due date for projects. After this date, the plan will have to be amended by approval of the county.

Thank you for your participation in this process,



Record of Public Participation and Outreach

March 1, 2019 - Media Release

Media Release

From: Carol Killian, Elmore County Emergency Management Coordinator

Date: March 1, 2019

RE: Elmore County Multi-Hazard Mitigation Plan Update

Elmore County and Cities Begin Updating Hazard Risk Plan

Mountain Home, IDAHO – Elmore County recently began the process of updating its Multi-Hazard Mitigation Plan. This plan examines the risks posed by the natural hazards that affect Elmore County and develops strategies to reduce the impacts from those hazards.

The Federal Emergency Management Agency (FEMA) requires counties to update their plan every five years to remain eligible for federal funding for hazard mitigation projects. The cities of Mountain Home and Glens Ferry are currently recognized as adopting jurisdictions in the plan and will adopt the 2019 plan update. The community of Oasis also intends to adopt the plan this year.

This project is funded through a grant from FEMA and the initial “kickoff meeting” was held February 28, in Mountain Home. A planning team will work with Elmore County Emergency Management throughout the update process. The team consists of representatives from local agencies, organizations, governments, and groups. Northwest Management, Inc. has been retained by Elmore County to provide risk assessments, hazard mapping, field inspections, interviews, and to collaborate with the planning team to update the plan.

Community input will also play a key role in the 2019 plan update. Public meetings, reviews of the plan, and a public comment period will be announced in the future. The Multi-Hazard Mitigation Plan update is projected to be completed by December, 2019.

Questions and comments can be addressed to:

Carol Killian
Elmore County Emergency Management Coordinator
208 – 590 – 0967
CKILLIAN2005@msn.com

September 24 & 25 - Public Meeting Flyers (Pine and Oasis)

Is your community
RESILIENT?

The Elmore County Hazard Mitigation Plan
Striving to prevent natural hazards from becoming natural disasters

Flood + Landslide + Wildfire
Severe + Weather + Earthquake



Please join us!

Elmore County Hazard Mitigation Plan Update
Presentation and Q&A

Wednesday, September 25
Oasis Fire Station
7:00 p.m.

Hosted by Elmore County Emergency Management

Is your community
RESILIENT?

The Elmore County Hazard Mitigation Plan
Striving to prevent natural hazards from becoming natural disasters

Flood + Landslide + Wildfire
Severe + Weather + Earthquake



Please join us!

Elmore County Hazard Mitigation Plan Update
Presentation and Q&A

Tuesday, September 24
Pine Senior Center
1:00 p.m.

Hosted by Elmore County Emergency Management



September 24 & 25 – Public Meeting Agenda

A G E N D A	Elmore County Hazard Mitigation Plan: Public Meetings			
	September 24 Pine Senior Center 390 Pine-Featherville Rd 1:00 pm	September 24 Glenns Ferry City Hall 110 E 2 nd Avenue 7:00 pm	September 25 Mountain Home Search & Rescue Rm 2255 E 8 th N 1:00 pm	September 25 Oasis Tilji Fire Station 11825 W Tilji Rd 7:00 pm
Start	OPEN – Introductions			
30 to 45 Minutes	PUBLIC MEETING PRESENTATION <ul style="list-style-type: none"> I. Overview: <ul style="list-style-type: none"> ✓ Northwest Management Inc.; who we are. ✓ Hazard Mitigation, Resiliency, and Preparedness ✓ Purpose of the Hazard Mitigation Plan: why is it needed? ✓ FEMA Hazard Mitigation Plan Requirements: putting together a complete plan. II. The Elmore County Hazard Mitigation Plan: <ul style="list-style-type: none"> ✓ Basic components of the HMP ✓ Who is involved? Elmore County Adopting Jurisdictions ✓ Hazard Profiles and Risk Assessments: what do they say? ✓ Which hazards are included in the plan? ✓ Mitigation Strategy: Limiting Hazard Impacts through projects and preparedness. ✓ Public Involvement: What are your concerns? Look for opportunities to read and comment on the plan. III. Open House -let us know what you think: <ul style="list-style-type: none"> ✓ Any specific areas of concern in your neighborhood or in the county? ✓ Project ideas and suggestions: community, city, or county level? ✓ Project ideas and preparedness around your home. ✓ How to stay involved in the project -be on the lookout for the public comment period. 			
60 minutes	OPEN HOUSE Q&A		Group	
	ADJOURNMENT			

Contact Info:

Project Co-Leads: Adam Herrenbruck herrenbruck@northwestmanagement.com Eric Nelson nelson@northwestmanagement.com	Department Manager: Brad Tucker tucker@northwestmanagement.com	Lead GIS Analyst: Vaiden Bloch bloch@northwestmanagement.com
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NMI Office: 208-883-4488



September 24 & 25 – Public Presentation

Elmore County, ID
Hazard Mitigation Plan Update



Northwest Management, Inc.
 233 East Palouse River Drive
 Moscow, Idaho 83843
 208-883-4488 Telephone

SLIDE 1

Northwest Management, Inc.

- Natural Resource Consultants
- Serving the Western U.S. since 1984
- Main Office in Moscow, Idaho
 - Deer Park and Colville, Washington
 - Helena, Montana
- At the Meeting Today:
 - Adam Herrenbruck
 - Eric Nelson



"Providing a balanced approach to natural resource management"

SLIDE 2

What is Hazard Mitigation?

- The Effort to Reduce the Risk of...
 - Loss of Life and Property
 - Human Suffering
 - Economic Disruption
 - Disaster Assistance Costs
- ...by lessening the impact of disasters.

Create more Resilient Communities

SLIDE 3

A Resilient Community

Resilience: the ability to adapt to changing conditions and prepare for, withstand, and rapidly recover from disruptions caused by a hazard.

- Makes proactive investments and policy decisions
- Communicates risk and vulnerability to all
- Builds public and private sector capabilities and partnerships
- Resumes normal operations and recovers rapidly after hazard events

SLIDE 4

Mitigation

....the reduction or elimination of long-term risk to human life and property from hazards.



SLIDE 5

Preparedness

- **Hazard Readiness**
- **Emergency Response Services**
- **Infrastructure Readiness**
- **Communications**
- **Planning**



A firefighter patrolling the Elk Complex Fire – AP Photo/The Times-News, Ashley Smith

SLIDE 6



Hazard Mitigation Planning

- Empowers local governments and groups to...
 - Identify risks and vulnerabilities associated with natural disasters
 - Develop long-term strategies for protecting people and property from future hazard events
 - Begin breaking the cycle of disaster damage, reconstruction, and repeated damage
 - Increase education and awareness around threats, hazards, and vulnerabilities
 - Build partnerships for risk reduction
 - Align mitigation objectives with other community objectives
 - Prioritize mitigation projects and obtain project funding

SLIDE 7

FEMA Hazard Mitigation Plan

- Disaster Mitigation Act of 2000
 - Establishes eligibility for FEMA Hazard Mitigation Assistance (HMA)
 - Requires Tribal, State, and local governments to submit plans to FEMA for review
- Title 44 Code of Federal Regulations (CFR) 201.6 or 201.7
 - Publishes requirements for approval of a local mitigation plan
 - Requires mitigation plan approved by FEMA in order to receive hazard mitigation project grants
 - Requires plan to be updated every five years

As of November 1, 2004 FEMA requires ALL counties to have an HMP



SLIDE 8

FEMA Requirements

- Adoption by Local Government Body
- Multi-Jurisdictional Planning
- Identification of Hazards & Risk Assessment
 - Profiling Hazard Events
 - Mapping Juxtaposition of Hazards, Structures, Infrastructure
 - Potential Dollar Losses to Vulnerable Structures (B/C Analysis)
- Documented Planning Process
- Assessing Vulnerability
- Mitigation Goals
- Analysis of Mitigation Measures
- Monitoring, Evaluating & Updating the Plan (5 year cycles)
- Implementation Through Existing Programs
- Public Involvement



SLIDE 9

What's in a Mitigation Plan?

- Vision and Goals
- The Planning Team
 - Jurisdiction Reps, Key Stakeholders, Planning Partners
- Descriptions of the Region and Communities
- Hazard Profiles and Risk Assessments
 - Maps, Impacts, Future Probability, History
- Mitigation Strategy
 - Action Items, project leaders, project supporters, timeframes, funding sources
- Documented Public Involvement Process
- Monitoring and Maintenance Schedule
 - Continued public outreach, yearly reviews, five-year updates

SLIDE 10

The Planning Team

- Planning Team Members:
 - Elmore County Emergency Management
 - Representatives from the Adopting Jurisdictions
 - Sheriff's Office
 - Mountain Home Highway District
 - Elmore County Land Use and Building Department
 - Elmore County Rescue
 - Mountain Home Public Works
 - Mountain Home Fire Department
 - Community of Atlanta
 - Pine Featherville EMS
 - Idaho Office of Emergency Management

SLIDE 11

Adopting Jurisdictions

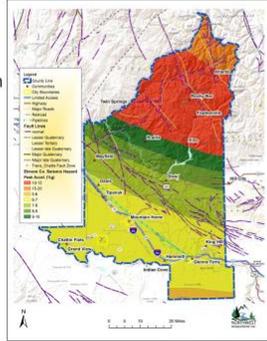
- Elmore County
- City of Mountain Home
- City of Glens Ferry
- Oasis Fire Protection District



SLIDE 12

Hazard Profile and Risk Assessment

- Each Hazard and Each Jurisdiction:
 - Background Information
 - Local Event History
 - Probability of Future Occurrence
 - Impacts of Hazard Events
 - Development Trends
 - Value of Resources at Risk



SLIDE 13

Elmore County Hazard Summary

Hazard	Location (Geographic Area Affected)	Max Probable Extent (Magnitude/Strength)	Probability of Future Events	Overall Significance Ranking
Flood	3 – Significant	3 – Severe	4 – Highly Likely	10 – High
Landslide	3 – Significant	2 – Moderate	4 – Highly Likely	9 – High
Earthquake	1 – Unlikely	1 – Unlikely	1 – Unlikely	3 – Low
Severe Weather	3 – Significant	3 – Severe	3 – Likely	9 – High
Wildland Fire	4 – Highly Likely	4 – Highly Likely	4 – Highly Likely	12 – High
Ranking Value	1 – Negligible 2 – Limited 3 – Significant 4 – Extensive	1 – Weak 2 – Moderate 3 – Severe 4 – Extreme	1 – Unlikely 2 – Occasional 3 – Likely 4 – Highly Likely	3 to 5 – Low 6 to 8 – Medium 9 to 12 – High

SLIDE 14

Mitigation Strategy

- Defensible Space and Fuels Treatments Projects
- Floodplain Management and Infrastructure Upgrades
- Studies (e.g. watershed) and Evaluations (e.g. culvert capacity)
- Infrastructure Hardening and Communication Upgrades
- Access Improvement Projects
- Emergency Response Needs
- Policy Issues
- Public Education Campaigns
- Slope Stabilization Projects



Trinity Ridge Fire – Photo: U.S. Forest Service

SLIDE 15

Public Involvement

- Media Releases about planning efforts
- Public Meetings
- Public Review and Comment Period
 - This will be facilitated once all sections have been completed and reviewed by the planning team
 - Anyone can review the most current DRAFT of the plan and provide feedback
- Open public adoption hearings

SLIDE 16

Your Input

- Talk to one of the planning team members.
- Let us know your ideas and concerns.
- Look at the maps – Draw and Make Notes!

Contact Information:

Elmore County Emergency Management Carol Killian 208-590-0967 ckillian@elmorecounty.org	Northwest Management, Inc. Environmental Planning Dept. Brad Tucker, Eric Nelson, Adam Herrenbruck 208-883-4488
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Thank you for attending and participating!

SLIDE 17

Landslide Impact Zone along the road from Fall Creek, through Pine and Featherville, up to Atlanta, and along the Middle Fork to the county line.



SLIDE 18

Appendix B: Supporting Information

List of Tables

Table 1) The hazard rating matrix utilized for the Phase I Hazard Assessment in the 2011 and earlier versions of the Elmore County Multi-Hazard Mitigation Plan.....	17
Table 2) Natural hazard rating table that was developed for the 2020 update of the Elmore County Hazard Mitigation Plan. (This table is an adaptation of Worksheet 5.1 in the FEMA Local Mitigation Planning Handbook.).....	17
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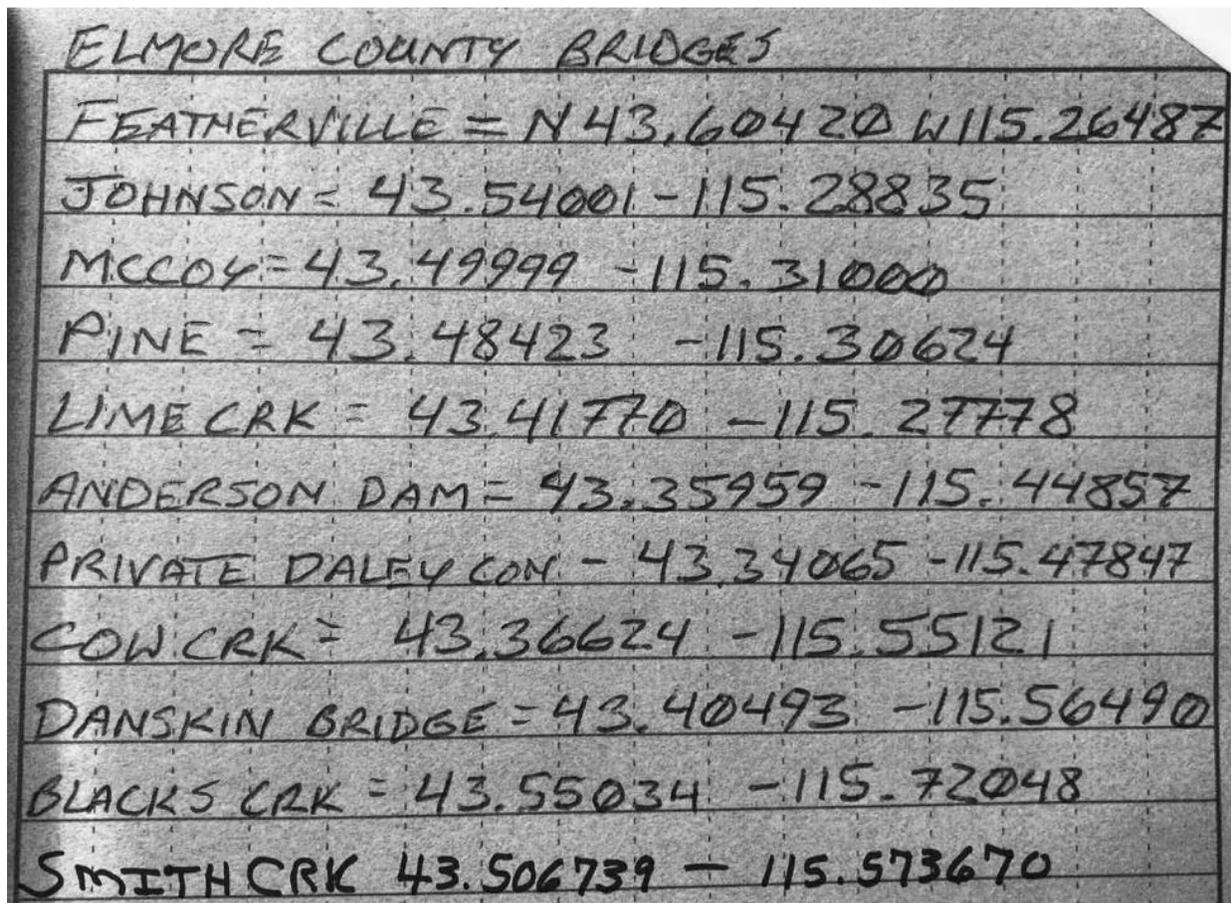


Appendix C: Bridge Information

The 2017 Pine Valley flooding, which was a consequence of the wildfire season, caused damage to residences, roads, campground, bridges and affected the lives of residents and impacted businesses. Rivers and creeks were heavy with silt from the runoff. The South Fork Boise River, under normal conditions, would be clear or dingy at spring thaw; however, it was heavy with mud and black in color. Landslides blocked roads and dammed up creeks. Floating debris in the river, including fully mature trees, wedged against the Johnson, McCoy and Pine Bridges. Heavy equipment was required to remove the blockages to prevent damage, collapse or partial collapse of the bridges. Additionally, overflow on or around the bridge caused damage to the roadway and surrounding area. Access roads to campgrounds and rangeland were severely affected as well.

Elmore County has clearly identified fault lines in the northern portion of the county. Tremors have been recorded and strong earthquakes have happened in the recent past. Earthquakes would potentially cause damage to pipelines and pump stations that carry gas through Elmore County. Electric transmission lines and the structures that support them as well as substations that distribute electricity could be damaged or destroyed by an earthquake. Damage to windmill farms, forests and buildings could be extensive.

The following is a list of coordinates for bridges located in the rural parts of Elmore County:

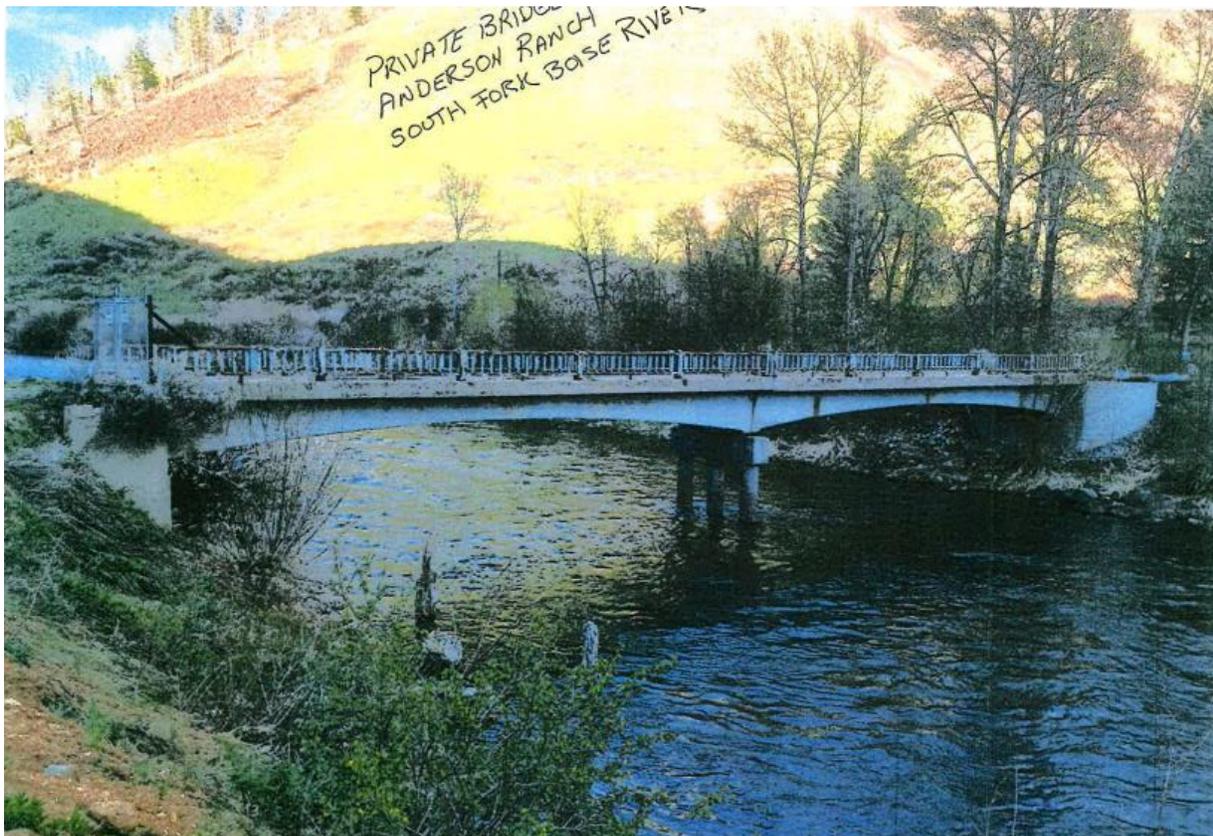


ELMORE COUNTY BRIDGES

FEATHERVILLE	= N 43.60420 W 115.26487
JOHNSON	= 43.54001 - 115.28835
MCCOY	= 43.49999 - 115.31000
PINE	= 43.48423 - 115.30624
LIME CRK	= 43.41770 - 115.27778
ANDERSON DAM	= 43.35959 - 115.44857
PRIVATE DALEY CON.	= 43.34065 - 115.47847
COW CRK	= 43.36624 - 115.55121
DANSKIN BRIDGE	= 43.40493 - 115.56490
BLACKS CRK	= 43.55034 - 115.72048
SMITH CRK	= 43.506739 - 115.573670

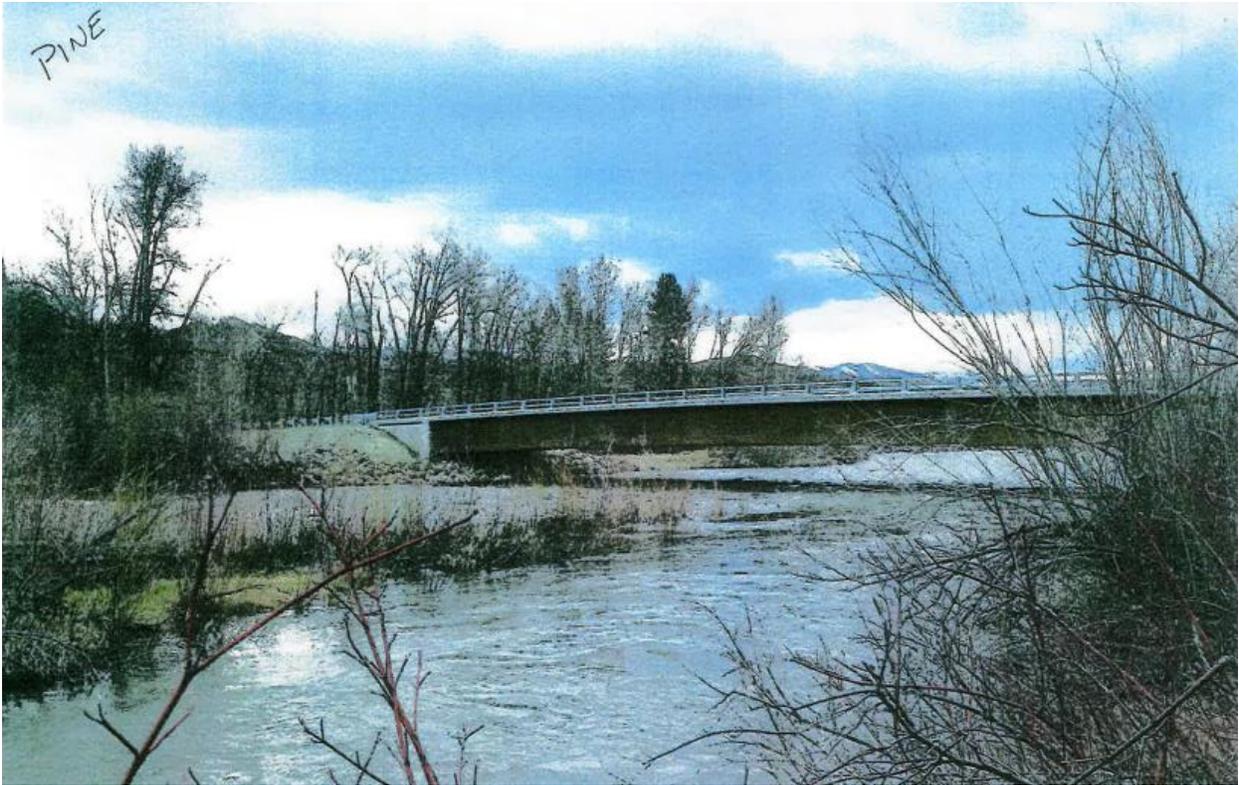


Danskin Bridge: Crosses the South Fork of the Boise River at 43.40493, -115.56490.

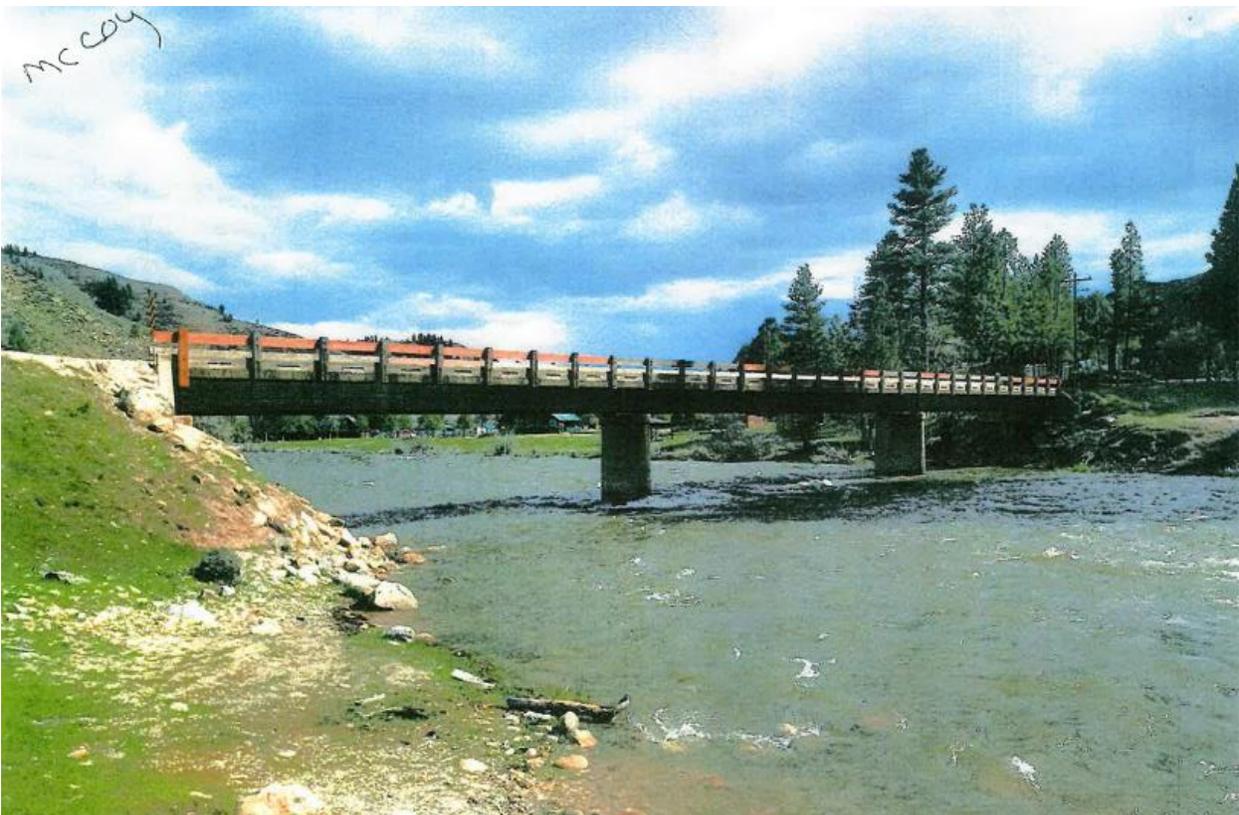


Private Bridge: Crosses the South Fork of the Boise River at 43.34065, -115.47847



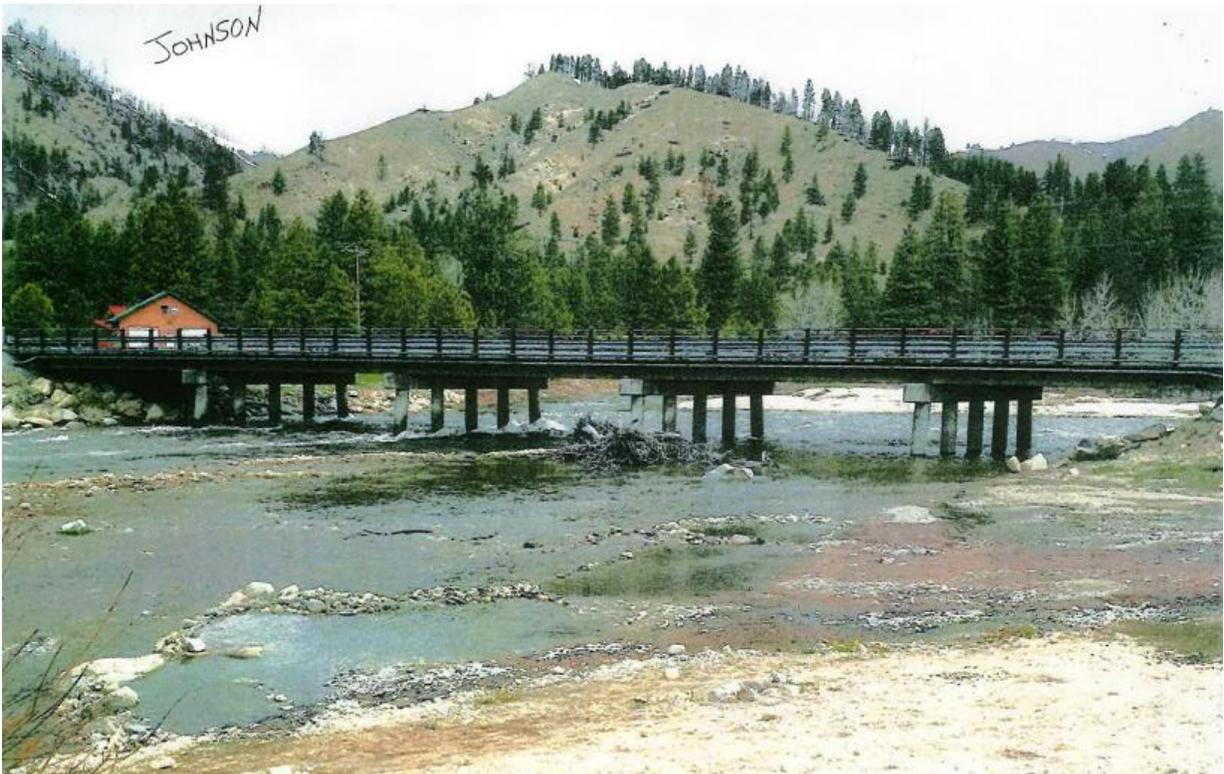


Pine Bridge: Crosses the South Fork of the Boise River at 43.48423, -115.30624.



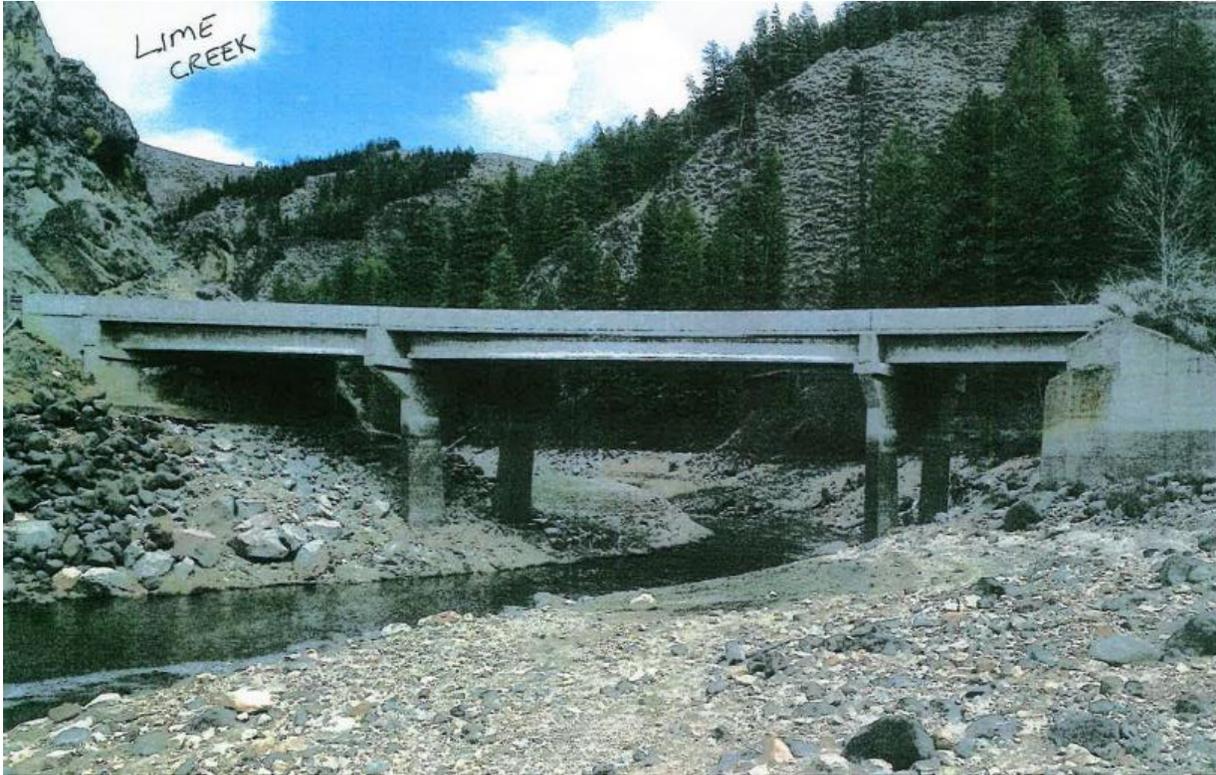
McCoy Bridge: Crosses the South Fork of the Boise River at 43.49999, -115.31000.





Johnson Bridge: Crosses the South Fork of the Boise River at 43.54001, -115.28835.



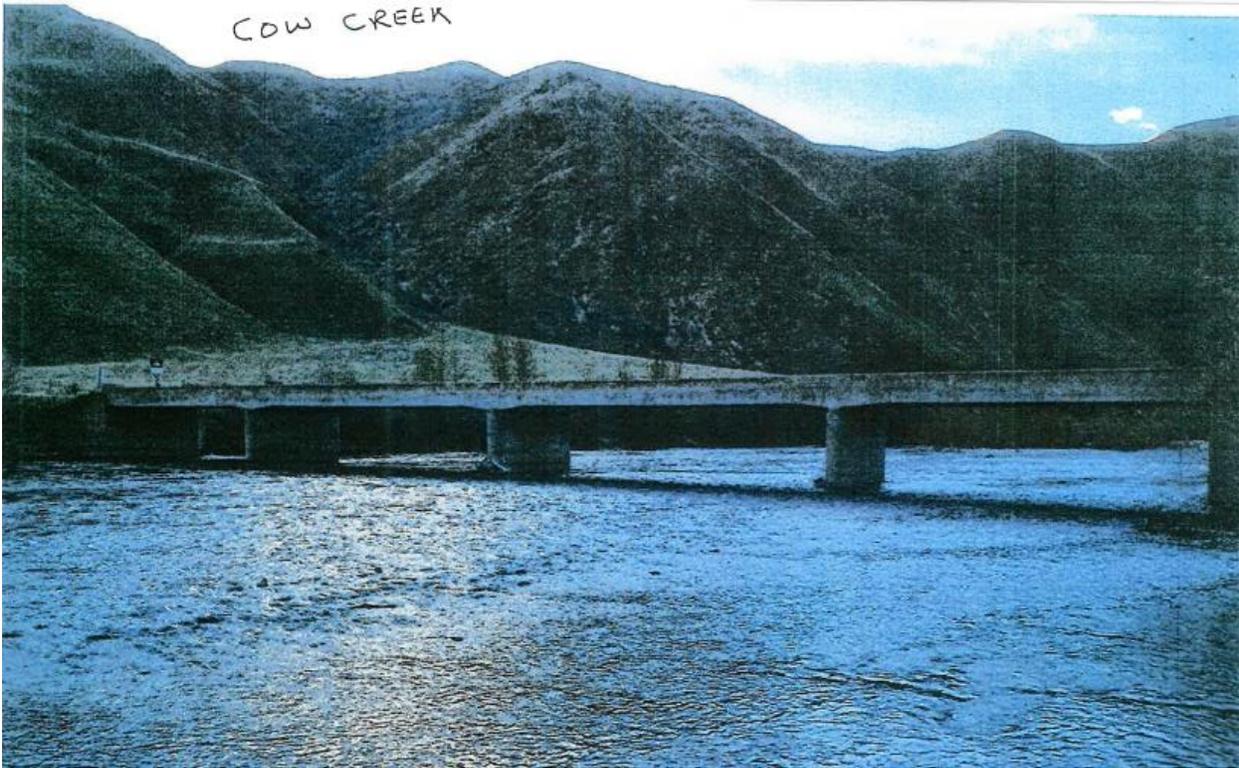


Lime Creek Bridge: Crosses Lime Creek at 43.41770, -155.27778

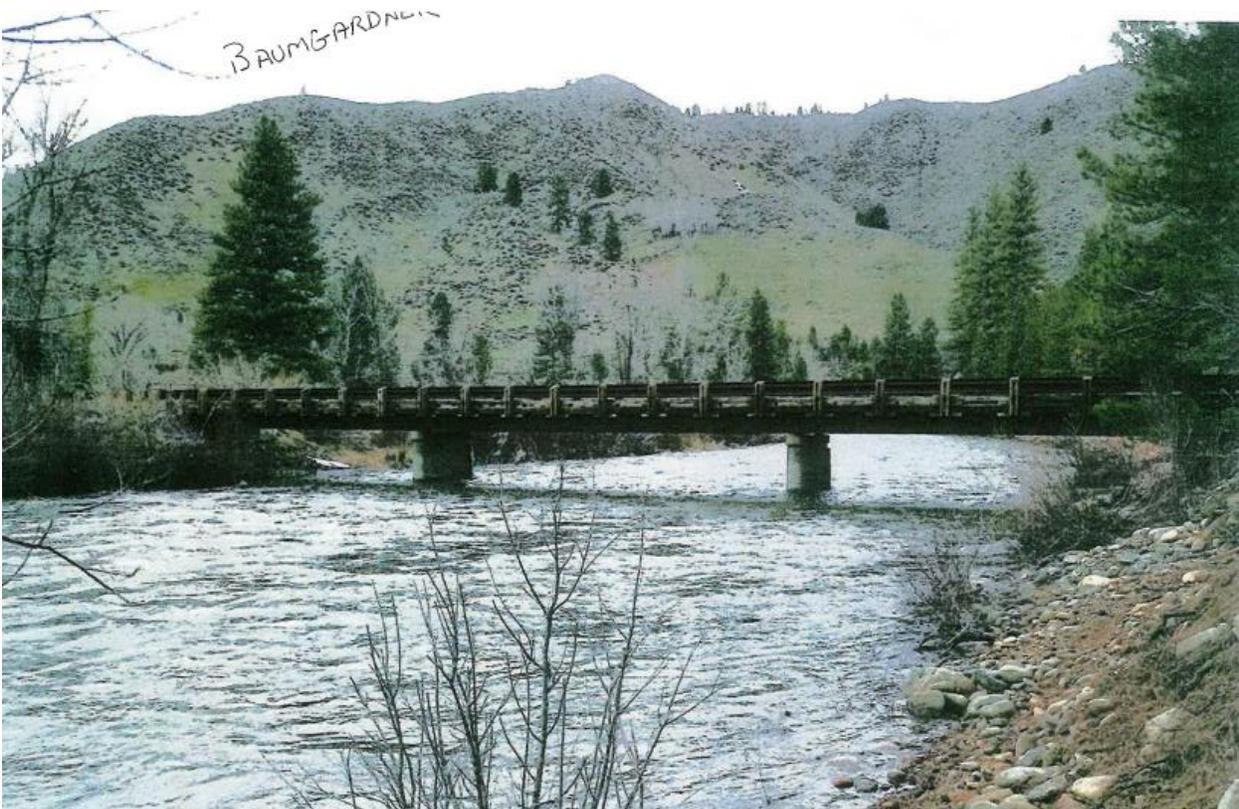


Featherville Bridge: Crosses the South Fork of the Boise River at 43.60420, -115.26487





Cow Creek Bridge: Crosses the South Fork of the Boise River at 43.36624, -115.55121

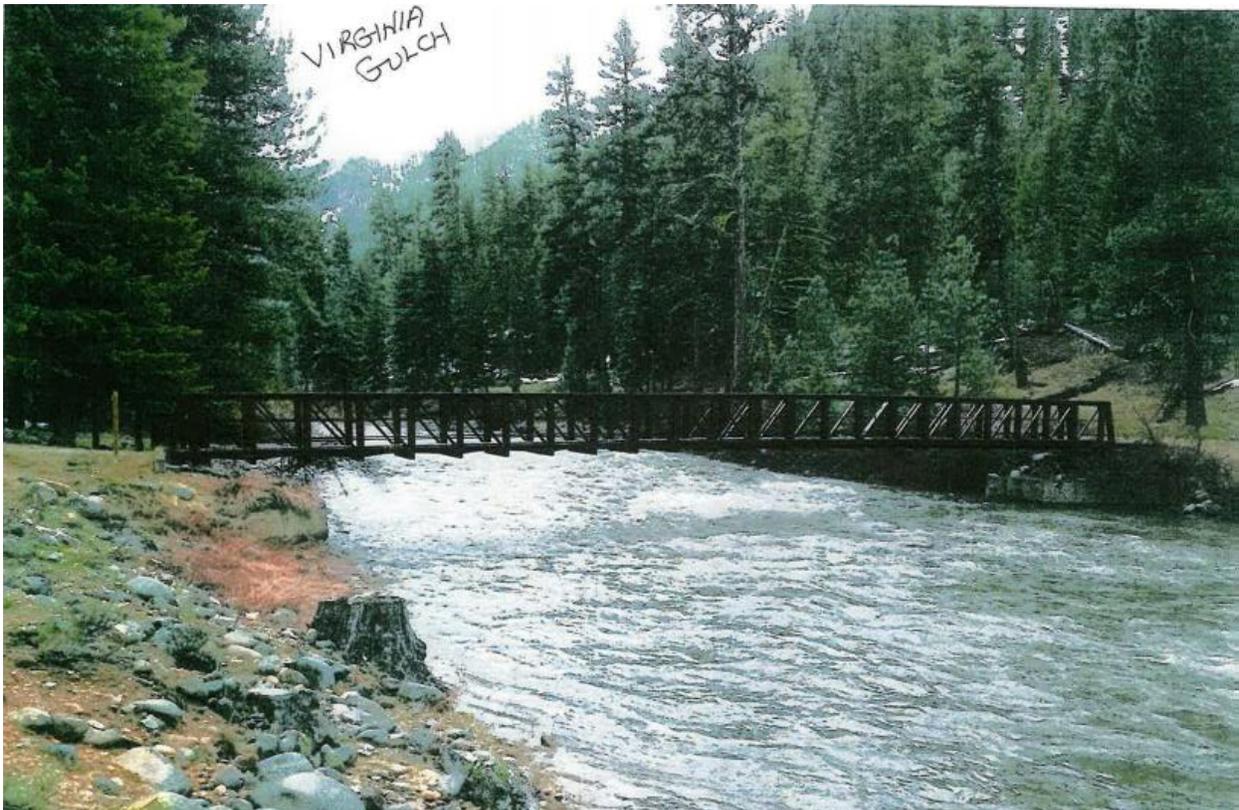


Baumgardner Bridge: Crosses the South Fork of the Boise River at 43.55034, -115.72048





Abbot Bridge:



Virginia Gulch Bridge: Crosses the South Fork of the Boise River at 43.605117, -115.145316



Appendix D: Capability Assessments

The capability assessment form completed for each adopting jurisdiction is an adaptation of FEMA Worksheet 4.1. This is a condensed version of the original form; the number of categories has been reduced to those that are most likely to be applicable to smaller counties that have fewer resources.

Elmore County

CAPABILITY ASSESSMENT: ELMORE COUNTY		
Category	Planning Tool/Capability	Yes/No; Year; Comments
Planning and Regulatory	Comprehensive or Master Plan	Yes, 2014
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	Yes 2019
	Continuity of Operations Plan	No
	Transportation Plan	Yes 2004
	Stormwater Management Plan	Unknown
	Community Wildfire Protection Plan	Yes, this will be incorporated in the new AHMP plan
	Other	
Administrative	Maintenance programs (tree trimming, drain clearing, etc.)	No
	Mutual aid agreements	No
	Memorandums of understanding	No
	Other	



CAPABILITY ASSESSMENT: ELMORE COUNTY		
Category	Planning Tool/Capability	Yes/No; Year; Comments
Technical	Warning systems/services	Yes, been in place for the last 13 years; Alertsense
	Hazard data and information	Yes, receive data from various agencies every year
	GIS capabilities	Yes. Limited
	Grant Writing	Grant writing is done through various departments in the County
	Flood Plain Manager	Yes
	Other	
Codes and Ordinances	Building code	Yes 2012
	Zoning ordinance	Yes 2018-2020
	Subdivision ordinance	Yes 2018
	Floodplain ordinance	Yes. Updating
	Natural hazard specific ordinance	Unsure
	Flood insurance rate maps	Yes
	Other	
Project Funding Sources	Capital improvements project funding	Unsure
	Community Development Block Grant	Unsure
	Other federal funding program	Unsure



CAPABILITY ASSESSMENT: ELMORE COUNTY		
Category	Planning Tool/Capability	Yes/No; Year; Comments
	State funding programs	Unsure
	Other	
Education and Outreach	Ongoing public education or information programs	Yes
	Firewise Communities certification	No
	StormReady certification	No
	Other	
Other Comments:		



City of Glenns Ferry

CAPABILITY ASSESSMENT: GLENN'S FERRY		
Category	Planning Tool/Capability	Yes/No; Year; Comments
Planning and Regulatory	Comprehensive or Master Plan	Included in the Elmore County Comprehensive Plan (2014)
	Capital Improvements Plan	No
	Economic Development Plan	No
	Local Emergency Operations Plan	
	Continuity of Operations Plan	No
	Transportation Plan	No
	Stormwater Management Plan	Water System Facilities Plan (2014)
	Community Wildfire Protection Plan	Yes, 2020 CWPP will be in HMP
	Other	Airport Master Plan (2012); Community Review Report (2012)
Administrative	Maintenance programs (tree trimming, drain clearing, etc.)	No
	Mutual aid agreements	No
	Memorandums of understanding	No
	Other	
Technical	Warning systems/services	Part of the Elmore County AlertSense system
	Hazard data and information	County Multi-Hazard Mitigation Plan 2020



CAPABILITY ASSESSMENT: GLENNS FERRY		
Category	Planning Tool/Capability	Yes/No; Year; Comments
	GIS capabilities	Through the county Land Use and Building Department
	Grant Writing	Possible grant writing resources through the county
	Flood Plain Manager	No
	Other	
Codes and Ordinances	Building code	Yes
	Zoning ordinance	Yes
	Subdivision ordinance	Yes
	Floodplain ordinance	Yes
	Natural hazard specific ordinance	
	Flood insurance rate maps	No
	Other	
Project Funding Sources	Capital improvements project funding	Unsure, maybe through the county
	Community Development Block Grant	Unsure, maybe through the county
	Other federal funding program	Unsure, maybe through the county
	State funding programs	Unsure, maybe through the county
	Other	



CAPABILITY ASSESSMENT: GLENNS FERRY		
Category	Planning Tool/Capability	Yes/No; Year; Comments
Education and Outreach	Ongoing public education or information programs	Through the county
	Firewise Communities certification	No
	StormReady certification	No
	Other	
Other Comments:		



City of Mountain Home

CAPABILITY ASSESSMENT: MOUNTAIN HOME		
Category	Planning Tool/Capability	Yes/No; Year; Comments
Planning and Regulatory	Comprehensive or Master Plan	Yes, 2020
	Capital Improvements Plan	No
	Economic Development Plan	Downtown Master Plan (2018)
	Local Emergency Operations Plan	
	Continuity of Operations Plan	No
	Transportation Plan	No
	Stormwater Management Plan	No stand-alone plan; stormwater management is addressed in the Downtown Master Plan.
	Community Wildfire Protection Plan	Yes, 2020 CWPP will be in HMP
	Other	
Administrative	Maintenance programs (tree trimming, drain clearing, etc.)	No
	Mutual aid agreements	No
	Memorandums of understanding	No
	Other	
Technical	Warning systems/services	Part of the Elmore County AlertSense system
	Hazard data and information	County Multi-Hazard Mitigation Plan 2020



CAPABILITY ASSESSMENT: MOUNTAIN HOME		
Category	Planning Tool/Capability	Yes/No; Year; Comments
	GIS capabilities	Through the county Land Use and Building Department
	Grant Writing	Possible grant writing resources through the county
	Flood Plain Manager	Yes
	Other	
Codes and Ordinances	Building code	Yes
	Zoning ordinance	Yes
	Subdivision ordinance	Yes
	Floodplain ordinance	Yes
	Natural hazard specific ordinance	
	Flood insurance rate maps	Yes
	Other	
Project Funding Sources	Capital improvements project funding	Unsure, maybe through the county
	Community Development Block Grant	Unsure, maybe through the county
	Other federal funding program	Unsure, maybe through the county
	State funding programs	Unsure, maybe through the county
	Other	



Oasis Fire Protection District

CAPABILITY ASSESSMENT: OASIS FIRE PROTECTION DISTRICT		
Category	Planning Tool/Capability	Yes/No; Year; Comments
Planning and Regulatory	Comprehensive or Master Plan	Yes
	Capital Improvements Plan	Yes - For the fire station/community center
	Economic Development Plan	Yes - Create a Firewise Community
	Local Emergency Operations Plan	Yes - OVFD is a member of the Elmore LEPC
	Continuity of Operations Plan	Yes
	Transportation Plan	Yes
	Stormwater Management Plan	No
	Community Wildfire Protection Plan	Yes
	Other	
Administrative	Maintenance programs (tree trimming, drain clearing, etc.)	Yes - In the Firewise Community Plan
	Mutual aid agreements	Yes - BLM, IDL, MHFPA, Orchard Training & EMS
	Memorandums of understanding	Yes - Dream River Ranch
	Other	
Technical	Warning systems/services	Yes - Pagers, Repeater, & Communications System
	Hazard data and information	Yes - In our SOP



CAPABILITY ASSESSMENT: OASIS FIRE PROTECTION DISTRICT		
Category	Planning Tool/Capability	Yes/No; Year; Comments
	GIS capabilities	Yes - In hand-held devices, Computer & Cell phones
	Grant Writing	
	Flood Plain Manager	Yes
	Other	
Codes and Ordinances	Building code	Elmore County's
	Zoning ordinance	Elmore County's
	Subdivision ordinance	Elmore County's
	Floodplain ordinance	Elmore County's
	Natural hazard specific ordinance	Yes
	Flood insurance rate maps	Yes
	Other	
Project Funding Sources	Capital improvements project funding	Yes - Through OFPD Tax Revenue
	Community Development Block Grant	No
	Other federal funding program	RFA when applicable
	State funding programs	IDL - Rural Fire Capacity
	Other	



Appendix E: CWPP Signature Page Template

Adoption by the Elmore County Commissioners

NAME

Elmore County Commissioner

Date

NAME

Elmore County Commissioner

Date

NAME

Elmore County Commissioner

Date

Approval by Emergency Management

NAME

Elmore County Emergency Manager

Date

Approval by Local Emergency Planning Committee Chair

The Chair of the Local Emergency Planning Committee approves this document on behalf of all Elmore County fire protection districts and departments.

NAME

Local Emergency Planning Committee Chair

Date

Approval by Idaho Department of Lands

NAME

Wildfire Risk Mitigation Program Manager

Date



Plan Reference

This plan was developed by Northwest Management, Inc. under contract with Elmore County Emergency Management.

Copies of this Plan can be obtained by contacting:

Elmore County Emergency Management Director, Carol Killian
Elmore County Emergency Management Office
2255 East 8th Street North
Mountain Home, Idaho 83647
Phone: 208-590-1646

Citation of this work:

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