



August 2017

2017 Ada County Multi-Hazard Mitigation Plan

Volume 1—Countywide Elements



TETRA TECH

2017 Ada County Multi-Hazard Mitigation Plan: Volume 1—Countywide Elements

August 2017

PREPARED FOR

Ada County Emergency Management

7200 Barrister Drive
Boise ID 83704-9293

Phone: 208-577-4750
Fax: 208-577-4759
www.adaprepare.id.gov

PREPARED BY

Tetra Tech

90 South Blackwood Avenue
Eagle, ID 83616

Phone: 208.939.4391
Fax: 208.939.4402
tetratech.com

Tetra Tech Project #103S3856

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Project Manager

Paul “Crash” Marusich, CEM
Emergency Planner
Ada County Emergency Management
7200 Barrister Dr., Boise, ID 83704
(208) 577-4750 office
Email: pmarusich@adaweb.net

Other Ada County Staff

- Doug Hardman, Director, Ada County Emergency Management
- Myla Jeffries, Community Outreach Specialist, Ada County Emergency Management

Consultants

- Rob Flaner, CFM, Project Manager/Lead Project Planner, Tetra Tech, Inc.
- Carol Bauman, GISP, Risk Assessment Lead, Tetra Tech, Inc.
- Stephen Veith, GIS Analyst, Tetra Tech, Inc.
- Dan Portman, Technical/Format Editor, Tetra Tech, Inc.
- Kristen Gelino, Planner, Tetra Tech, Inc.
- Jessica Cerutti, Planner, Tetra Tech, Inc.

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EXECUTIVE SUMMARY

Hazard mitigation is the use of long-term and short-term policies, programs, projects, and other activities to alleviate the death, injury, and property damage that can result from a disaster. Ada County and a partnership of local governments within the County, led by Ada County Emergency Management (ACEM), have developed the *2017 Ada County Multi-Hazard Mitigation Plan* to reduce risks from natural disasters. The plan complies with federal Disaster Mitigation Act hazard mitigation planning requirements and establishes eligibility for funding under Federal Emergency Management Agency (FEMA) grant programs. Participating planning partners are listed in Tables ES-1 and ES-2.

Table ES-1. Municipal Planning Partners

Jurisdiction	Point of Contact	Jurisdiction	Point of Contact
Ada County	Doug Hardman	City of Boise	Romeo Gervais
City of Eagle	Mike Williams	Garden City	John Evans
City of Kuna	Mike Borzick	City of Meridian	Kyle Radick
City of Star	Chad Bell		

Table ES-2. Special Purpose District Planning Partners

Jurisdiction	Point of Contact	Jurisdiction	Point of Contact
Ada County Highway District	Tim Nicholson	Eagle Fire District	Mike Winkle
Kuna Rural Fire District	Terry Gammel	N. Ada County Fire & Rescue	Michael Irvin
Star Joint Fire Protection Dist.	Greg Timinsky	Star Sewer & Water District	Hank Day
Whitney Fire protection District	Rem Ross	Drainage District #4	Mike Dimmick
Eagle Sewer District	Lynn Moser	Joint School District #2	Spencer McClean
Independent School District of Boise City #1	Mike Munger	Greater Boise Auditorium District	Patrick D. Rice
Flood Control District #10	William C. Clayton		

PREVIOUS HAZARD MITIGATION PLANNING IN ADA COUNTY

Ada County and a group of planning partners prepared an initial hazard mitigation plan that was approved by FEMA in 2006. Federal regulations require updates of hazard mitigation plans on a 5-year cycle to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation strategies. A jurisdiction covered by a plan that has expired is no longer in compliance with the federal requirements for hazard mitigation planning.

To meet the federal requirements for updating plans, the 2006 plan was comprehensively updated in 2011. The 2011 update represented a significant enhancement of the 2006 plan in content, scope and coverage. The *2017 Ada County Multi-Hazard Mitigation Plan* represents an update of the 2011 plan.

PLAN UPDATE PROCESS

Updating the plan consisted of the following phases:

- **Phase 1, Organize Resources**—A planning team was assembled for the plan update, consisting of staff from ACEM and a technical consultant. The team conducted outreach to establish the planning partnership. A 17-member steering committee was assembled to oversee the plan update, consisting of planning partner staff, residents, and other stakeholders in the planning area. Coordination with other local, state and federal agencies involved in hazard mitigation occurred throughout the plan update process. This phase included a review of the existing plan and existing programs that may support hazard mitigation actions.
- **Phase 2, Update the Risk Assessment**—Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards. This process assesses the vulnerability of people, buildings and infrastructure to natural hazards. Risk assessment models were enhanced with new data and technologies that have become available since 2004. Planning partners used the risk assessment to rank risk and to gauge the potential impacts of each hazard of concern on their jurisdiction. The risk assessment included the following:
 - Hazard identification and profiling
 - Assessment of the impact of hazards on physical, social and economic assets
 - Vulnerability identification
 - Estimates of the cost of potential damage.
- **Phase 3, Engage the Public**—The planning team implemented a public involvement strategy developed by the Steering Committee. The strategy included staffing public events where members of the planning team presented the risk assessment and the draft plan, presentations at various events and to community groups, a hazard mitigation survey, an ACEM-sponsored website, and multiple media releases.
- **Phase 4, Update Goals, Objectives and Actions**—The Steering Committee reviewed and updated the goals from the 2011 plan and confirmed a set of objectives. The planning partnership selected a range of appropriate mitigation actions to work toward achieving the goals set forth in this plan update. Additionally, the Steering Committee selected a set of countywide mitigation actions. The mitigation actions recommended in this plan include some that address limitations in the modeling caused by insufficient data, such as digitizing maps of urban flooding issues and collecting perishable data, such as high water marks, after hazard events.
- **Phase 5, Develop Plan Implementation and Maintenance Strategy**—The Steering Committee developed a plan implementation and maintenance strategy that includes the establishment of a hazard mitigation working group, annual progress reporting, a strategy for continued public involvement, a commitment to plan integration with other relevant plans and programs, and a recommitment from the planning partnership to actively maintain the plan over the five-year performance period.
- **Phase 6, Assemble the Updated Plan**—The planning team and Steering Committee assembled a document to meet federal hazard mitigation planning requirements for all partners. The updated plan contains two volumes. Volume 1 contains components that apply to all partners and the broader planning area. Volume 2 contains all components that are jurisdiction-specific. Each planning partner has a dedicated annex in Volume 2.
- **Phase 7, Plan Adoption/Implementation**—Once pre-adoption approval has been granted by FEMA, the final adoption phase will begin. Each planning partner will individually adopt the updated plan.

Phase 8, Plan Implementation, will occur over the next five years as the planning partnership begins to implement the county-wide and jurisdiction specific actions identified in this plan.

RISK ASSESSMENT RESULTS

Based on the risk assessment, hazards were ranked for the risk they pose to the overall planning area as shown in Table ES-3.

Hazard Ranking	Hazard Event	Category
1	Severe Weather	High
2	Earthquake	Medium
3	Wildfire	Medium
4	Flood	Medium
5	Dam/Canal Failure	Medium
6	Landslide	Low
7	Drought	Low
8	Volcano	Low

Each planning partner also ranked hazards for its own area. Table ES-4 summarizes the categories of high, medium and low (relative to other rankings) that all jurisdictions assigned each hazard. The results indicate the following general patterns:

- The earthquake, flood and severe weather hazards were most commonly ranked as high.
- The dam failure and wildfire hazards were most commonly ranked as medium.
- The landslide, drought, volcano and wildfire hazard were most commonly ranked as low.

	Number of Jurisdictions Assigning Ranking to Hazard			
	High	Medium	Low	Not Ranked
Dam Failure	0	14	3	3
Drought	0	0	20	0
Earthquake	18	2	0	0
Flood	13	7	0	0
Landslide	0	2	15	3
Severe weather	16	2	2	0
Volcano	0	0	20	0
Wildfire	4	8	5	3

MITIGATION PURPOSE STATEMENT, GOALS AND OBJECTIVES

The following purpose statement guided the Steering Committee and the planning partnership in selecting the actions contained in this plan update:

To reduce the vulnerability to natural hazards in order to protect the health, safety, welfare and economy of the Ada County community.

The Steering Committee and the planning partnership established the following goals for the plan update:

- Protect lives and reduce hazard related injuries

- Minimize or reduce current and future damage from natural hazards to property, including critical facilities and environment
- Encourage the development and implementation of long-term, cost-effective mitigation projects
- Maintain, enhance, and restore the natural environment’s capacity to deal with the impacts of natural hazard events.
- Improve emergency management preparedness, collaboration, and outreach within the planning area.

The following objectives were identified that meet multiple goals, helping to establish priorities for recommended mitigation actions:

1. Minimize disruption of local government and commerce operations caused by natural hazards.
2. Using best available data, science, and knowledge, continually improve understanding of the location and potential impacts of natural hazards.
3. Based on willing participation, encourage retrofit, purchase, or relocation of real property, based on one or more of the following criteria: level of exposure, repetitive loss history, and previous damage from natural hazards.
4. Based on understanding of risk, prevent or discourage new development in hazardous areas; if building occurs in high-risk areas, ensure that it is done in such a way as to minimize risk.
5. Strengthen codes and code enforcement to ensure that new construction and redevelopment of property and infrastructure can withstand the impacts of natural hazards.
6. Integrate hazard mitigation policies into local government land use plans that not only protect the built environment, but also maintain or enhance the natural environment’s ability to withstand and recover from natural disasters, with an emphasis on the promotion of regional consistency in policy.
7. Develop new, and improve existing, early warning emergency notification protocols, systems, and evacuation procedures.
8. Educate the public on the area’s potential natural hazards and ways to personally prepare, respond, recover and mitigate the impacts of these events.
9. Establish partnerships among all levels of government, the business community, and other stakeholders to improve and implement methods to protect life, property and the natural environment.
10. Increase the resilience and continuity of operations of identified critical facilities and infrastructure within the planning area.

MITIGATION ACTIONS

Mitigation actions presented in this update are activities designed to reduce or eliminate losses resulting from natural hazards. The update process resulted in the identification of more than 224 mitigation actions for implementation by individual planning partners, as presented in Volume 2 of this plan. In addition, the steering committee and planning partnership identified 15 countywide actions benefiting the whole partnership, as listed in Table ES-5.

IMPLEMENTATION

Full implementation of the recommendations of this plan will require time and resources. The measure of the plan’s success will be its ability to adapt to changing conditions. Ada County and its planning partners will assume responsibility for adopting the recommendations of this plan and committing resources toward implementation. The framework established by this plan commits all planning partners to pursue actions when the benefits of a project exceed its costs. The planning partnership developed this plan with extensive public input, and public support of the actions identified in this plan will help ensure the plan’s success.

Table ES-5. County-Wide Mitigation Actions

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line ^a	Objectives
<p>CW-1—Sponsor and maintain a natural-hazard informational website to include the following types of information:</p> <ul style="list-style-type: none"> • Hazard-specific information such as warning, private property mitigation alternatives, important facts on risk and vulnerability • Pre- and post-disaster information such as notices of grant funding availability • CRS creditable information • Links to planning partners' pages, FEMA and Idaho Office of Emergency Management • Natural hazard mitigation plan information such as progress reports, mitigation success stories, update strategies, Steering Committee meetings. 				
All	ACEM	ACEM Operation Budget	Short term, ongoing	2,8,9
<p>CW-2—The Steering Committee will remain as a viable body over time to monitor progress of the plan, provide technical assistance to planning partners and oversee the update of the plan according to schedule. This body will continue to operate under the ground rules established at its inception.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	6,8,9
<p>CW-3—All planning partners that committed to the update effort will formally adopt this plan when pre-adoption approval has been granted by the Idaho Office of Emergency Management (IOEM) and FEMA Region X. Each planning partner will adhere to the plan maintenance protocol identified in this plan. All actions under this action will be coordinated by ACEM</p>				
All	ACEM/ Each planning partner	Can be funded under existing programs	Short term	All
<p>CW-4—Continue to implement ongoing public outreach programs administered by ACEM. Seek opportunities to promote the mitigation of natural hazards within the planning area, utilizing information contained within this plan.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	2,8,9
<p>CW-5—Seek out and use the best available data, science and technology to update the risk assessment to this plan as that data, science, technology and funding resources become available.</p>				
All	ACEM	FEMA Hazard Mitigation Grant funding, RiskMAP, federal hazard analysis funding	Long-Term, depends on funding	2,9
<p>CW-6—Continue to support and coordinate with the Idaho Silver Jackets program.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	2,6,8,9
<p>CW-7— Provide technical support and coordination for available grant funding opportunities to the planning partnership</p>				
All	ACEM	Can be funded under existing programs. This technical assistance is a reimbursable activity under FEMA Hazard Mitigation Gran Programs	Short term	2,9
<p>CW-8—Participate as a cooperating partners with FEMA and other stakeholders in FEMA's RiskMAP initiative</p>				
All	ACEM	Can be funded under existing programs. Could be subsidized with funding under the RiskMAP initiative	Short term	2,9
<p>CW-9— Leverage public outreach partnering capabilities (such as CERT) within the planning area to promote a uniform and consistent message on the importance of proactive hazard mitigation.</p>				
All	ACEM	ACEM Operation Budget	Short Term, ongoing	All
<p>CW-10— Coordinate mitigation planning and project efforts within the planning area to leverage all resources available to the planning partnership.</p>				
All	ACEM	ACEM Operation Budget	Short Term, ongoing	1,9,10
<p>CW-11— Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive and severe repetitive loss properties as a priority. Seek opportunities to leverage partnerships within the planning area in these pursuits.</p>				
All	Planning Partners	Hazard Mitigation Grant funding	Long-term, depends on funding	3,9
<p>CW-12— Utilize information contained within the Ada County Multi-Hazard Mitigation Plan to support updates to other emergency management plans in effect within the planning area.</p>				
All	ACEM	Can be funded under existing programs	Short term, ongoing	1,2,6,10

Hazards Addressed	Lead Agency	Possible Funding Sources or Resources	Time Line ^a	Objectives
CW-13—Using the most current Hazus model and other data available, examine exposure and level of risk to the known hazards of concern for first responder facilities and identified potential sheltering sites.				
All	ACEM, all first responder planning partners	Can be funded under existing programs	Long-term, depends on funding	2,9
CW-14— Based on identified risks, relocate or structurally harden first responder facilities as needed. Relocation may not be an option based on response requirements of the organization.				
All	ACEM, all planning partners	Hazard mitigation or emergency management grant funding	Long-term, depends on funding	3,9
CW-15— Using the most current Hazus model and other data available, categorize potential sheltering sites from lowest to highest exposure to the known hazards of concern. Identify partners that own the sheltering sites and encourage building enhancements at those sites that would allow for operations during a major disaster event.				
All	ACEM, all planning partners	Can be funded under existing programs, to be augmented by mitigation planning grant funding at next plan update.	Long-term, depends on funding	2,9

Part 1. BACKGROUND AND METHODS

1. INTRODUCTION TO THE PLANNING PROCESS

1.1 WHY PREPARE THIS PLAN?

1.1.1 The Big Picture

Hazard mitigation is defined as a way to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster through long- and short-term strategies. It involves strategies such as planning, policy changes, programs, projects, and other activities that can mitigate the impacts of hazards. The responsibility for hazard mitigation lies with many, including private property owners; business and industry; and local, state, and federal government.

The federal Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) required state and local governments to develop hazard mitigation plans as a condition for federal disaster grant assistance. Prior to 2000, federal disaster funding focused on disaster relief and recovery, with limited funding for hazard mitigation planning. The DMA increased the emphasis on planning for disasters before they occur.

The DMA encourages state and local authorities to work together on pre-disaster planning, and it promotes sustainability for disaster resistance. “Sustainable hazard mitigation” includes the sound management of natural resources and the recognition that hazards and mitigation must be understood in the largest possible social and economic context. The enhanced planning network called for by the DMA helps local governments articulate accurate needs for mitigation, resulting in faster allocation of funding and more cost-effective risk reduction projects.

1.1.2 Local Concerns

The inevitability of natural hazards in Ada County create an urgent need to develop strategies, coordinate resources, and increase public awareness to reduce risk and prevent loss from future hazard events. Identifying risks posed by hazards and developing strategies to reduce the impact of a hazard event can assist in protecting life and property of citizens and communities. Local residents and businesses can work together with the County to create a hazard mitigation plan that addresses the potential impacts of hazard events.

In 2005, following its tradition of proactive emergency management planning, Ada County Emergency Management (ACEM) led a planning effort to prepare the *Ada County All Hazards Mitigation Plan*. Ada County and 10 planning partners adopted that plan in October 2006. It received Federal Emergency Management Agency (FEMA) approval in November 2006, establishing compliance with the DMA for all participating planning partners. The plan addressed five identified hazards: flood, landslide, earthquake, severe weather and wildfire. An update to the plan in 2011, with 22 participating jurisdictions, addressed eight identified hazards: dam or canal failure, drought, volcano (ash fall), flood, landslide, earthquake, severe weather and wildfire. The update received FEMA approval on December 22, 2011, maintaining the partners’ DMA compliance. The plan is now undergoing its second comprehensive update in accordance with federal requirements.

Several factors initiated this planning effort:

- The Ada County area has significant exposure to numerous natural hazards that have caused millions of dollars in past damage.
- The participating partners wanted to be proactive in preparedness for the probable impacts of natural hazards.
- Local resources to undertake risk reduction initiatives are limited. Being able to leverage federal financial assistance is paramount to successful hazard mitigation.

1.1.3 Purposes for Planning

This planning effort represents the second comprehensive update to the Ada County hazard mitigation plan since its initial development in 2005. This update identifies resources, information, and strategies for reducing risk from natural hazards. Elements and strategies in the plan were selected because they meet a program requirement and because they best meet the needs of the planning partners and their citizens. One of the benefits of multi-jurisdictional planning is the ability to pool resources and eliminate redundant activities within a planning area that has uniform risk exposure and vulnerabilities. FEMA encourages multi-jurisdictional planning under its guidance for the DMA. The plan will help guide and coordinate mitigation activities throughout the planning area. The main purpose of this planning effort was to identify risks posed by hazards and to develop strategies to reduce the impact of hazard events on people and property in Ada County; however, the plan was also developed to meet the following objectives:

- Meet or exceed requirements of the DMA.
- Enable all planning partners to continue using federal grant funding to reduce risk through mitigation.
- Meet the needs of each planning partner as well as state and federal requirements.
- Create a risk assessment that focuses on Ada County hazards of concern.
- Create a single planning document that integrates all planning partners into a framework that supports partnerships within the county, and puts all partners on the same planning cycle for future updates.
- Meet the planning requirements of FEMA’s Community Rating System (CRS), allowing planning partners that participate in the CRS program to maintain or enhance their CRS classifications.
- Coordinate existing plans and programs so that high-priority actions to mitigate possible disaster impacts are funded and implemented.

1.2 WHO WILL BENEFIT FROM THIS PLAN?

All citizens and businesses of Ada County are the ultimate beneficiaries of this hazard mitigation plan. The plan reduces risk for those who live in, work in, and visit the county. It provides a viable planning framework for all foreseeable natural hazards that may impact the county. Participation in development of the plan by key stakeholders in the county helped ensure that outcomes will be mutually beneficial. The resources and background information in the plan are applicable countywide, and the plan’s goals and recommendations can lay groundwork for the development and implementation of local mitigation activities and partnerships.

1.3 HOW TO USE THIS PLAN

This plan has been set up in two volumes so that elements that are jurisdiction-specific can easily be distinguished from those that apply to the whole planning area:

- **Volume 1**—Volume 1 includes all federally required elements of a disaster mitigation plan that apply to the entire planning area. This includes the description of the planning process, public involvement strategy, goals and objectives, countywide hazard risk assessment, countywide mitigation actions, and a plan maintenance strategy. The following appendices provided at the end of Volume 1 include information or explanations to support the main content of the plan:

- Appendix A—The 2015 progress report for the previous update of the Ada County Hazard Mitigation Plan
 - Appendix B—Public outreach information, including the hazard mitigation questionnaire and summary of results.
 - Appendix C—Concepts and methods used for hazard mapping
 - Appendix D—The Boise River Enhancement Plan
 - Appendix E—A summary of firefighting capabilities and resources in Ada County
 - Appendix F—Plan adoption resolutions from Planning Partners
 - Appendix G—A template for progress reports to be completed as this plan is implemented.
- **Volume 2**—Volume 2 includes all federally required jurisdiction-specific elements, in annexes for each participating jurisdiction. It includes a description of the participation requirements established by the Steering Committee, as well as instructions and templates that the partners used to complete their annexes. Volume 2 also includes “linkage” procedures for eligible jurisdictions that did not participate in development of this plan but wish to adopt it in the future.

Each planning partner will adopt Volume 1 in its entirety, its own jurisdiction-specific annex in Volume 2, and at least the introduction and appendices to Volume 2. Partners may at their discretion adopt Volume 2 in its entirety.

2. PLAN UPDATE—WHAT HAS CHANGED?

2.1 PREVIOUS PLANS

2.1.1 The 2006 Plan

ACEM was awarded a federal Pre-Disaster Mitigation Grant and a Wildfire Mitigation Assistance Grant to prepare the original *Ada County All Hazards Mitigation Plan* and hired a consultant to prepare the plan with oversight from a planning committee made up of stakeholders within the Ada County. The County Commissioner's Office contacted stakeholders directly to invite their participation and schedule meetings of the planning committee.

A principal objective of the planning process was the integration of the National Fire Plan, the Idaho Statewide Implementation Strategy, the Healthy Forests Restoration Act, the Idaho State Hazard Mitigation Plan 2004, the Ada County Comprehensive Plan, and FEMA requirements for a countywide all hazards mitigation plan. The effort used the best and most appropriate science from all partners, integrating local and regional knowledge about hazards while meeting the needs of local citizens, the regional economy and the significance of this region to the rest of Idaho and the Inland West.

The plan was published in three volumes: Volume I addressed flood, landslide, earthquake and severe weather; Volume II was the wildfire mitigation plan; and Volume III contained appendices. The plan identified and prioritized 37 strategies to address flood, landslide, earthquake and severe weather and 44 strategies addressing wildfire mitigation.

2.1.2 The 2011 Plan

Ada County Emergency Management used the plan update process to comprehensively revise the original hazard mitigation plan. This plan differed from its predecessor for a variety of reasons:

- Better guidance existed at the time of its development.
- The scope of the plan was expanded to include special purpose district planning partners not involved in the initial planning effort. These district planning partners were considered to be true stakeholders in mitigation within the planning area.
- Newly available data and tools provided for a more detailed and accurate risk assessment. The initial plan did not use tools such as FEMA's Hazards U.S. Multi-Hazard (Hazardus-MH) computer model or new data such as FEMA's countywide Digital Flood Insurance Rate Maps (DFIRMs).
- The risk assessment was prepared to better support future grant applications by providing risk and vulnerability information that would directly support the measurement of "cost-effectiveness" required under FEMA mitigation grant programs.
- Science and technology had improved since the development of the initial plan.
- The plan was developed such that it met program requirements of the Community Rating System (CRS), thus reducing flood insurance premiums in participating jurisdictions.

- There was a strong desire on the part of ACEM for this plan to be a user-friendly document that is understandable to the general public and not overly technical.
- The plan identified actions rather than strategies. Strategies provide direction, but actions are fundable under grant programs. This plan replaced strategies with a guiding principal, goals and objectives. The identified actions met multiple objectives that were measurable, so that each planning partner can measure the effectiveness of their mitigation actions.
- The plan identified and prioritized 230 actions to be implanted by the planning partnership. The status of these actions was monitored over the plan performance period by a plain maintenance strategy identified in the plan that included annual progress reporting.

2.2 PROGRESS REPORTING

The 2011 Plan identified a comprehensive plan maintenance strategy that the planning partnership followed during the 5-year performance period of the plan. This strategy included the completion of an annual progress report. Progress reports are a prerequisite for the CRS program. They help keep the plan dynamic as each planning partner annually reviews the actions identified for their community and the progress made on each action. Each planning partner is asked to review the priority of each action to determine if that priority needs to be changed due to economic, political, capacity, or disaster related changes within their jurisdiction. During the performance period for the 2011 plan, four progress reports were completed by the planning partnership. The 2015 progress report is included Appendix A of this volume. All of the completed progress reports can be viewed on the ACEM website at: <https://adacounty.id.gov/ACEM/Mitigation>. These progress reports play an important role in action plan development and prioritization for each planning partner. Each planning partner was asked to start first with the progress report when developing their action plans for this plan update, to identify which actions should be carried over from the previous plan. All actions carried over were reviewed and reprioritized according to the criteria identified in Volume 2 (Introduction section) of this plan update.

2.3 WHY UPDATE?

44 CFR stipulates that hazard mitigation plans must present a schedule for monitoring, evaluating and updating the plan. This provides an opportunity to reevaluate recommendations, monitor the impacts of actions that have been accomplished, and determine if there is a need to change the focus of mitigation strategies. A jurisdiction covered by a plan that has expired is not able to pursue elements of federal funding under the Robert T. Stafford Act for which a current hazard mitigation plan is a prerequisite.

2.4 THE UPDATED PLAN—WHAT IS DIFFERENT?

Due to the success of the prior plan update, no major changes were made to the format and function for this update. The plan has been significantly enhanced using recently available best available data and technology, especially in the risk assessment portion. This plan update followed the same basic planning process as was used for the initial effort. A Steering Committee was once again the critical planning component in the process. Table 2-1 indicates the major changes between the two plans as they relate to 44 CFR planning requirements.

Table 2-1. Plan Changes Crosswalk

44 CFR Requirement	2011 Plan	Updated Plan
<p>Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:</p> <ol style="list-style-type: none"> 1. An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval; 2. An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and 3. Review and incorporation, if appropriate, of existing plans, studies, reports and technical information. 	<p>The 2011 plan followed an outreach strategy utilizing multiple media developed and approved by the Steering Committee. This strategy involved:</p> <ul style="list-style-type: none"> • Public participation on an oversight Steering Committee. • Establishment of a plan informational website. • Press releases. • Use of a public information survey <p>Stakeholders were identified and coordinated with throughout the process. A comprehensive review of relevant plans and programs was performed by the planning team.</p>	<p>Building upon the success of the 2011 plan, the 2017 planning effort deployed the same public engagement methodology. Enhancements included:</p> <ul style="list-style-type: none"> • Utilization of social media • Web deployed survey • Enhanced press coverage <p>As with the 2011 plan, the 2017 planning process identified key stakeholders and coordinated with them throughout the process. A comprehensive review of relevant plans and programs was performed by the planning team.</p>
<p>§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.</p>	<p>The 2011 plan included a comprehensive risk assessment of eight hazards of concern. Risk was defined as (probability x impact), where impact is the impact on people, property and economy of the planning area. All planning partners ranked risk as it pertains to their jurisdiction. The potential impacts of climate change are discussed for each hazard.</p>	<p>The same methodology, using new, updated data, was deployed for the 2017 plan update.</p>
<p>§201.6(c)(2)(i): [The risk assessment shall include a] description of the ... location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.</p>	<p>The 2011 plan presented a risk assessment of each hazard of concern. Each chapter included the following components:</p> <ul style="list-style-type: none"> • Hazard profile, including maps of extent and location, historical occurrences, frequency, severity and warning time. • Secondary hazards • Climate change impacts • Exposure of people, property, critical facilities and environment • Vulnerability of people, property, critical facilities and environment. • Future trends in development • Scenarios • issues 	<p>The same format, using new, updated data, was deployed for the 2017 plan update. Climate change was addressed as a stand-alone chapter</p>

44 CFR Requirement	2011 Plan	Updated Plan
<p>§201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i). This description shall include an overall summary of each hazard and its impact on the community</p>	<p>Vulnerability was assessed for all hazards of concern. The Hazus-MH computer model was used for the dam failure, earthquake and flood hazards. These were Level 2 analyses using city and county data. Site-specific data on County-identified critical facilities were entered into the Hazus model. Hazus outputs were generated for other hazards by applying an estimated damage function to an asset inventory extracted from Hazus-MH.</p>	<p>The same methodology was deployed for the 2017 plan update, using new and updated data.</p>
<p>§201.6(c)(2)(ii): [The risk assessment] must also address National Flood Insurance Program insured structures that have been repetitively damaged floods</p>	<p>During the 2011 plan update there were no repetitive loss properties identified in the Ada County planning area. However, a comprehensive flood insurance analysis that looks at policy coverage and claims history was performed as part of the flood hazard risk assessment.</p>	<p>The repetitive loss status remained unchanged for the 2017 plan update. A comprehensive flood insurance analysis that looks at policy coverage and claims history was re-run with current up to date data as part of the flood hazard risk assessment.</p>
<p>Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure and critical facilities located in the identified hazard area.</p>	<p>A complete inventory of the numbers and types of buildings exposed was generated for each hazard of concern. The Steering Committee defined “critical facilities” for the planning area, and these were inventoried by exposure. Each hazard chapter provides a discussion on future development trends.</p>	<p>The same methodology was deployed for the 2017 plan update, using new and updated data.</p>
<p>Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) and a description of the methodology used to prepare the estimate.</p>	<p>Loss estimates were generated for all hazards of concern. These were generated by Hazus-MH for the dam failure, earthquake and flood hazards. For the other hazards, loss estimates were generated by applying a regionally relevant damage function to the exposed inventory. In all cases, a damage function was applied to an asset inventory. The asset inventory was the same for all hazards and was generated in Hazus.</p>	<p>The same methodology was deployed for the 2017 plan update, using new and updated data.</p>
<p>Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.</p>	<p>There is a discussion of future development trends as they pertain to each hazard of concern. This discussion looks predominantly at the existing land use and the current regulatory environment that dictates this land use.</p>	<p>The same methodology was deployed for the 2017 plan update, using new and updated data. In addition, a look at the change in risk due to new development over the performance period of the plan was performed for each hazard of concern.</p>

44 CFR Requirement	2011 Plan	Updated Plan
<p>§201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.</p>	<p>The 2011 plan contained a mission statement, goals, objectives and actions. The guiding principal, goals and objectives were regional and covered all planning partners. Each planning partner identified actions that could be implemented within their capabilities. The actions were jurisdiction-specific and strove to meet multiple objectives. All objectives met multiple goals and stand alone as components of the plan. Each planning partner completed an assessment of its regulatory, technical and financial capabilities.</p>	<p>The same methodology for setting goals, objectives and actions was applied to the 2017 plan update. The Steering Committee reviewed and reconfirmed the mission statement, goals and objectives for the plan. Each planning partner used the progress reporting from the plan maintenance and evaluated the status of actions identified in the 2011 plan. Actions that were completed or no longer considered to be feasible were removed. The balance of the actions were carried over to the 2017 plan and in some cases, new actions were added to the action plan.</p>
<p>Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.</p>	<p>The Steering Committee identified a mission statement, five goals and ten objectives. These were completely new goals and objectives targeted specifically for this hazard mitigation plan. They were not carried over from any other planning document and were identified based upon the capabilities of the planning partnership. These planning components supported the actions identified in the plan.</p>	<p>The same methodology for setting goals, objectives and actions was applied to the 2017 plan update. The Steering Committee reviewed and reconfirmed the mission statement, goals and objectives for the plan.</p>
<p>Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.</p>	<p>The 2011 plan includes a hazard mitigation catalog that was developed through a facilitated process. This catalog identifies actions that manipulate the hazard, reduce exposure to the hazard, reduce vulnerability, or increase mitigation capability. The catalog further segregates actions by scale of implementation. A table in the action plan section analyzes each action by mitigation type to illustrate the range of actions selected.</p>	<p>The mitigation catalog was reviewed and updated by the Steering Committee for the 2017 update. As with the 2011 plan, the catalog has been included in the 2017 plan to represent the comprehensive range of alternatives considered by each planning partner. The analysis of mitigation action was again used in jurisdictional annexes to the plan.</p>
<p>Requirement: §201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction’s participation in the National Flood Insurance Program, and continued compliance with the program’s requirements, as appropriate.</p>	<p>All municipal planning partners that participate in the National Flood Insurance Program identified an action stating their commitment to maintain compliance and good standing under the program. Communities that participate in the Community Rating System have identified actions to maintain or enhance their standing under the CRS.</p>	<p>The same methodology was deployed for the 2017 plan update, using new and updated data.</p>

44 CFR Requirement	2011 Plan	Updated Plan
<p>Requirement: §201.6(c)(3)(iii): [The mitigation strategy shall describe] how the actions identified in section (c)(3)(ii) will be prioritized, implemented and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.</p>	<p>Each recommended action was prioritized using a qualitative methodology based on the objectives the project will meet, the timeline for completion, how the project will be funded, the impact of the project, the benefits of the project and the costs of the project.</p>	<p>The same methodology was deployed for the 2017 plan update, using new and updated data.</p>
<p>Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.</p>	<p>The 2011 plan details a plan maintenance strategy similar to that of the initial plan. There is additional detail addressing deficiencies observed during the initial performance period of the plan. This includes a more defined role for the Steering Committee in annual plan review.</p>	<p>The 2011 plan maintenance strategy was carried over to the 2017 plan.</p>
<p>Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.</p>	<p>The 2011 plan details recommendations for incorporating the plan into other planning mechanisms such as:</p> <ul style="list-style-type: none"> • Comprehensive Plan • Emergency response plan • Capital Improvement Programs • Municipal Code • Continuity of Operations Plan 	<p>The 2011 plan maintenance strategy was carried over to the 2017 plan.</p>
<p>Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.</p>	<p>The 2011 plan details a strategy for continuing public involvement</p>	<p>The 2011 plan maintenance strategy was carried over to the 2017 plan.</p>
<p>Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).</p>	<p>21 planning partners were covered by the 2011 plan. Appendix D presents the resolutions of all planning partners that adopted this plan</p>	<p>The 2017 plan achieves DMA compliance for 21 planning partners. Resolutions for each partner adopting the plan can be found in Appendix F of this volume.</p>

3. PLAN METHODOLOGY

To develop the 2017 Ada County Multi-Hazard Mitigation Plan, the County followed a process that had the following primary objectives:

- Secure grant funding
- Form a planning team
- Reestablish a planning partnership
- Define the planning area
- Establish a steering committee
- Coordinate with other agencies
- Review existing programs
- Engage the public.

3.1 GRANT FUNDING

This planning effort was supplemented by a grant from FEMA’s Pre-Disaster Mitigation Grant Program (PDM). ACEM was the applicant agent for the grant. The grant was applied for in 2013, and funding was appropriated in 2014. This grant covered 75 percent of the cost for development of this plan update. The County and its planning partners covered the balance through in-kind contributions.

3.2 FORMATION OF THE PLANNING TEAM

Ada County hired Tetra Tech, Inc. to assist with development and implementation of the plan update. The Tetra Tech project manager assumed the role of the lead planner, reporting directly to a County-designated project manager. A planning team was formed to lead the planning effort, made up of the following members:

- Doug Hardman (ACEM)—Director
- Paul Marusich (ACEM)—Emergency Planner-County Project Manager
- Rob Flaner (Tetra Tech)—Lead project Planner
- Carol Bauman (Tetra Tech)—Hazus/GIS lead
- Stephen Veith (Tetra Tech)—Hazus/GIS support

3.3 ESTABLISHMENT OF THE PLANNING PARTNERSHIP

Ada County opened this planning effort to all eligible local governments in the county. The planning team made a presentation at a stakeholder meeting on January 19, 2016 to update eligible local governments within the planning area on the plan update process to date and solicit planning partners. Key meeting objectives were as follows:

- Provide an overview of the Disaster Mitigation Act.
- Provide an overview of the previous disaster mitigation plan.
- Describe the reasons for a plan update.

- Outline the County work plan.
- Outline planning partner expectations.
- Seek commitment to the planning partnership.

Jurisdictions wishing to join the planning partnership were asked to provide a “letter of intent to participate” and designate a point of contact. The municipal planning partners and their contacts are as follows:

- Ada County—Doug Hardman, Director, Ada County Emergency Management
- City of Boise—Romeo Gervais, Deputy Chief
- City of Eagle—Mike Williams, CFM, Planner III
- City of Garden City— John Evans, Mayor
- City of Kuna—Mike Borzick, GIS Manager
- City of Meridian—Kyle Radek, Assistant City Engineer
- City of Star— Chad Bell, Mayor

Special purpose district planning partners are listed in Table 3-1. Linkage procedures were established for any jurisdiction wishing to link to the Ada County plan in the future (see Volume 2).

Table 3-1. Special Purpose District Planning Partners

District	Point of Contact	Title
Eagle Fire Protection District	Mike Winkle	Fire Chief
Kuna Rural Fire District	Terry D. Gammel	Assistant fire chief
North Ada County Fire and Rescue	Michael Irvan	Commission Chair
Star Joint Fire Protection District	Greg Timinsky	Fire Chief
Star Sewer and Water District	Hank Day	General Manager
Whitney Fire Protection District	Rem Ross	Fire Chief
Drainage District #4	Mike Dimmick	Board Chair
Eagle Sewer District	Lynn Moser	General Manager
Joint School District #2	Spencer McLean	Administrator of Building and Grounds
Independent School District of Boise City #1	Mike Munger	Safety and Security Specialist
Greater Boise Auditorium District	Patrick D. Rice	Executive Director
Ada County Highway District	Tim Nicholson	Maintenance Manager
Flood Control District #10	William C. Clayton	Chairman

3.4 DEFINING THE PLANNING AREA

The planning area consists of all of Ada County plus the portion of the Flood Control District #10 jurisdictional boundary that extends into Canyon County. All partners to this plan have jurisdictional authority within this planning area. The area is shown in Figure 3-1.

3.5 THE STEERING COMMITTEE

Hazard mitigation planning enhances collaboration and support among diverse parties whose interests can be affected by hazard losses. A steering committee was formed to oversee all phases of the plan update. The members of this committee included key planning partner staff, citizens and other stakeholders from within the planning area. The planning team assembled a list of candidates representing interests within the planning area that could have recommendations for the plan or be impacted by its recommendations. Table 3-2 lists the committee members.

Ada County

Figure 3-1.
General Planning Area

Legend

- Interstate Roads
- City Boundaries
- Major Roads
- Water Bodies



Base Map Data Sources:
Ada County, U.S. Geological Survey



Ada County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

Table 3-2. Steering Committee Members

Name	Title	Jurisdiction/Agency	Representing
Angela Gilman (Chair)	County Engineer/Floodplain Administrator	Ada County Development Services	Planning Partner/ Land use planner
Phil Bandy (Vice-Chair)	Citizen	--	Stakeholder
Paul Marusich	Emergency Planner	Ada County Emergency Management	Emergency Management
Tim Nicholson	Maintenance Manager	Ada County Highway District	Planning Partner
Romeo Gervais	Deputy Chief	City of Boise Fire Department	Planning Partner
Rob Littrell	Emergency Planner	Boise State University	Stakeholder
Scott Buck	Deputy Fire Marshall	Eagle Fire Protection District	Planning Partner
Mike Dimmick	District Manager	Flood Control District #10	Planning Partner
Mike Pellant	Citizen	Healthy Hills Initiative	Stakeholder
Susan Cleverly	Senior Mitigation Planner	Idaho Office of Emergency Management	Stakeholder
Gary Pagel	Physical Security/Business Continuity Manager	Idaho Power	Stakeholder
Liz Paul ^a	Citizen	Idaho Rivers United	Stakeholder
Tim Breuer ^a	Citizen	Land Trust of Treasure Valley	Stakeholder
Dave Miles	Management Analyst	City of Meridian	Planning Partner
Brian Holmes	Meteorologist	Channel 7, KTVB	Stakeholder
Brian Terry	Risk Manager	Micron Technology	Stakeholder
Pete Wagner	Environmental, Health and Safety Manager	United Water	Stakeholder
Rex Barrie	Water Master	Water District #63	Stakeholder

a. Liz Paul was replaced by Tim Breuer following SC Meeting #5.

Leadership roles and ground rules were established during the Steering Committee’s initial meeting on July 16, 2015. The Steering Committee agreed to meet monthly as needed throughout the course of the plan’s development. The planning team facilitated each Steering Committee meeting, which addressed a set of objectives based on the work plan established for the update. The Steering Committee met eight times from July 2015 through March 2016. Meeting agendas, notes and attendance logs are available for review upon request. All Steering Committee meetings were open to the public, and agendas and meeting notes were posted to the hazard mitigation plan website. All open public meeting laws and policies were adhered to during the facilitation of these steering committee meetings.

3.6 COORDINATION WITH OTHER AGENCIES

44 CFR requires that opportunities for involvement in the planning be provided to neighboring communities, agencies involved in hazard mitigation, agencies that regulate development, businesses, academia and other private interests (Section 201.6.b.2). The initial coordination activity was an invitation to agencies to provide representatives to participate on the Steering Committee.

As the plan update process proceeded, the following agencies were invited to participate and were kept apprised of plan development milestones:

- Idaho Office of Emergency Management
- Idaho Department of Water Resources (IDWR)
- Idaho Rivers United
- Boise River Enhancement Network

- Ada County Irrigation Districts
- Community Planning Association of SW Idaho (COMPASS)

These agencies received meeting announcements, meeting agendas, and meeting minutes by e-mail throughout the plan update process. These agencies supported the effort by attending meetings or providing feedback on issues. Other agencies/organizations that provided input/data include Idaho Silver Jackets, the National Weather Service, the U.S. Army Corps of Engineers, and the Bureau of Land Management.

The following additional agency coordination was conducted specifically to meet planning requirements for a Community Wildfire Protection Plan (CWPP):

- The Idaho Department of Lands received drafts of the CWPP components of the plan for review and comment on CWPP compliance.
- The federal Bureau of Land Management (BLM) was contacted to provide data for the wildfire risk assessment.
- The Healthy Hills Initiative was a full participating stakeholder on the Steering Committee. This group's participation provided access to the planning process of all of its support agencies at the federal and state level.
- All local Ada County fire agencies participated in this planning process as full planning partners and also held positions on the Steering Committee.
- The Idaho Office of Emergency Management provided representation on the Steering Committee.

All the agencies listed above were provided an opportunity to comment on this plan update, primarily through the hazard mitigation plan website. Each was sent an e-mail message informing them that draft portions of the plan were available for review. In addition, the complete draft plan was sent to FEMA Region X, the Idaho Office of Emergency Management, Idaho Department of Lands (for CWPP compliance) and the Insurance Service Office (ISO) for a pre-adoption review to ensure program compliance.

3.7 REVIEW OF EXISTING PROGRAMS

44 CFR states that hazard mitigation planning must include review and incorporation, if appropriate, of existing plans, studies, reports and technical information (Section 201.6.b(3)). Section 4.8 of this plan provides a review of laws and ordinances in effect within the planning area that can affect hazard mitigation actions. In addition, the following programs can affect mitigation within the planning area:

- Ada County Comprehensive Plan (2007)
- The comprehensive plans for each of the incorporated city planning partners
- Idaho State Hazard Mitigation Plan (2013)
- The Ada County Hazard Inventory and Vulnerability Analysis (2010)
- Ada County Threat/Hazard Identification and Risk Assessment (2015)
- The Ada County Emergency Operations Plan (2014)
- Ada County Flood Response Plan (April 2014)
- Ada County Wildfire Response Plan (May 2014)
- Ada County Dam Response Plan (April 2007)
- Boise River Enhancement Plan

An assessment of all planning partners' regulatory, technical and financial capabilities to implement hazard mitigation actions is presented in the individual jurisdiction-specific annexes in Volume 2. Many of these relevant plans, studies and regulations are cited in the capability assessment.

One of the Steering Committee's first action items was to review the Idaho State Hazard Mitigation Plan. The Steering Committee identified hazards listed in the state plan to which the Ada County planning area is susceptible, in order to determine if there was a need to expand the scope of the risk assessment. The committee also reviewed the goals, objectives and strategies of the state plan in order to select goals, objectives and actions for the plan that are consistent with those of the state.

3.8 PUBLIC INVOLVEMENT

Broad public participation in the planning process helps ensure that diverse points of view about the planning area's needs are considered and addressed. The public must have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (44 CFR, Section 201.6(b)(1)). The Community Rating System expands on these requirements by making CRS credits available for optional public involvement activities. The strategy for involving the public in this plan update emphasized the following elements:

- Include members of the public on the Steering Committee.
- Use a questionnaire to determine if the public's perception of risk and support of hazard mitigation has changed since the initial planning process.
- Utilize social media tools to expand messaging
- Utilize/leverage existing public outreach efforts implemented by ACEM
- Attempt to reach as many planning area citizens as possible using multiple media.
- Identify and involve planning area stakeholders.

3.8.1 Stakeholders and the Steering Committee

Stakeholders are the individuals, agencies and jurisdictions that have a vested interest in the recommendations of the hazard mitigation plan, including planning partners. All planning partners are stakeholders in the process. The diversity brought to the table by special purpose districts and private non-profit entities creates an opportunity to leverage partnerships between entities that typically do not work together in the field of hazard mitigation.

The effort to include stakeholders in this plan update included stakeholder participation on the Steering Committee. All members of the Steering Committee live or work within the planning area. Four members of the committee represented Ada County citizen and property owner interests and three of the four citizens also represented public special interest groups (Healthy Hill Initiative, Land Trust of the Treasure Valley and Idaho Rivers United). Four members represented private sector interests. Boise State University also provided a representative to the committee to represent the academic interests of this planning effort. New representation on the committee from the 2011 planning effort was provided by Water District # 63, representing irrigation district interest, and a staff meteorologist from KTVB Channel 7, which provided an excellent public relations resource to the committee. The Steering Committee met throughout the course of the plan's development, and all meetings were open to the public. Protocols for handling public comments were established in the ground rules developed by the Steering Committee.

3.8.2 Hazard Mitigation Survey

Building upon the successful survey effort of the 2011 plan, the Steering Committee decided to deploy a survey again for the 2017 planning effort. The principal driver for this decision was the availability of enhanced survey tools and dissemination mediums from what was utilized in the 2011 planning effort. The decision to survey was driven by the principal objective of gaining more responses from all portions of the County. A hazard mitigation survey (see Figure 3-2) developed by the planning team, with guidance from the Steering Committee, was used to gauge household preparedness for natural hazards and the level of knowledge of tools and techniques that assist in reducing risk and loss from natural hazards.

Ada County Survey: Hazard Mitigation Planning

1. Survey Introduction

A coalition of local governments and other stakeholders in Ada County is working together to update the Ada County Hazard Mitigation Plan. This plan was created in 2011 in response to Federal programs that enable the partnership to use pre- and post-disaster financial assistance to reduce the exposure of County residents to risks associated with natural hazards. In order to identify and plan for future natural disasters, we need your assistance. This questionnaire will provide valuable insight to the planning partnership that will be utilized in this plan update.

The survey consists of 30 questions plus an opportunity for any additional comments at the end. The survey should take less than 10 minutes to complete and is anonymous. When you have finished the survey, please click "Done" on the final page.

The Ada County Hazard Mitigation Planning Partnership thanks you for taking the time to participate in this information-gathering process.

1. Where do you live?

- Boise
- Meridian
- Garden City
- Other (please specify)
- Eagle
- Star
- Kuna
- Hidden Springs
- Unincorporated County
- Outside Ada County

2. Do you work in Ada County?

- Yes
- No

3. Which of the following hazard events have you or anyone in your household experienced in the past within Ada County? (Check all that apply)

- Drought
- Earthquake
- Flood
- Hazardous Materials
- Household Fire
- Other (please specify)
- Landslide
- Severe Weather (wind, lightning, winter storm, etc.)
- Wildfire
- None

Figure 3-2. Sample Page from Questionnaire Distributed to the Public

This questionnaire was designed to help identify areas vulnerable to one or more natural hazards. Responses helped guide the Steering Committee in selecting goals, objectives and mitigation strategies. A web-based survey tool was used to develop and track the results of the survey. The survey was disseminated by electronic means, principally via the hazard mitigation plan website as well as social media (Facebook, Twitter, Next-Door). The survey and the website were advertised via multiple means during the survey period. The survey was conducted from November 2015 through June 2016. Approximately 2,300 surveys were completed, covering all geographic locations in the County. This response was much greater than the 380 surveys received for the 2011 planning effort. This success is attributed to the power of social media tools such as Facebook, Twitter and Nextdoor. The questionnaire and a summary of results are in Appendix B.

3.8.3 Public Meetings

With support of the Steering Committee, ACEM coordinated public outreach events to educate the public on the hazards of concern and mitigation activities taking place around the community. These events provided the public unprecedented access to the plan update process. The sections below summarize the public meetings.

Boise River Enhancement Network, Floodplain Management Brown Bag, May 20, 2015

The Boise River Enhancement Network (BREN) held a lunch time “brown-bag” educational session to inform the public on the potential impacts of new floodplain mapping on the Boise River being generated by FEMA. The Idaho State Floodplain Coordinator from the Idaho Department of Water Resources was the principal speaker. This meeting was also attended by Paul Marusich from ACEM and Rob Flaner from Tetra Tech. Paul was given the opportunity at this meeting to provide an overview of the hazard mitigation plan update and to recruit Steering Committee members for the plan update. The meeting was attended by approximately 30 attendees.

Public Open House at The Village, October 6, 2015

ACEM sponsored a public open house at The Village Shopping Center in Meridian on October 6, 2015 (see Figure 3-3 and Figure 3-4), during Earthquake Awareness Month. The Village is a popular venue that sponsors a “cheap movie night” on Tuesdays. It features an open pavilion area centrally located near the theaters. Hazus workstations providing property-specific loss information for earthquake and dam failure hazards were available to advise citizens. The booth was staffed by members of the planning team, Steering Committee and ACEM. Press coverage of the event on the 6:00 evening news helped to increase attendance. Approximately 100 people stopped by the booth during the 2-hour period and approximately 30 visited the Hazus workstation. The Steering Committee viewed this session as a great success.



Figure 3-3. Village Open House Booth, October 6, 2015



Figure 3-4. Village Open House Workstation, October 6, 2015

Eagle Fire Open House, October 10, 2015

Eagle Fire Protection District, a planning partner in the Ada County Hazard mitigation Plan, holds an annual open house. During the District’s 2015 open house, ACEM manned a table with information on various aspects of emergency management, including information on the update to the hazard mitigation plan. QR code links to the survey as well as hard copies were available to those in attendance. The open house ran from 9:00 AM to 3:00 PM and was well attended.

Meridian Public Safety Day, October 17, 2015

ACEM hosted an information table at the City of Meridian’s Public Safety Day. Information on the mitigation plan update and access to the survey was available for all in attendance. The Public Safety Day ran from 9:00 AM to 3:00 PM and was well attended.

Severe Weather Week, March 26 –April 1, 2016

A partnership of the National Weather Service (NWS), ACEM and Tetra Tech set up outreach booths at two of the area’s busiest retail centers during Severe Weather Week in Idaho: an evening event at The Village in Meridian (see Figure 3-5) and a midday Saturday event at the Boise Towne Square Mall (see Figure 3-6). The events were advertised on the web and through social media by ACEM and NWS. Staff from both agencies answered questions and provided brochures. Tetra Tech GIS staff was on site with the Hazus computer model for the public to check flood risk at their homes (see Figure 3-7).



Figure 3-5. Booth at the Village, March 29, 2016



Figure 3-6. Booth at the Mall, April 2, 2016

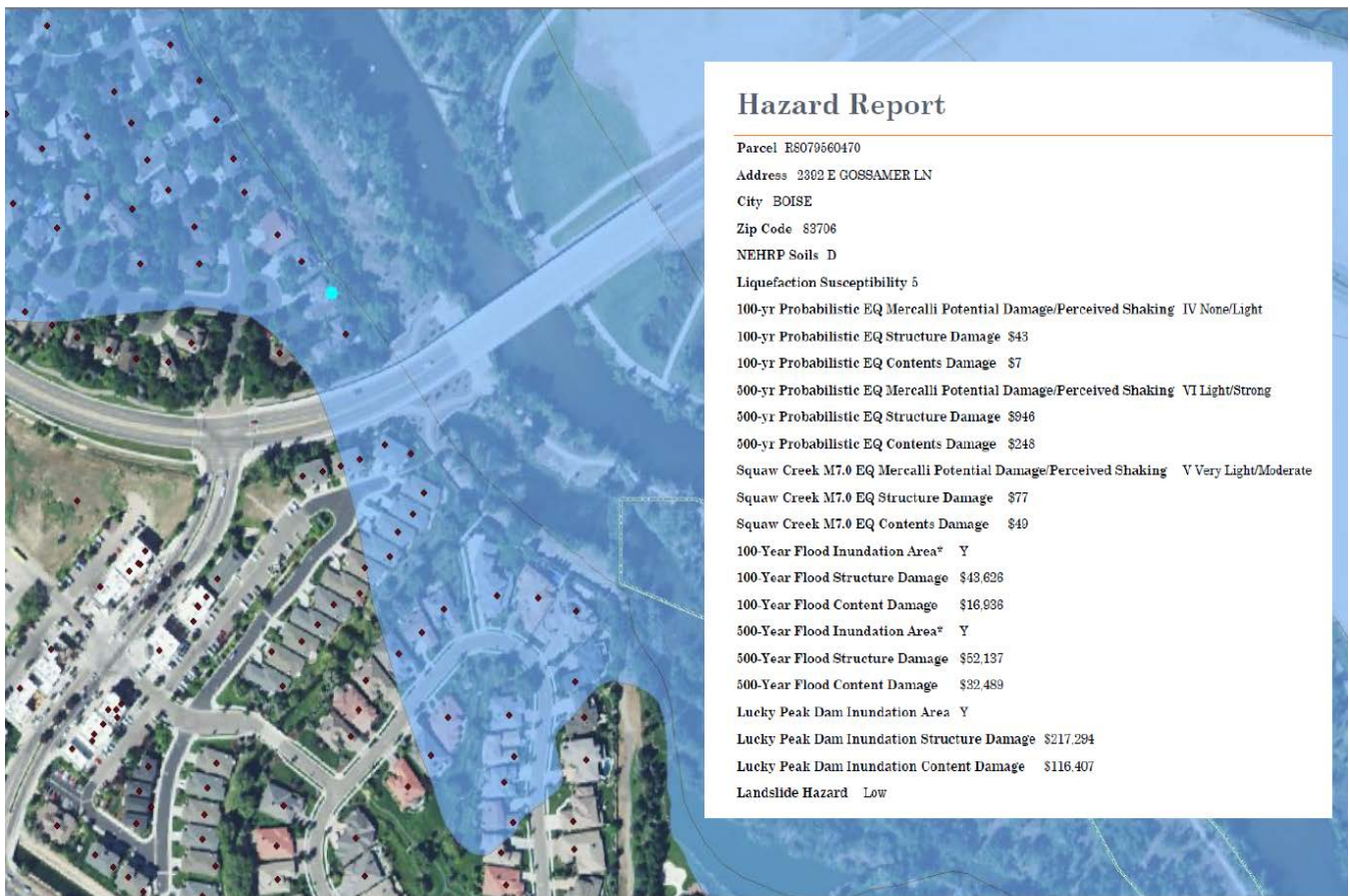


Figure 3-7. Example Hazus Workstation Output

A final event was held in conjunction with the Ada County Open House in April at the Ada County Courthouse. The Open House focused on local government services, with displays and demonstrations from first response agencies. Information was presented by Idaho Firewise (wildfire), NWS (severe weather, flooding), Tetra Tech (Hazus model results) and the Idaho Silver Jackets (flooding, dam inundation). This event received significant social media promotion.

3.8.4 Press Coverage

Press releases were distributed over the course of the plan’s development that triggered multiple levels of press coverage during the plan update process. The planning effort received the following press coverage:

- Lead project planner Rob Flaner was interviewed by Boise State Public Radio on the impacts of revising the Boise River Flood Insurance Rate Maps. Rob discussed the Ada County Multi-Hazard Mitigation Plan and how the new flood data would be used to assess the flood risk along the Boise River. This broadcast can be listened to at: <http://boisestatepublicradio.org/post/why-thousands-more-treasure-valley-residents-may-have-buy-flood-insurance>
- Coverage in the “Preparedness Pointer,” the emergency management newsletter disseminated to Ada County residents by ACEM
- Channel 7 (KTVB) news covered the public open houses the week of October 6, 2015.
- Coverage on the public outreach effort during severe weather week (March 29, 2016) by KBOI, Channel 2 (see Figure 3-8)
- A press release announcing the plan update process and the mitigation plan website was disseminated to all media outlets on July 15, 2015.
- A press release announcing the “Great Idaho Shakeout” public outreach opportunities was disseminated to all media outlets on October 1, 2015.
- A press release announcing the public comment period was disseminated to all media outlets by ACEM on August 15, 2016.

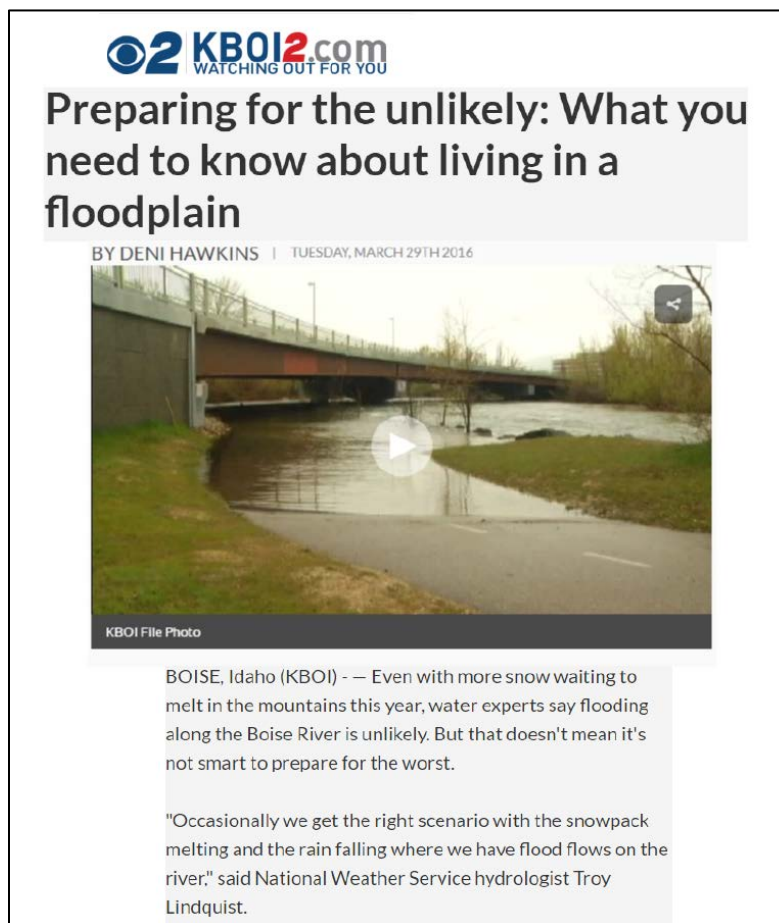


Figure 3-8. KBOI TV Coverage of March Public Open House

3.8.5 Internet

The ACEM hazard mitigation webpage was utilized as the primary means for public access to all phases of this plan update process. This website was established and maintained by ACEM during the last plan update and is a robust data source for all aspects of emergency management in the Ada County planning area (see Figure 3-9):

<https://adacounty.id.gov/ACEM>

The site's address was publicized in all press releases, mailings, questionnaires and public meetings. Information on the plan update process, the Steering Committee, the questionnaire and phased drafts of the plan was made available to the public on the site throughout the process. ACEM will continue to maintain this website as part of its overall public outreach program during the performance period for this plan update.

Preparedness, Response, Recovery, Mitigation

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- Emergency Plans
- Training Resources
- Committees
- Helpful Information and Links
- Volunteers

Hazard Mitigation Plan

This page provides information about the update to the Ada County All Hazard Mitigation Plan. Meeting schedules, meeting minutes and other information may be found on this page.

Effective November 1, 2004, a Local Hazard Mitigation Plan approved by the [Federal Emergency Management Agency \(FEMA\)](#) is required for participation in its Hazard Mitigation programs. To ensure that the latest information and analysis is contained in the plan it must be updated every five years.

Mitigation is the cornerstone of emergency management. It's the continuing effort to lessen the impact disasters have on people and property. Mitigation is defined as "sustained action that reduces or eliminates long-term risk to people and property from natural hazards and their effects."

2016 All Hazards Mitigation Plan:

In an effort coordinated by Ada County Emergency Management (ACEM), local governments and districts, are in the process of updating the Ada County All Hazards Mitigation Plan. The updated plan will include information on:

- The seven potential natural hazards of Ada County and dam failure
- Risk assessments, that include computer modeling, to describe potential losses from these hazards
- A set of goals, objectives and actions that will guide future mitigation activities within the county
- A system for implementing and monitoring the plan in the future

This plan update will maintain the formatting of the current plan and will include new modeling of the hazards based on the most recent data available. The plan is composed of two volumes. Volume One examines potential disasters and mitigation on a county-wide basis, and identifies desired actions that could reduce risk for the area as a whole. Volume Two is composed of individual annexes for each of the planning partners (local jurisdictions and taxing districts) that are participating in the process. These annexes address specific mitigation actions that each partner has identified as possible methodologies to reduce risk in their area.

The Ada County Hazard Mitigation Plan Update will:

- Strategically locate and plan mitigation projects that prioritize the protection of people, structures, infrastructure and unique ecosystems that contribute to our way of life and the sustainability of the local economy.
- Involve the maximum number of planning partners (local governments) that wish to participate in the process.
- Ensure that the goals, objectives, identified hazards and mitigation strategies coincide with those documented in the most current State of Idaho All Hazards Mitigation Plan.
- Enhance the risk assessment and analysis of the current plan using the most up to date geographic data and modeling tools available.

NTAS
National Terrorism Advisory System
www.DHS.gov/alerts

Network for Good.
Support Disaster Relief

Figure 3-9. Sample Page from Multi-Hazard Mitigation Plan Web Site

3.9 PLAN DEVELOPMENT CHRONOLOGY/MILESTONES

Table 3-3 summarizes important milestones in the development of the plan update.

Table 3-3. Plan Development Milestones

Date	Event	Description	Attendance
2014			
9/26	Grant Award	ACEM secures grant funding for plan update	N/A
2015			
1/26	County initiates contractor procurement	Seek technical assistance to facilitate plan update process	N/A
3/26	County selects Tetra Tech to facilitate plan update	Facilitation contractor secured	N/A
5/15	Planning team identified	Formation of the planning team	N/A
5/20	Public Outreach	Boise River Enhancement Network–Floodplain Management Brown Bag	42
6/1	Public Outreach	KBSU piece on flood insurance mapping changes within Ada County. Interview with Rob Flaner.	N/A
6/22	Steering Committee	Steering Committee membership confirmed	NA
7/15	Public Outreach	Press release to all media outlets announcing the plan update process	N/A
7/16	Steering Committee Meeting #1	<ul style="list-style-type: none"> Review purposes for update Organize Steering Committee Plan review Public involvement strategy 	19
8/13	Steering Committee Meeting #2	<ul style="list-style-type: none"> Risk assessment update Plan review observations Critical facilities Public involvement strategy 	16
9/8	Public Outreach	Hazard mitigation survey deployed	N/A
9/10	Steering Committee Meeting #3	<ul style="list-style-type: none"> Risk assessment update Finalize hazards of concern Phase 1 public outreach strategy Finalize critical facilities definition Review/approve mission, goals and objectives. 	19
10/6	Public Outreach	Public open house at The Village	50+
10/8	Steering Committee Meeting #4	<ul style="list-style-type: none"> Risk assessment update Review the 1st public outreach meeting Comment on survey Confirm critical facilities definition Review/confirm mission statement, goals and objectives 	14
10/10	Public Outreach	Eagle Fire Open House	300+
10/17	Public Outreach	Meridian Public Safety Day	300+
11/12	Steering Committee Meeting #5	<ul style="list-style-type: none"> Risk assessment update Review the recent public outreach meetings Review/confirm mission statement, goals and objectives Public outreach-next steps Planning process-next steps 	13
2016			
1/14	Steering Committee Meeting #6	<ul style="list-style-type: none"> Risk assessment update Confirm objectives Public outreach status Planning partner engagement Plan maintenance strategy 	14

Date	Event	Description	Attendance
2/11	Steering Committee Meeting #7	<ul style="list-style-type: none"> • Risk assessment update • Public outreach status • Planning partner engagement status • Alternatives analysis • Countywide actions 	15
3/3	Public Outreach	"Preparedness Pointer" disseminated advertising severe weather week activities	N/A
3/10	Steering Committee Meeting #8	<ul style="list-style-type: none"> • Review flood risk assessment results • Review final hazard mitigation catalog • Review countywide actions • Review climate change chapter • Current survey results • Public outreach, next steps 	14
3/26-4/1	Public Outreach	Severe Weather Week	50+
3/29	Public Outreach	KBOI (Channel 2) coverage of severe weather week outreach efforts	N/A
5/16	CWPP Stakeholder Engagement	Southwest Idaho Wildfire Mitigation Forum	50+
8/17	Public Outreach	Initiation of final public comment period	N/A
9/7	Public Outreach	Closure of the final public comment period	N/A
9/15	Steering Committee Meeting #9	<ul style="list-style-type: none"> • Provide comment on draft plan • Review changes that were made during public comment • Approve final draft • Next steps 	11
11/22	Plan Approval	Approval pending adoption (APA) provided by FEMA	N/A
11/23	Adoption	Adoption window of final plan opens	N/A
2017			
8/16	Plan Approval	Final plan approved by FEMA	N/A

4. ADA COUNTY PROFILE

Ada County is located in southwestern Idaho's Treasure Valley. Ada County covers 1,060 square miles, of which all but about 5 square miles is land area. According to Ada County's Comprehensive Plan, 48 percent of the land in the County is privately owned by private, 2 percent is held by local government, 7 percent belongs to state government, and 43 percent is owned by the federal government, primarily the Bureau of Land Management (BLM). Ada County is bounded on the north by Gem and Boise Counties, on the east by Elmore County, on the south by Owyhee County and on the west by Canyon County.

4.1 JURISDICTIONS AND ATTRACTIONS

Ada County is the most populous county in the state of Idaho. It has six incorporated cities:

- Boise, the county seat and state capital, is the most populous city in Ada County and the region. Boise serves as a retail and business center as well as the cultural and entertainment hub of the region.
- Meridian, the County's second largest city, was established as a town in 1891 and incorporated in 1903. Meridian is the fastest growing city in the state. The majority of Meridian's residential neighborhoods are new, due to fast population growth in the last 20 years.
- Eagle, a bedroom community of Boise, is situated between the Boise Foothills and the Boise River. Eagle maintains its rural charm with open space, parks and access to the Boise River Greenbelt System.
- Garden City owes much of its early existence to gambling. Today, the small village adjacent to Boise has since capitalized on the rediscovery of the river and the natural environment.
- Kuna is a community rooted in agriculture in the southwestern portion of Ada County.
- Star is Ada County's smallest and newest incorporated city, yet it was also one of the earliest communities developed in the Boise River Valley. Varied growth and development rates over time have resulted in the un-incorporation and re-incorporation of this rural community.

The cities lie within the broad mountain valley and are close to Interstate 84, the primary transportation route through southern Idaho. Each is expected to grow with the regional development of the Treasure Valley.

Streams, mountain ranges, extensive foothills and open space provide a wide array of recreational opportunities in Ada County. Much of the county's landscape is dry grassland or sagebrush, with a few pockets of timbered land. Terrain ranges from 5,750 feet above sea level at the northern mountains to about 2,200 feet along the southern floodplains. This southern portion of the County is largely undeveloped as much of the land belongs to the federal government. The long time agricultural valley is bounded to the northwest by the foothills of the Boise Front.

Treasure valley, formerly known as the Lower Snake River Valley or the Boise River Valley, is a broad basin where the Payette, Boise, Weiser, Malheur and Owyhee Rivers drain into the Snake River. The Boise River is an important contributor to Ada County's quality of life, identity and economy. The Snake River, Ada County's largest river, meanders through the southern portion of the county, forming part of the county's boundary. These rivers, their impoundments, and their tributaries provide boating, fishing, bird watching and other water recreation activities. The major rivers and creeks, along with their tributary streams, gulches, canals and drainages, have contributed to local development but have also been the source of many flood events in Ada County.

4.2 HISTORICAL OVERVIEW

Archaeological evidence indicates that the Shoshone-Bannock tribe moved into the region between 4,000 and 5,000 years before present as hunters following large game migrating to the north. The Shoshone tribes were organized as a collection of extended families referred to as a band. Having occupied the Great Basin for centuries, the Shoshone were skilled at living in inhospitable arid deserts. Southern Idaho offered a plethora of food resources spread out across a vast region and at varying elevations. During the 1700s, Shoshone bands acquired horses, which improved their mobility and expanded their trading opportunities with other tribes. Trade routes became trail routes used by immigrants during the American westward movement during the mid-19th century. Though early encounters between natives and explorers were amiable, encroachment, settlement and cultural conflict with settlers irrevocably changed the native way of life. By the end of the 19th century, much of the Shoshone population had been forced onto reservation land or had succumbed to diseases introduced by explorers and settlers.

The growing fur trading business in the West was responsible for bringing white settlers into Southern Idaho in the early 1800s. British fur trappers and traders were the first explorers in the Boise Valley. In 1834, the British established Old Fort Boise at the mouth of the Boise River, but they abandoned it after only two decades. Gold was discovered in 1862 within the Boise Basin, resulting in the establishment of several small gold rush settlements and boom towns as word of the discovery spread. The U.S. Army built Fort Boise in 1863, on what is now the northeastern part of Boise.

Over the years, Boise became an important crossroads and trading center for Ada County. Miners traveled through town on their way to mining settlements and many others traveling the Old Oregon Trail found the crossing at Boise River to be more agreeable than other river crossings. Stage coach and freight lines soon followed, making the Boise area a regional transportation hub. With the increase in population and growing political influence, Boise became an incorporated city in 1864. The territorial capital was relocated from Lewiston to Boise in the mid-1860s, following the re-delineation of territory boundaries.

Ada County was formed December 22, 1864, with Boise as the county seat. The County was named after Ada Riggs, the first child born to Pioneer H.C. Riggs, a co-founder of the city of Boise. Soon after the formation of the County, population and industry began to grow, particularly around Boise. Boise developed as a key government center and the federal, state and local offices located there enhanced the County's ability to grow and prosper.

Timber was an important industry in Ada County at the turn of the 20th century. The first sawmill was established on the Boise River just east of Boise in 1905 by the Barber Lumber Company. A wooden dam was constructed across the river to provide a holding pond for logs and an electrical plant. A few other mills followed on the river and other tributaries in the County. As communities were platted and developed, streetcars and light rail trolley systems connected the towns of Star, Middleton, Kuna, Nampa, Boise, Eagle and Caldwell. The rail lines provided a means for local transportation and to ship freight and produce beyond the region. Invention of the car and construction of state and federal highways marked the end of the trolley system in Ada County by the 1920s.

Ada County's economic base shifted to agriculture in the 1900s. The Boise Project resulted in the irrigation and cultivation of the formerly arid, sagebrush plains of central Ada County. Some of the first farms in the County were established along the low-lying floodplains of the Boise River and early irrigation systems were constructed around Garden City, Eagle Island, Dry Creek and Star.

Post-war development included the construction of Anderson Ranch Dam to increase irrigation capabilities, produce power and reduce flooding in the valley. Ada County also welcomed the first Albertson's grocery store in Boise and the Simplot agricultural processing company in Caldwell. Today, Albertson's and Simplot remain among the County's largest employers.

4.3 MAJOR PAST HAZARD EVENTS

Presidential disaster declarations are typically issued for hazard events that cause more damage than state and local governments can handle without federal assistance. A presidential disaster declaration puts federal recovery programs into motion to help disaster victims, businesses and public entities. The State of Idaho has experienced 25 declared events since 1956, as listed in Table 4-1. Two of these events impacted Ada County.

Table 4-1. Presidential Disaster Declarations in Idaho for Ada County Hazards of Concern

Type of Event	Date	Disaster Declaration	Counties Impacted ^a
Flood	4/21/1956	DR-55	
Flood	5/27/1957	DR-76	
Wildfires	7/22/1960	DR-105	
Flood	6/26/1961	DR-116	
Flood	2/14/1962	DR-120	
Flood	2/14/1963	DR-143	
Heavy rains & flooding	12/31/1964	DR-186	Ada, Bannock, Benewah, Blaine, Boise, Bonneville, Butte, Camas, Caribou, Cassia, Clearwater, Elmore, Gem, Gooding, Idaho, Jerome, Kootenai, Latah, Lewis, Lincoln, Minidoka, Nez Perce, Owyhee, Payette, Power, Shoshone, and Washington.
Forest Fires	8/30/1967	DR-231	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Shoshone
Severe storms, extensive flooding	3/2/1972	DR-324	Latah
Severe storms, snowmelt, flooding	1/25/1974	DR-415	Adams, Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Shoshone, and Washington
Dam collapse	6/6/1976	DR-505	Bingham, Bonneville, Fremont, Jefferson, and Madison
Volcanic eruption, Mt. St. Helens	5/22/1980	DR-624	Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Nez Perce, and Shoshone
Earthquake	11/18/1983	DR-694	Butte, Custer, and Gooding
Ice jams, flooding	2/16/1984	DR-697	Lemhi
Storms/flooding	2/11/1996	DR-1102	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Shoshone
Severe storms/flooding	1/4/1997	DR-1154	Adams, Benewah, Boise, Bonner, Boundary, Camas, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, and Washington
Flood	6/13/1997	DR-1177	Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, and Shoshone
Wildfires	9/1/2000	DR-1341	Ada, Bannock, Bingham, Blaine, Boise, Clearwater, Custer, Elmore, Fort Hall Indian Reservation, Idaho, Jerome, Lemhi, Lewis, Lincoln, Power, and Valley
Heavy rains and flooding	7/6/2005	DR-1592	Nez Perce County and Nez Perce Indian Reservation.
Severe storms and flooding	2/27/2006	DR-1630	Owyhee
Flooding	7/31/2008	DR-1781	Kootenai, and Shoshone
Severe storms and flooding	7/27/2010	DR-1927	Adams, Gem, Idaho, Lewis, Payette, Valley, and Washington
Flooding, landslides, and mudslides	5/20/2011	DR-1987	Nez Perce Indian Reservation
Severe Storm and Straight Line Winds	12/23/2015	DR-4246	Benewah County, Bonner County, Boundary County, Coeur d'Alene Indian Reservation and Kootenai County.
Severe Winter Storms	2/01/2016	DR-4252	Benewah County, Bonner County and Kootenai County.

a. Federal disaster declarations were not issued by county until 1964. Declarations prior to that date are statewide

b. In Idaho, as in many other states, the Hurricane Katrina disaster declaration was related to the need to assist evacuees.

Review of these events helps identify targets for risk reduction and ways to increase a community's capability to avoid large-scale events in the future. Still, many natural hazard events do not trigger federal disaster declaration protocol but have significant impacts on their communities. These events are also important to consider in establishing recurrence intervals for hazards of concern.

4.4 PHYSICAL SETTING

4.4.1 Geology

Ada County has relatively simple geology, compared to some much more sparsely populated areas. On the northeast is the Cretaceous Idaho batholith, home to Bogus Basin ski area. The batholith forms a mountainous area uplifted on south-dipping normal faults that form the northeast margin of the western Snake River Plain.

In the Boise foothills are a complex assemblage of sandstones and lake beds formed on the edges and within Lake Idaho in the last 10 million years. Table Rock Sandstone, quarried since the mid-1800s, belongs to these strata. The City of Boise lies in the alluvial valley of the Boise River.

A series of northwest striking normal faults cuts Ada County, part of the western Snake River Plain. On the south are extensive Quaternary gravel deposits that overlie Quaternary basalt. Recent cinder cones line the Snake River near Swan Falls. The broad, flat valley floor sharply contrasts with the bold mountains and dissected foothills that are typical of most of southwest Idaho's terrain. Like most communities in the Treasure Valley, Ada County's terrain consists of a series of northwest trending mountains and valleys formed by thousands of years of tectonic plate movement.

4.4.2 Soils

Soils at higher elevations in the northeastern part of the county are sloping to very steep, moderately deep and very deep, and well-drained. They are used mainly as rangeland and wildlife habitat and for recreation. Slope, inaccessibility and depth to rock are the main limitations to engineering uses.

Soils on lacustrine foothills above the Boise River are nearly level to very steep and well-drained to excessively drained. Erosion and sedimentation hazards are limitations to the use of these soils because of the fragile vegetative cover and the highly erosive nature of the soils. Flash flooding in major drainage ways during summer cloudbursts increases the potential for debris flows.

The soils in the central and southern parts of Ada County are on alluvial terraces, basalt plains and alluvial fans. The natural vegetation is predominantly sagebrush and bunchgrass. These soils are shallow to very deep; and they are somewhat poorly drained, well-drained, and somewhat excessively drained. They are used mainly for farming and as rangeland and wildlife habitat. A significant acreage is used for urban development. The gentle slopes in these areas generally have significant erosion potential, even when vegetation is removed by wildfire. Where excessively drained soils exist on sloped areas, erosion potential is somewhat higher. However, this combination is only found occasionally in the southern portion of the county.

4.4.3 Hydrology

The largest river in Ada County is the Snake River, which passes through the southern portion of the County. The Boise River, a tributary of the Snake River with headwaters in the mountains to the east and northeast of the County, is important to the County's quality of life, identity and economy. It is the county's primary source of irrigation water and a major source of drinking water. It also offers numerous recreational opportunities as well as important wildlife habitat. A system of dams and canals connected to the Boise River provides flood control for

the majority of the Treasure Valley and irrigates 354,000 acres of lands in Ada County and other parts of the Treasure Valley.

Ada County's water supply comes from surface water, deep aquifers and shallow groundwater. The Treasure Valley Hydrologic Project indicates that the deep aquifers and shallow groundwater are separated from each other by clay zones that prevent the shallow water from recharging the deep aquifer in many, but not all, areas. Irrigation and canals are a major source of shallow groundwater recharge. The Treasure Valley Hydrologic Project estimates that 1 million acre-feet of water flows out of the Treasure Valley basin every year.

The depth to groundwater varies from 2 feet below surface level in western Ada County to 300 feet or more in the southern and eastern parts of the county. This, plus the area's relatively permeable soils, raises concerns about contamination of the Boise aquifer. The aquifer can be protected through the use of central sewage facilities, rather than individual septic systems, and best management practices for stormwater management.

4.4.4 Climate

Ada County has a four-season climate with generally mild temperatures. Climate recording stations are found in Boise and Kuna. Average daily temperatures reach the 70s in July and August and fall to just below freezing in December and January. Precipitation is heaviest during the winter and spring, and drops off during the summer. On average, Boise receives just over 12 inches of precipitation annually, including 20 inches of snowfall a year. Kuna receives just under 10 inches of precipitation and 12 inches of snow. The distribution of average weather conditions over Ada County is shown on Figure 4-1 through Figure 4-4.

4.5 DEVELOPMENT

4.5.1 Land Use

A key element in risk assessment is to look at existing land use in hazard areas that have a delineated extent (dam failure, flood, landslide and wildfire). For example, an agricultural, low-density use of the floodplain is a lower risk use than a high density, residential use. The source of data for the land use analysis is the 2013 Land Use Data for Ada County, which was developed by the Community Planning Association of Southwest Idaho (COMPASS) from digital analyses of information from a variety of government and other sources. Accuracy is limited to the collective accuracy of the source data on the date of the analysis. The information is believed to be accurate and reasonable efforts have been made to ensure the accuracy of the data. However, COMPASS disclaims responsibility for damage or liability that may arise from use of the data.

The COMPASS land use data is divided into 10 categories: Agriculture, Agriculture Prime Farmland, Residential, Residential Transit-Oriented Development (TOD), Commercial Retail and Office, Industrial, Public/Government, Open Space, Schools, Other. The data was not available for that portion of the planning area that extends in to Canyon County. Figure 4-5 shows the existing land use based on this data for the Ada County planning area.

4.5.2 Critical Facilities and Infrastructure

Critical facilities and infrastructure are those that are essential to the health and welfare of the population. These are especially important after a hazard event. Through a facilitated exercise, the Steering Committee crafted the following definition of "critical facilities" for this plan:

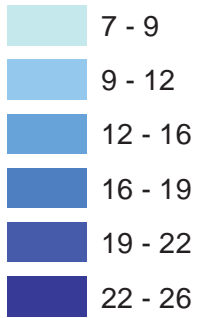
A critical facility is one that is deemed vital to the Ada County planning area's ability to provide essential services while protecting life and property. A critical facility may be a system or an asset, either physical or virtual, the loss of which would have a profound impact on the security, economy, public health or safety, environment, or any combination of thereof, across the planning area.

Ada County

Figure 4-1.
Average Annual Precipitation
(1981 - 2010)

Legend

Precipitation (Inches)

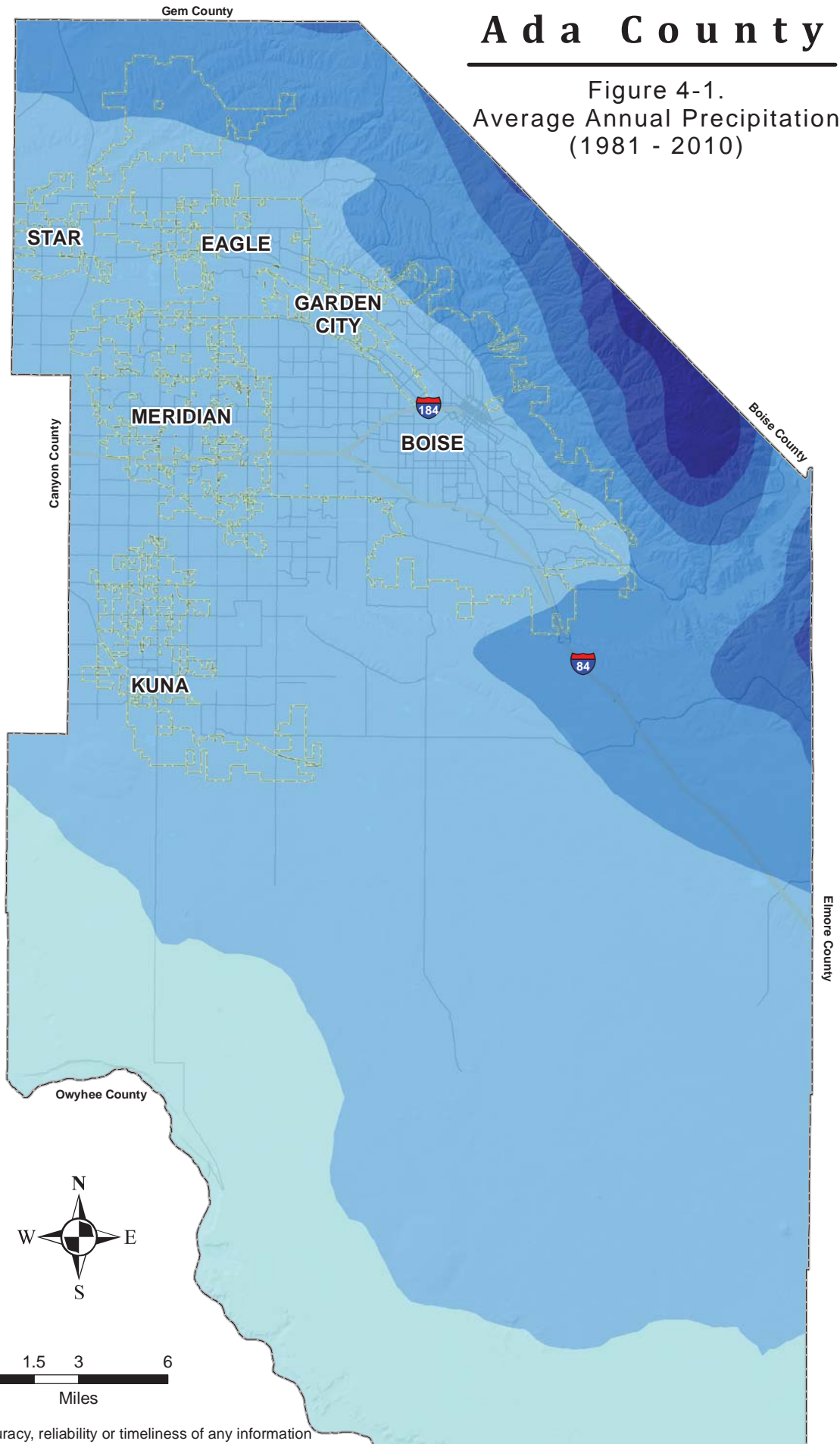


Climate information provided by the U.S. Department of Agriculture National Resources Conservation Service Geospatial Data Gateway.

Base Map Data Sources:
Ada County, U.S. Geological Survey



Ada County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

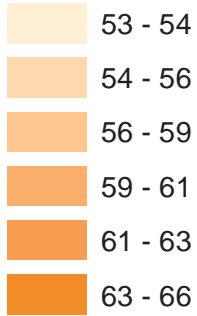


Ada County

Figure 4-2.
Average Annual Maximum
Temperature (1981 -
2010)

Legend

Maximum Average Temperature (°F)

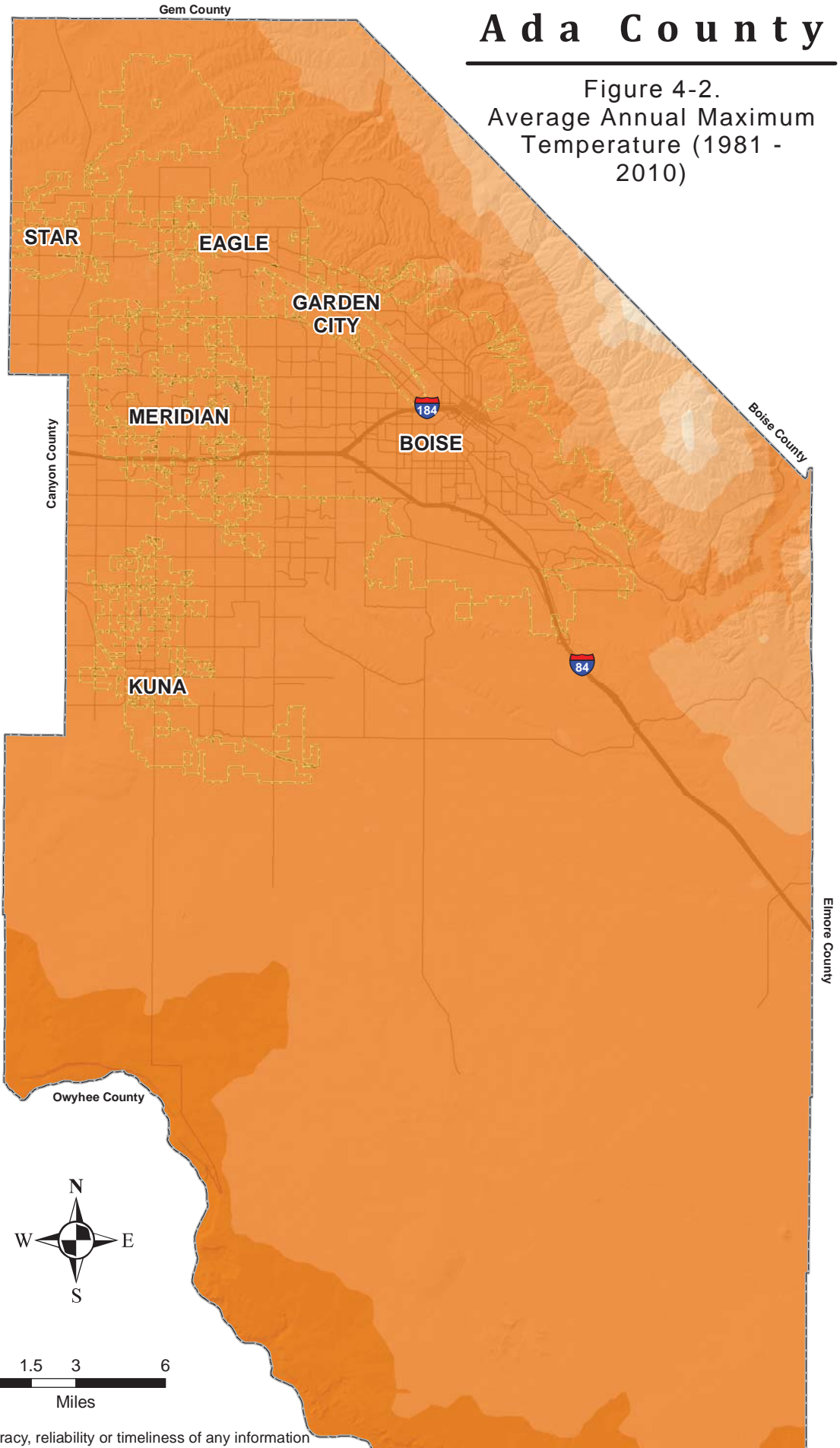


Climate information provided by
the U.S. Department of Agriculture
National Resources Conservation
Service Geospatial Data Gateway.

Base Map Data Sources:
Ada County, U.S. Geological Survey



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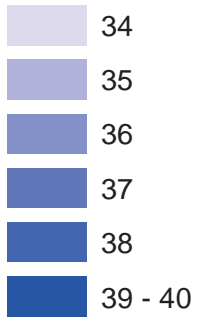


Ada County

Figure 4-3.
Average Annual Minimum
Temperature (1981 -
2010)

Legend

Minimum Average Temperature (°F)

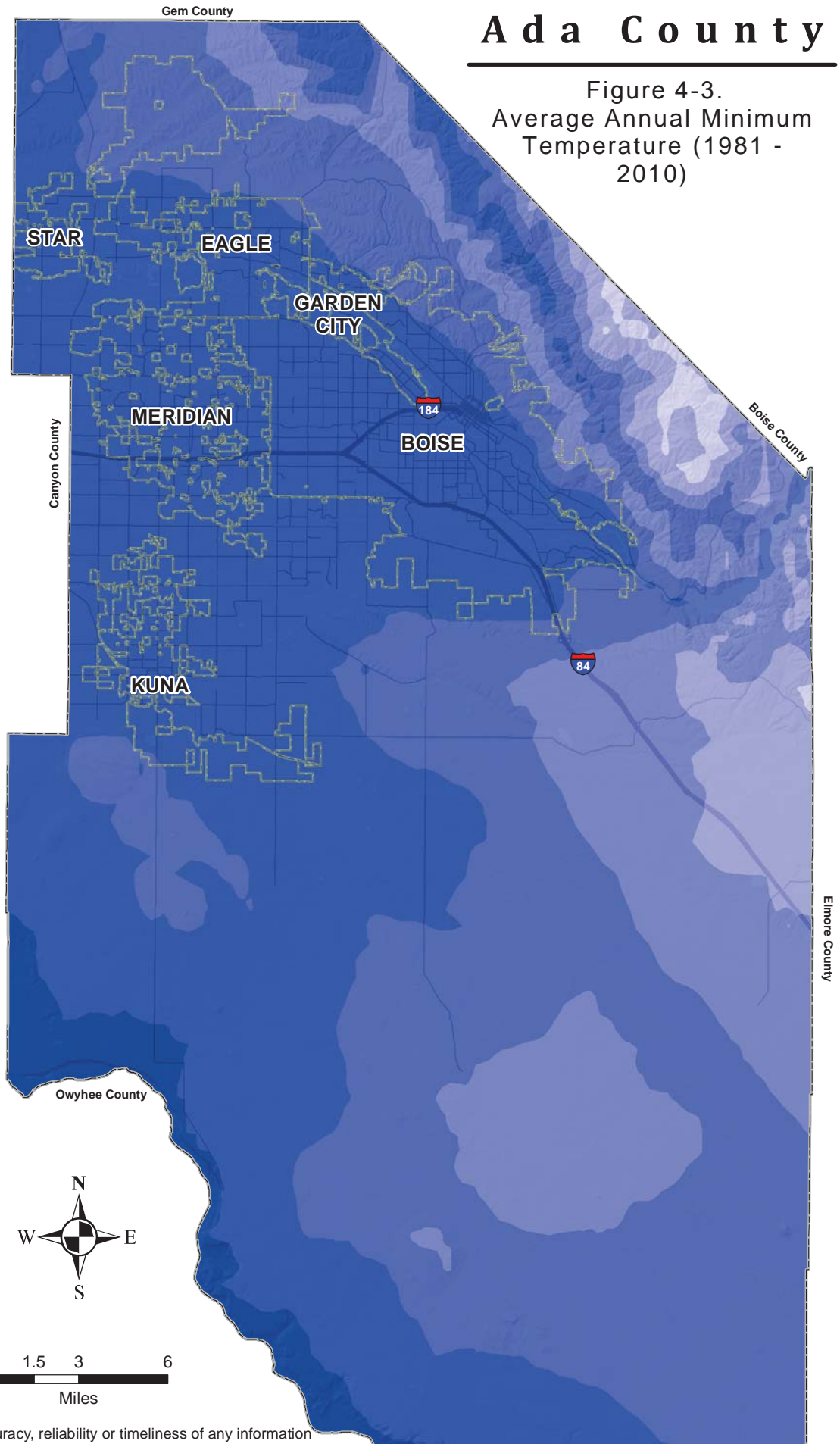


Climate information provided by
the U.S. Department of Agriculture
National Resources Conservation
Service Geospatial Data Gateway.

Base Map Data Sources:
Ada County, U.S. Geological Survey



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Ada County

Figure 4-4.
Wind Power Resource
at 50-Meter Height

Legend

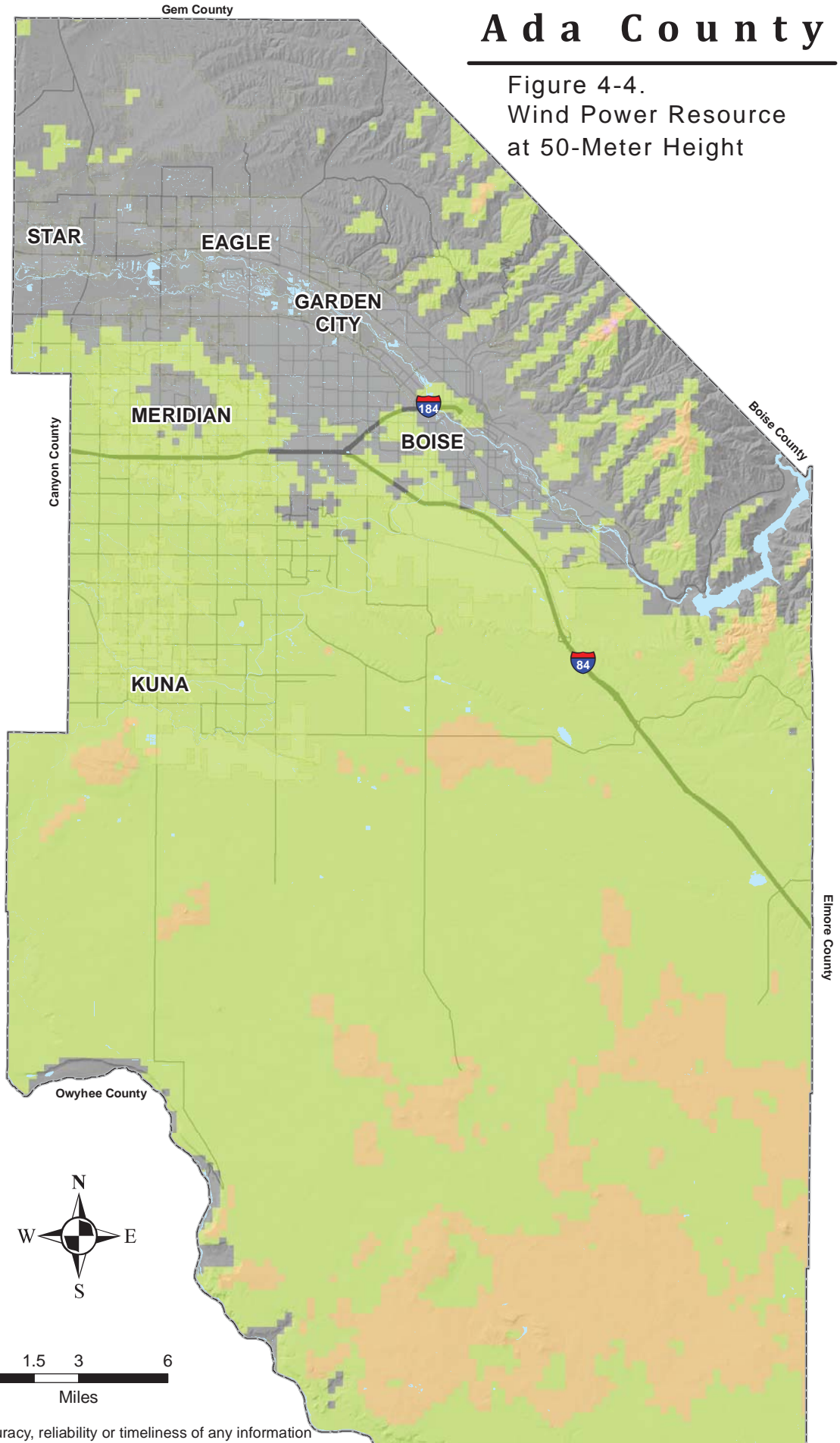


Wind Power Resource data
from National Renewable
Energy Laboratory

Base Map Data Sources:
Ada County, U.S. Geological Survey



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Ada County

Figure 4-5.
2015 Land Use

Legend

Land Use

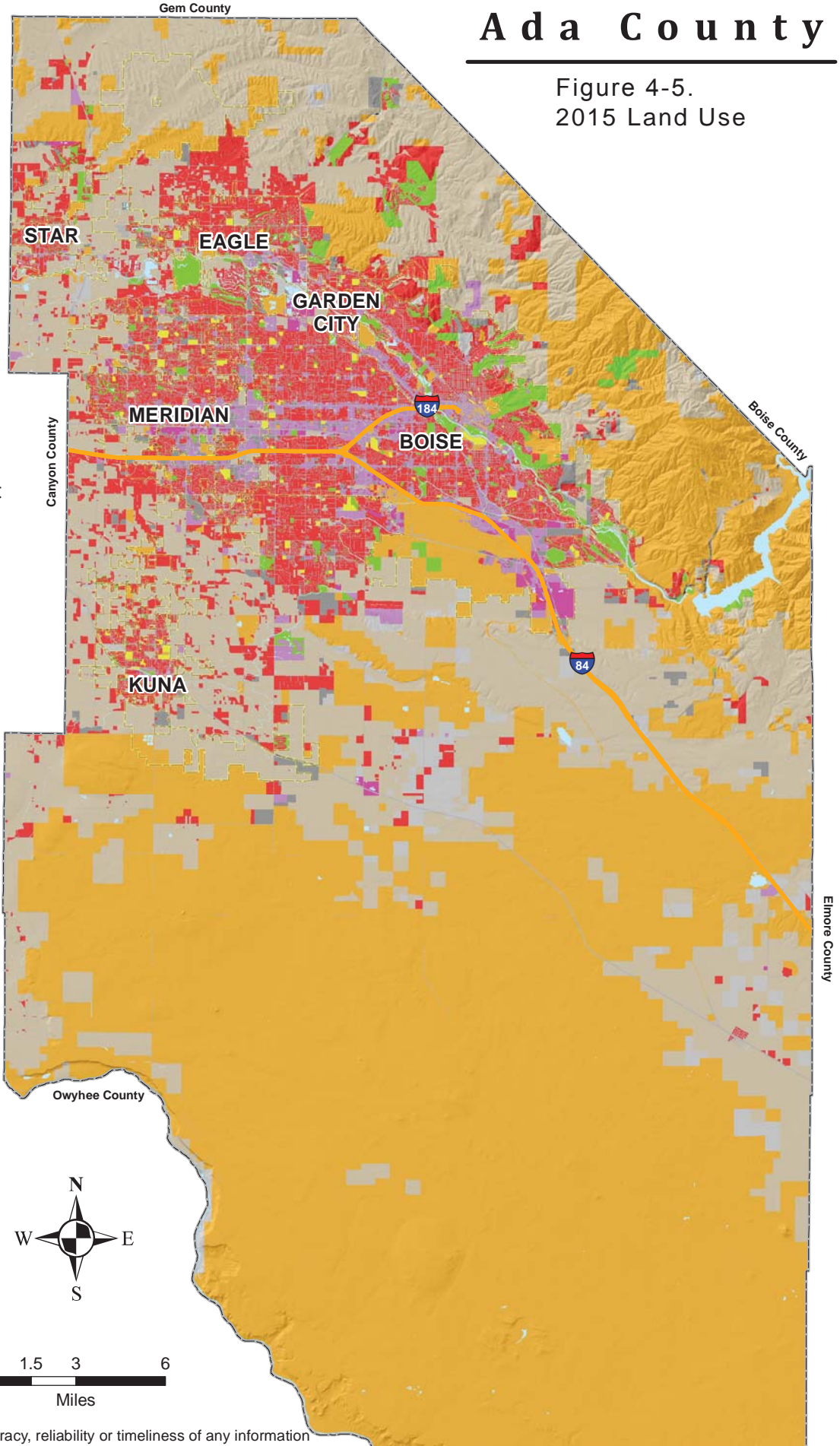
-  Agriculture
-  Commercial
-  Industrial
-  Open Space
-  Other
-  Public/Government
-  Residential
-  Schools
-  Vacant

2015 Land Use data provided by
COMPASS

Base Map Data Sources:
Ada County, U.S. Geological Survey



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For the *Ada County Multi-Hazard Mitigation Plan*, the following are defined as critical facilities:

- Police, fire and paramedic stations, emergency vehicle and equipment storage facilities, and emergency operations and communications centers needed for response before, during, and after hazard events
- Public and private utilities and infrastructure vital to normal services in areas damaged by hazard events. These include but are not limited to water, wastewater, and stormwater facilities, dams, irrigation conveyance facilities, transmission and distribution facilities for natural gas, electricity and geothermal, land-based phone, cell phone, internet emergency broadcast facilities and emergency radios
- Public gathering places that could be used as evacuation centers during large-scale disasters
- Hospitals, extended care facilities, urgent care facilities and housing that may contain occupants not sufficiently mobile to avoid death or injury during a hazard event
- Transportation systems for vital supplies and services to and throughout the community, including roads, bridges, railways, airports and pipelines
- Government and educational facilities central to governance and quality of life along with response and recovery actions after a hazard event
- Facilities that produce, use, or store volatile, flammable, explosive, toxic, and/or water-reactive materials (these facilities are called Tier II facilities)
- Infrastructure to help safely convey high-water events from the source to the edge of the planning area.

Maps of critical facilities in each city participating in this plan are provided in Volume 2. Due to the sensitivity of this information, a detailed list is not provided; a list is on file with each planning partner. Table 4-2 and Table 4-3 provide summaries of the general types of critical facilities and infrastructure in each city and unincorporated county areas. The risk assessment for each hazard qualitatively discusses critical facilities with regard to that hazard. The location of critical facilities in unincorporated areas of the county is shown on Figure 4-6, Figure 4-7, and Figure 4-8.

Table 4-2. Ada County Critical Facilities

City	Police & Fire Stations	Emergency Operations Centers	Medical Care	Schools & Educational Facilities	Hazardous Materials Facilities	Dams	Other Essential Facilities	Total
Boise	33	4	4	216	29	6	21	313
Eagle	5	1	1	10	1	0	2	20
Garden City	2	1	0	1	4	0	1	9
Kuna	2	1	0	10	0	1	1	15
Meridian	8	1	1	23	4	0	3	40
Star	3	1	0	1	0	0	2	7
Unincorporated	5	0	1	11	3	16	3	39
Total	58	9	7	272	41	23	33	443







Table 4-3. Ada County Critical Infrastructure

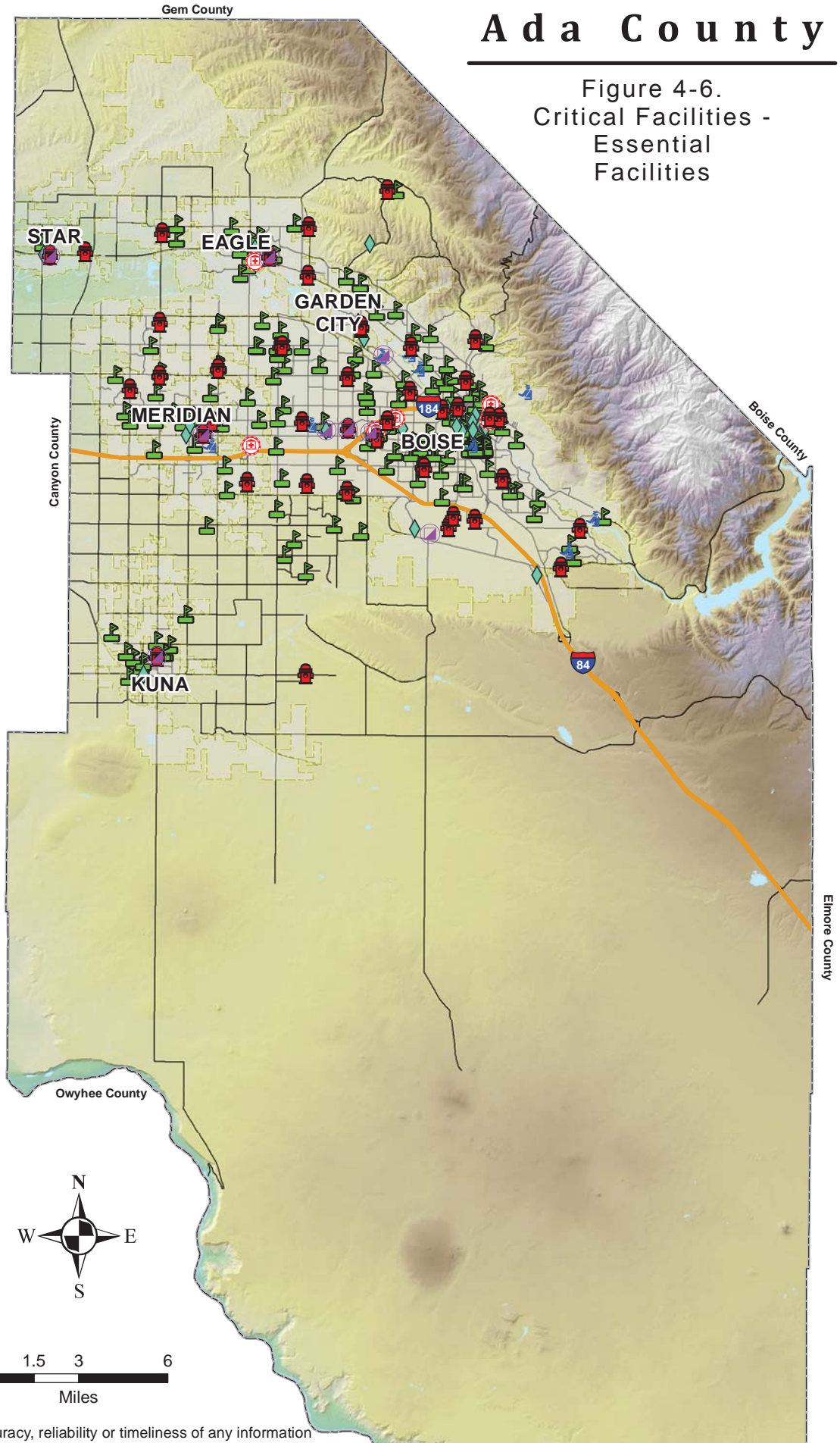
City	Transportation Systems	Communications Facilities	Natural Gas Facilities	Electric Facilities	Potable Water Facilities	Wastewater Facilities	Total
Boise	235	13	2	24	175	5	454
Eagle	40	1	0	1	36	0	78
Garden City	10	1	0	0	19	0	30
Kuna	24	3	0	2	10	0	39
Meridian	86	4	2	5	35	1	133
Star	20	0	0	1	6	1	28
Unincorporated	221	23	3	18	105	2	372
Total	636	45	7	51	386	9	1,134

Ada County

Figure 4-6.
Critical Facilities -
Essential
Facilities

Legend

-  Emergency Operation Centers
-  Fire Stations & EMS Facilities
-  Medical Care Facilities
-  Other Essential Facilities
-  Police Stations
-  Schools & Educational Facilities



Data Sources:
Ada County, COMPASS, Idaho DHS
Base Map Data Sources:
Ada County, U.S. Geological Survey










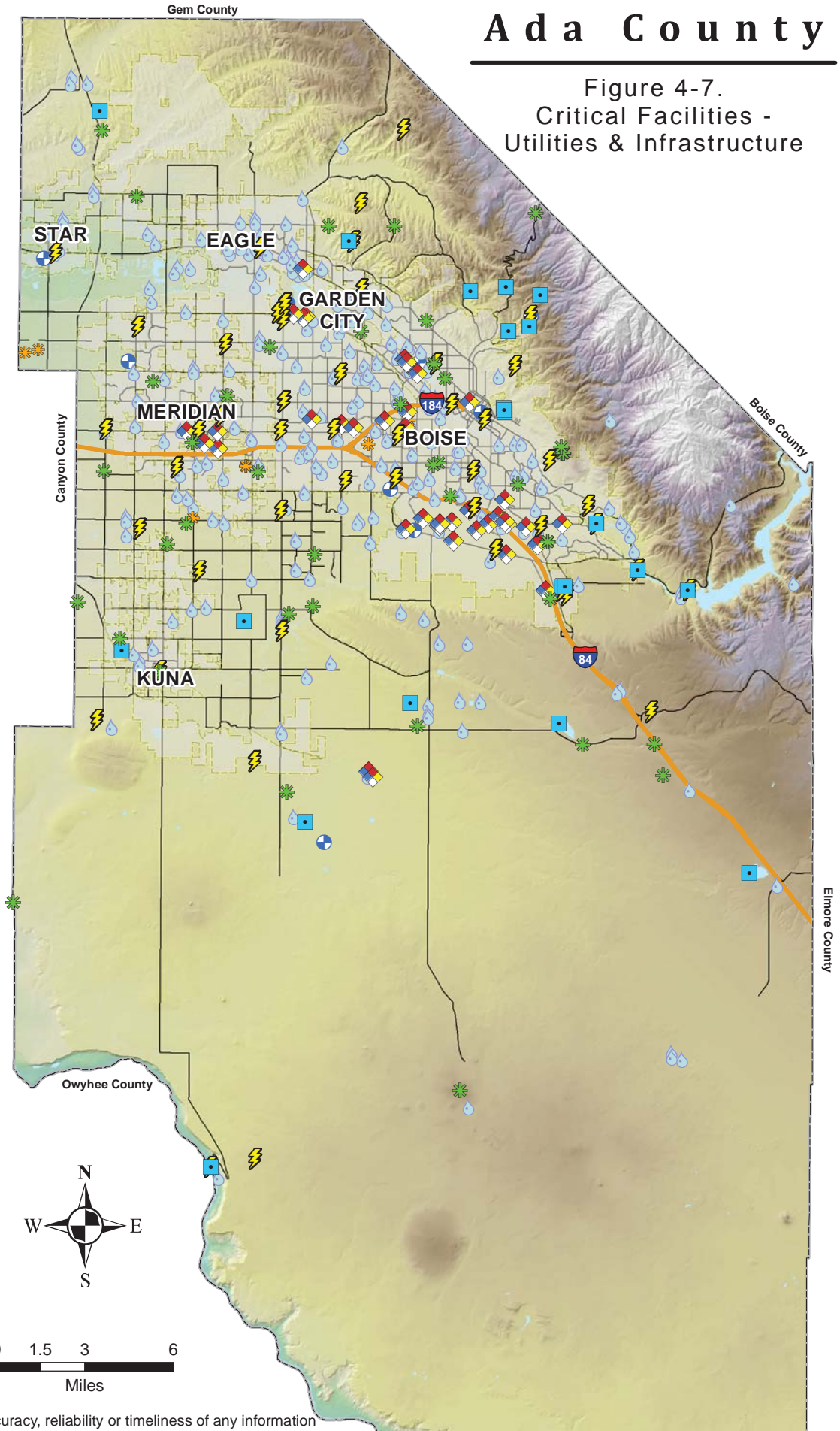
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Ada County

Figure 4-7.
Critical Facilities -
Utilities & Infrastructure

Legend

-  Communication Facilities
-  Dams
-  Electric Power Facilities
-  Hazardous Materials
-  Natural Gas Facilities
-  Potable Water Facilities
-  Wastewater Facilities



Data Sources:
Ada County, COMPASS, Idaho DHS
Base Map Data Sources:
Ada County, U.S. Geological Survey






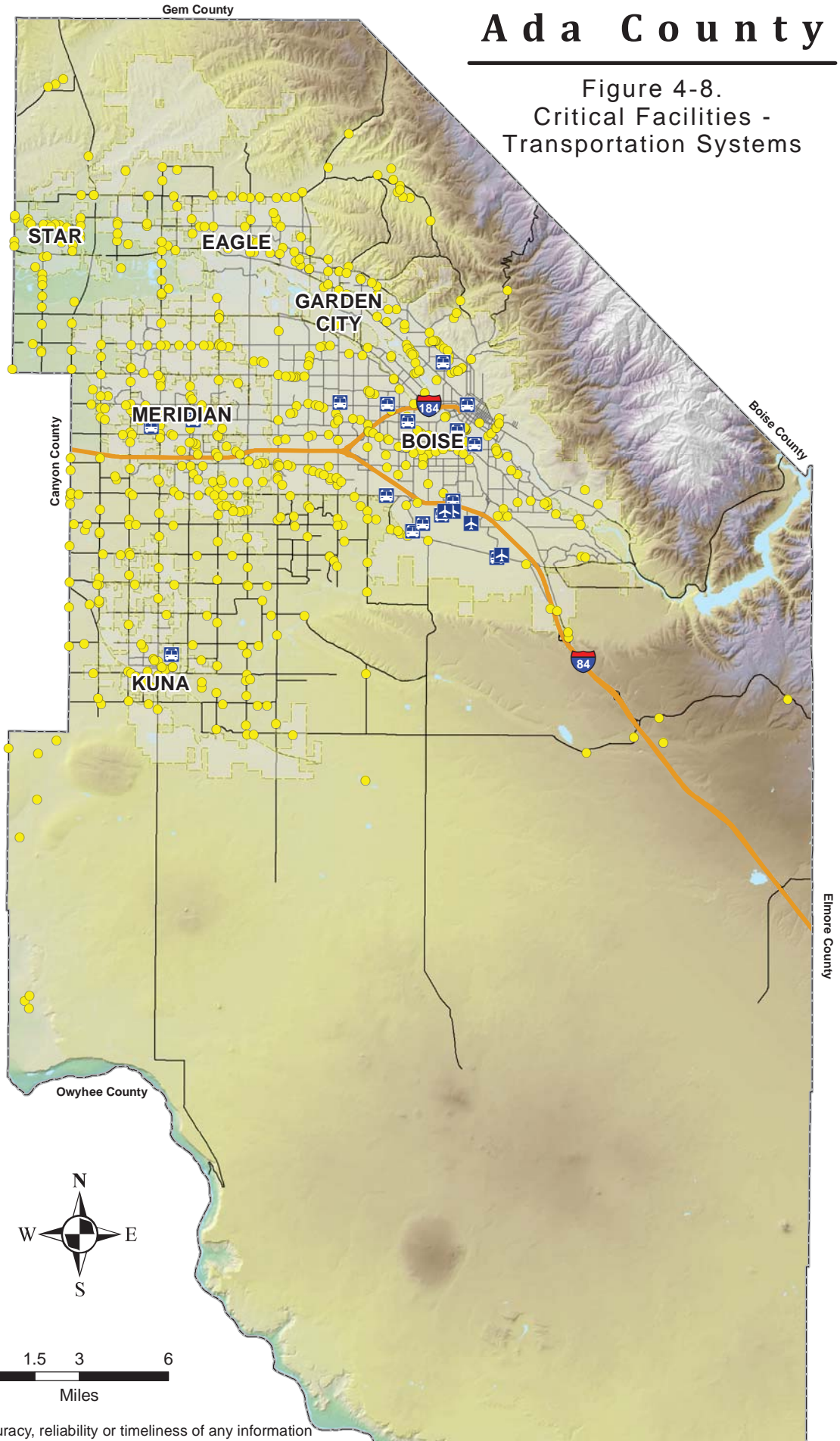
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Ada County

Figure 4-8.
Critical Facilities -
Transportation Systems

Legend

-  Airport Facilities
-  Bus Facilities
-  Highway Bridges



Data Sources:
Ada County, COMPASS, Idaho DHS
Base Map Data Sources:
Ada County, U.S. Geological Survey



Ada County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

4.5.3 Development Trends

Ada County and southwestern Idaho have experienced some of the highest growth rates in the nation since the mid- to late 1990s. This growth has forced expansion into areas that are susceptible to the hazards addressed by this plan. Since completion of the 2011 Ada County hazard mitigation plan, planning area population has increased 10.7 percent, the number of structures in the general building stock has increased 29.2 percent, and total assessed property value has risen 83.5 percent, from \$45.7 billion to \$83.8 billion. The structure count and property value increases are attributable to the population growth as well as Ada County's continued economic recovery from the 2008 economic downturn.

Land use in the planning area has been and will continue to be directed by comprehensive plans adopted under Idaho's land use regulation law. The County and each city have adopted comprehensive plans that govern land use and policy making for their jurisdictions. This hazard mitigation plan will work together with these programs to support wise land use in the future by providing vital information on the risk associated with natural hazards in Ada County. All municipal planning partners have included actions in their action plans to consider incorporating the Ada County Multi-Hazard Mitigation Plan into their comprehensive plans by reference. This would ensure that all future trends in development could include the benefits of the information on risk and vulnerability to natural hazards identified in this plan.

4.6 DEMOGRAPHICS

Some populations are at greater risk from hazard events because of decreased resources or physical abilities. Elderly people, for example, may be more likely to require additional assistance. Research has shown that people living near or below the poverty line, the elderly (especially older single men), the disabled, women, children, ethnic minorities and renters all experience, to some degree, more severe effects from disasters than the general population. These vulnerable populations may vary from the general population in risk perception, living conditions, access to information before, during and after a hazard event, capabilities during an event, and access to resources for post-disaster recovery. Indicators of vulnerability—such as disability, age, poverty, and minority race and ethnicity—often overlap spatially and often in the geographically most vulnerable locations. Detailed spatial analysis to locate areas where there are higher concentrations of vulnerable community members would assist the County in extending focused public outreach and education to these most vulnerable citizens.

4.6.1 Population Characteristics

Information about population is a critical part of planning because it directly relates to land needs such as housing, industry, stores, public facilities and services, and transportation. Ada County is the largest of Idaho's 44 counties. The Idaho Department of Commerce estimated Ada County's population at 426,236 as of 2014.

Population changes are useful socio-economic indicators. A growing population generally indicates a growing economy, while a decreasing population signifies economic decline. Figure 4-9 shows the growth rate of Ada County from 1990 to 2014 compared to that of the State of Idaho. Over the period, Idaho's population grew by 62.4 percent (about 2.04 percent per year) while Ada County's population increased by 107.1 percent (3.08 percent per year). From 2010 to 2014, the County's population increased 8.3 percent, an average of 2.02 percent per year.

Table 4-4 shows the population of incorporated municipalities and the combined unincorporated areas in Ada County from 1940 to 2014. In 2014, about 15 percent of Ada County's residents lived outside incorporated areas. Overall growth in incorporated areas was 45.1 percent from 2000 to 2014, while the unincorporated areas of the county grew about 24.7 percent during the same timeframe.

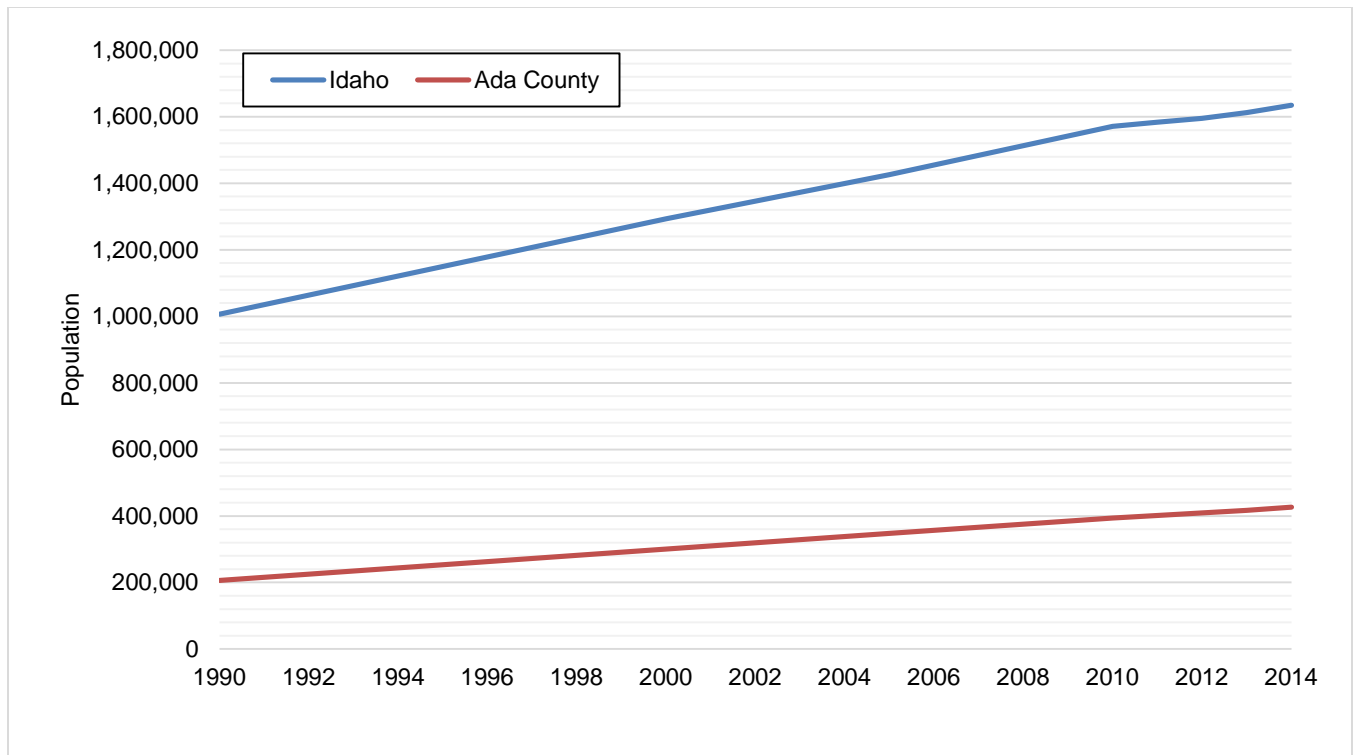


Figure 4-9. Idaho and Ada County Population Growth Rates

Table 4-4. City and County Population Data

	Boise	Eagle	Garden City	Kuna	Meridian	Star	Unincorporated County	Ada County Total
1940	26,130	--	--	443	1,465	--	22,363	50,401
1950	34,393	--	764	534	1,810	--	33,148	70,649
1960	34,481	--	1,681	516	2,081	--	54,701	93,460
1970	74,990	--	2,368	593	2,616	--	31,663	112,230
1980	120,249	2,620	4,571	1,767	6,658	--	37,260	173,125
1990	125,738	3,327	6,369	1,952	9,596	648	58,145	205,775
2000	185,787	11,085	10,624	5,382	34,919	1,795	51,312	300,904
2010	205,671	19,908	10,972	15,210	75,092	5,781	59,731	392,365
2011	209,280	20,432	11,112	15,852	77,855	5,995	60,574	401,100
2012	212,244	21,009	11,234	16,191	80,369	6,196	61,648	408,891
2013	214,234	21,651	11,304	16,532	83,515	6,614	62,706	416,556
2014	216,282	22,502	11,420	16,999	87,743	7,280	64,010	426,236

Data Sources:

1940 – 2000, from Ada County, 2011

2010 – 2014, from Idaho Department of Labor, 2015

4.6.2 Age Distribution

As a group, the elderly are more apt to lack the physical and economic resources necessary for response to hazard events and are more likely to suffer health-related consequences making recovery slower. They are more likely to be vision, hearing and/or mobility impaired, and more likely to experience mental impairment or dementia. Additionally, the elderly are more likely to live in assisted-living facilities where emergency preparedness occurs at the discretion of facility operators. These facilities are typically identified as “critical facilities” by emergency managers because they require extra notice to implement evacuation. Elderly residents living in their own homes may have more difficulty evacuating their homes and could be stranded in dangerous situations. This population group is more likely to need special medical attention, which may not be readily available during natural disasters due to isolation caused by the event. Specific planning attention for the elderly is an important consideration given the current aging of the American population.

Children under 14 are particularly vulnerable to disaster events because of their young age and dependence on others for basic necessities. Very young children may additionally be vulnerable to injury or sickness; this vulnerability can be worsened during a natural disaster because they may not understand the measures that need to be taken to protect themselves from hazards.

The overall age distribution for Ada County is illustrated in Figure 4-10. Based on U.S. Census data estimates, 11.4 percent of Ada County’s population is 65 or older, compared to the state average of 13.3 percent. According to U.S. Census data, 33.0 percent of the County’s over-65 population has disabilities of some kind and 7.8 percent have incomes below the poverty line. Of children under 18 in the county, 14.9 percent are below the poverty line. It is also estimated that 21.6 percent of the County’s population is 14 or younger, compared to the state average of 22.4 percent.

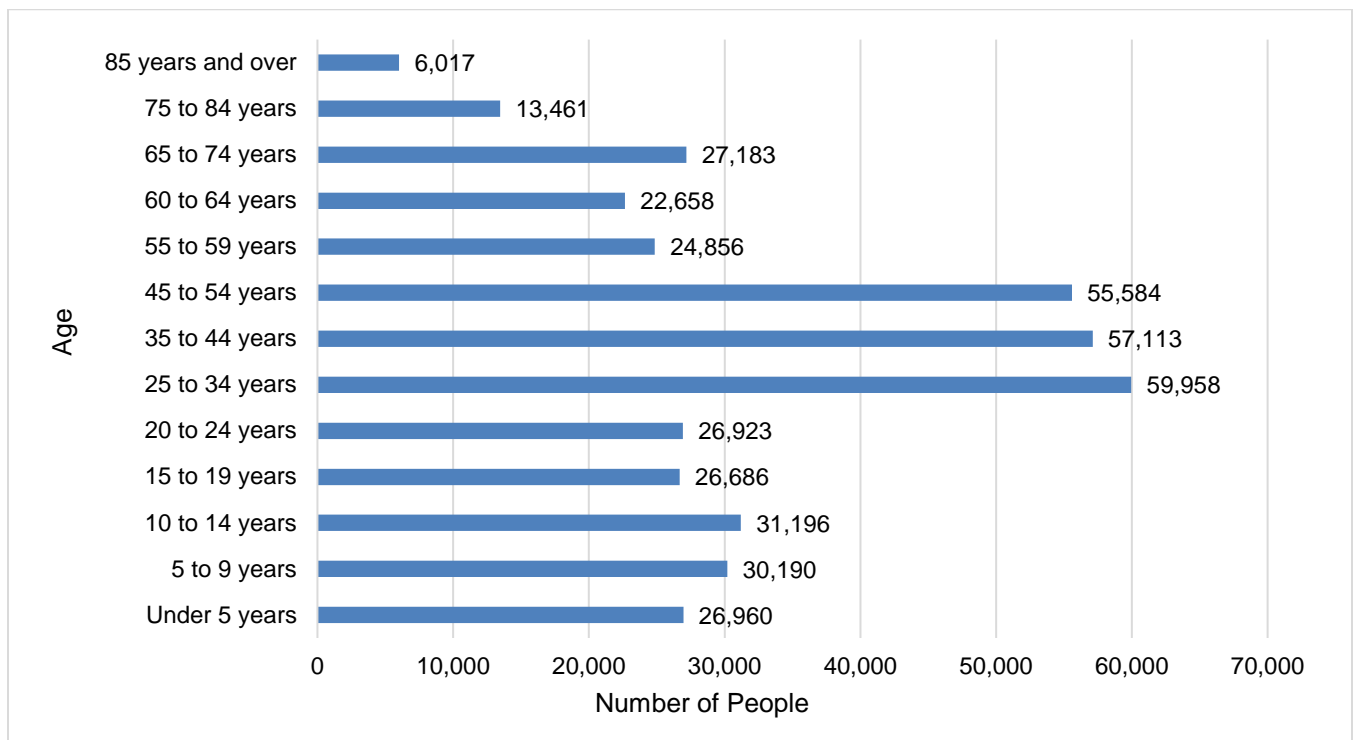


Figure 4-10. Ada County Age Distribution

4.6.3 Race, Ethnicity and Language

Research shows that minorities are less likely to be involved in pre-disaster planning and experience higher mortality rates during a disaster event. Since higher proportions of ethnic minorities live below the poverty line than the majority white population, poverty can compound vulnerability.

According to the U.S. Census, the racial composition of Ada County is predominantly white, at about 91.4 percent. The largest non-white racial groups are two-or-more-races, at 2.9 percent, and Asian, at 2.6 percent. Figure 4-11 shows the racial distribution in Ada County.

The Hispanic population makes up 7.4 percent of the total population of Ada County. The County has a 5.9-percent foreign-born population. Other than English, the most commonly spoken language in Ada County is Spanish. The census estimates 3.0 percent of the county’s residents speak English “less than very well.”

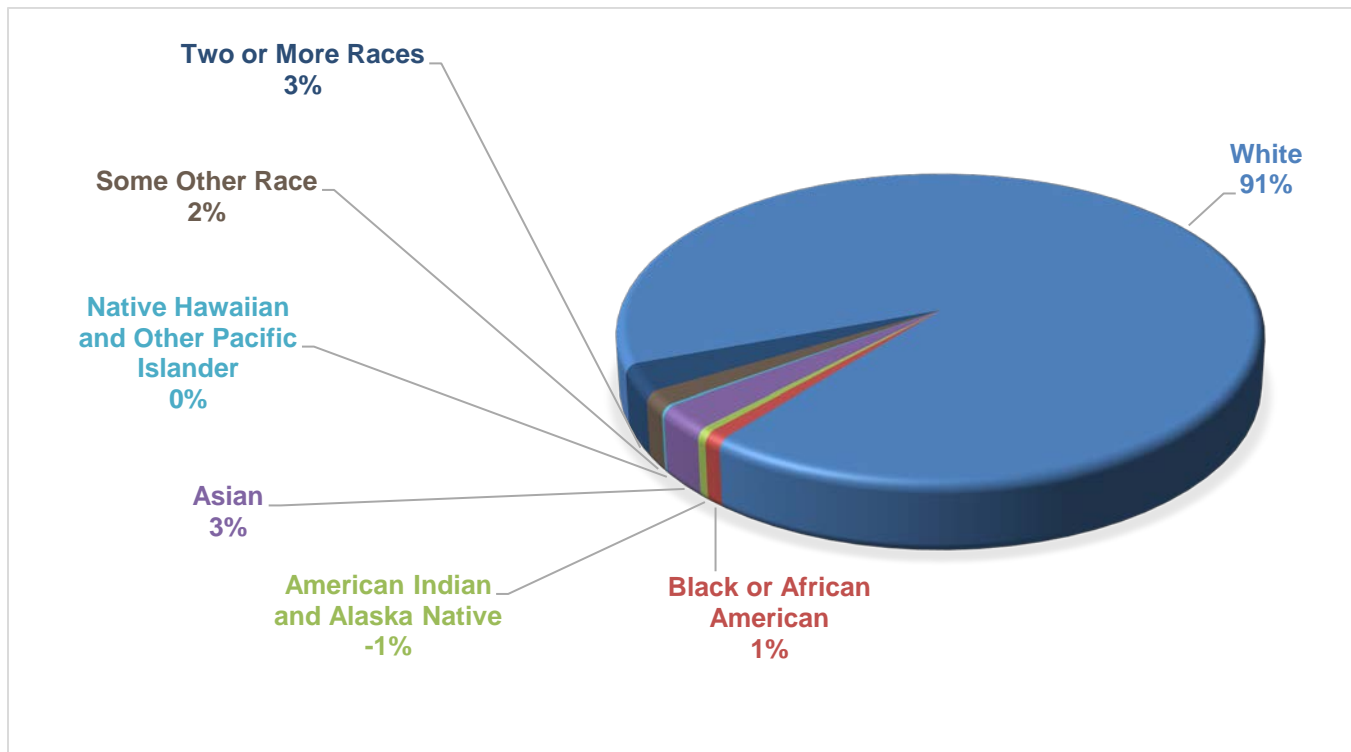


Figure 4-11. Ada County Race Distribution

4.6.4 Disabled Populations

People living with disabilities are significantly more likely to have difficulty responding to a hazard event than the general population. According to U.S. Census figures, roughly one-fifth of the U.S. population lives with a disability. Disabled populations are increasingly integrated into society. This means that a relatively large segment of the population will require assistance during the 72 hours after a hazard event, the period generally reserved for self-help. Disabilities can vary greatly in severity and permanence, making populations difficult to define and track. There is no “typical” disabled person, which can complicate disaster-planning processes that attempt to incorporate them. Disability is likely to be compounded with other vulnerabilities, such as age, economic disadvantage and ethnicity, all of which mean that housing is more likely to be substandard.

According to U.S. Census data, 9.9 percent of the County’s total population has a disability. Table 4-5 summarizes estimates of disabled people in Ada County by age group.

Table 4-5. Disability Status of Non-Institutionalized Population

Age	Persons with a Disability	Percent of Age Group
Under Age 18 years	3,927	3.7
Age 18 to 64 years	20,856	8.3
Age 65 years and over	15,093	33.0

4.7 ECONOMY

4.7.1 Income

Because households in the United States use private resources to prepare for, respond to and recover from disasters, households living in poverty are disadvantaged when confronting hazards. These households typically occupy more poorly built and inadequately maintained housing. Mobile or modular homes, for example, are more susceptible to damage in earthquakes and floods than other types of housing. In urban areas, the poor often live in older houses and apartment complexes, which are more likely to be made of un-reinforced masonry, which is particularly susceptible to damage during earthquakes. Furthermore, residents below the poverty level are less likely to have insurance to compensate for losses incurred from natural disasters. This means that these residents face high risk from hazards and are least prepared to deal with losses. The events following Hurricane Katrina in 2005 illustrated that personal household economics significantly impact people’s decisions on evacuation.

Based on U.S. Census Bureau estimates, per capita income in Ada County in 2013 was \$27,008, and the median household income was \$53,147. About 21 percent of the households in Ada County make less than \$25,000 per year. Households with incomes of \$150,000 or more account for 8.3 percent of total households.

4.7.2 Industry, Businesses and Institutions

The Idaho Department of Labor lists the following as major private employers in Ada County:

- St. Luke’s Regional Medical Center
- St. Alphonsus Regional Medical Center
- Blue Cross of Idaho Health Services
- DirecTV
- Hewlett Packard
- Idaho Power Co.
- Micron Technology, Inc.
- Fred Meyer
- Wal-Mart
- Citicorp
- Supervalu

The State of Idaho is also a major employer in Ada County, as Boise, the state capitol, is in the county. Figure 4-12 shows the breakdown of industry types in Ada County.

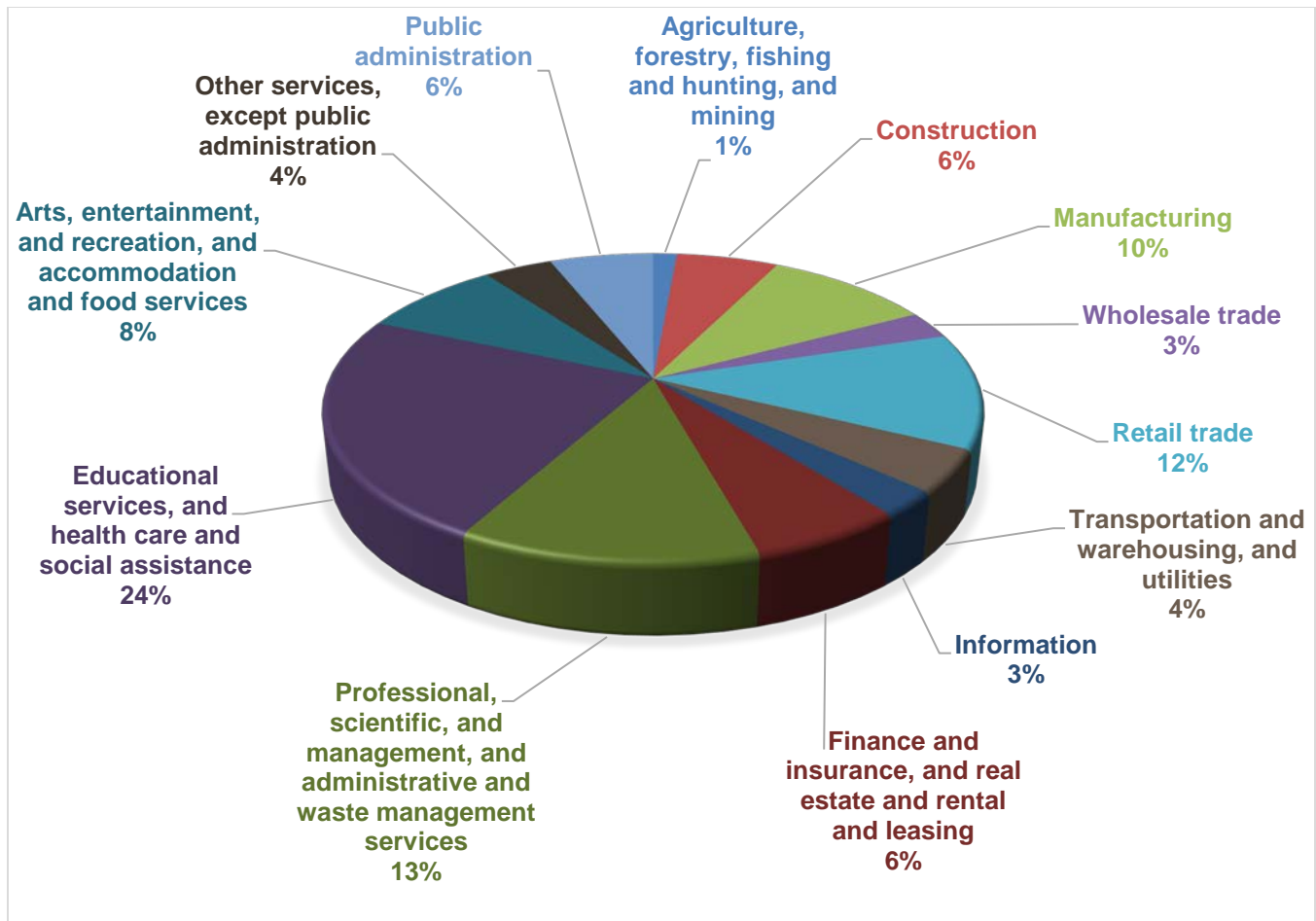


Figure 4-12. Distribution of Industry in Ada County

4.7.3 Employment Trends and Occupations

According to the American Community Survey, 67 percent of Ada County’s population over the age of 16 is in the labor force, including 65.1 percent of women and 72.5 percent of men. Figure 4-13 compares Idaho’s and Ada County’s unemployment trends from 2001 through 2014. Ada County’s unemployment rate was lowest in 2006, at 2.3 percent and rose to 8.9 percent in 2010 during the last recession. The rate had fallen back to 3.3 percent as of June 2016 (U.S. Bureau of Labor Statistics). Figure 4-14 shows the 2013 breakdown of occupation type in Ada County.

According to the Idaho Department Labor, almost all workers living in Ada County also work in the County, with most of those who work elsewhere commuting to employment in Canyon County. The U.S. Census estimates that 79.5 percent of Ada County workers commute alone (by car, truck or van) to work, and mean travel time to work is 20.0 minutes (the state average is also 20.0 minutes).

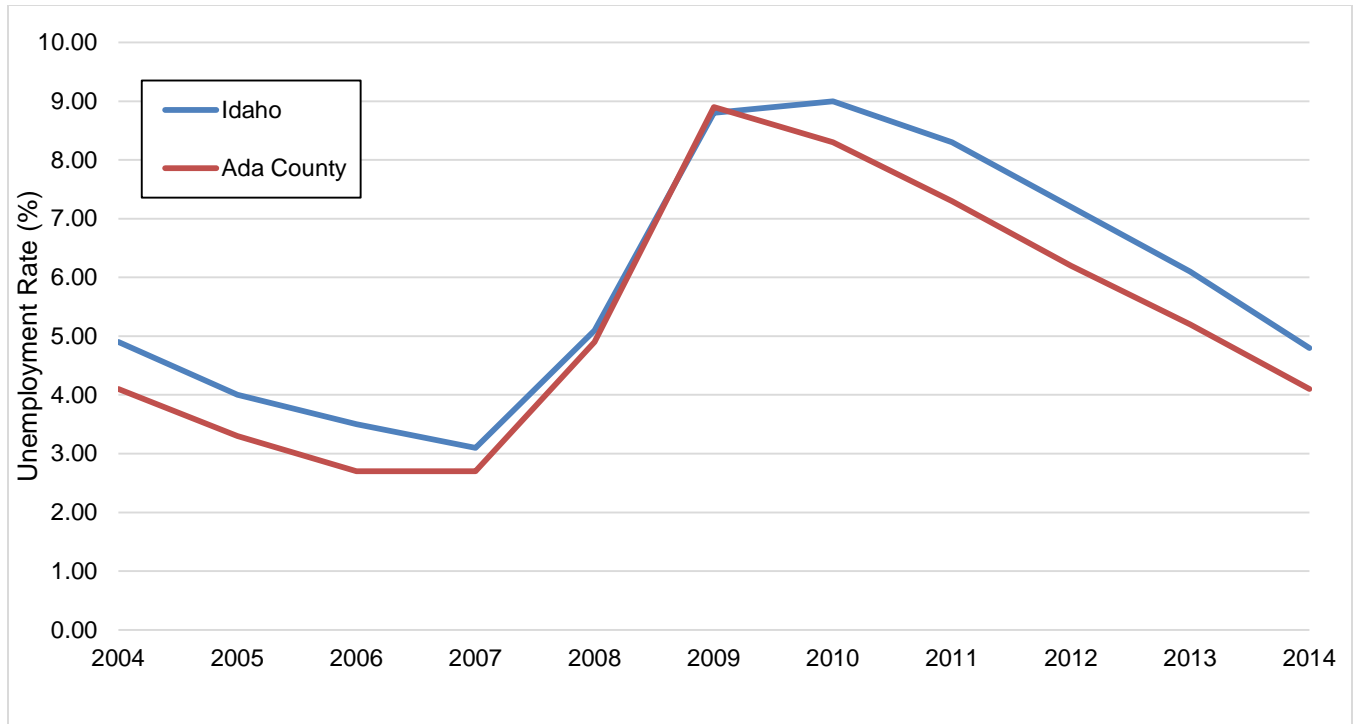


Figure 4-13. Idaho and Ada County Unemployment Rate

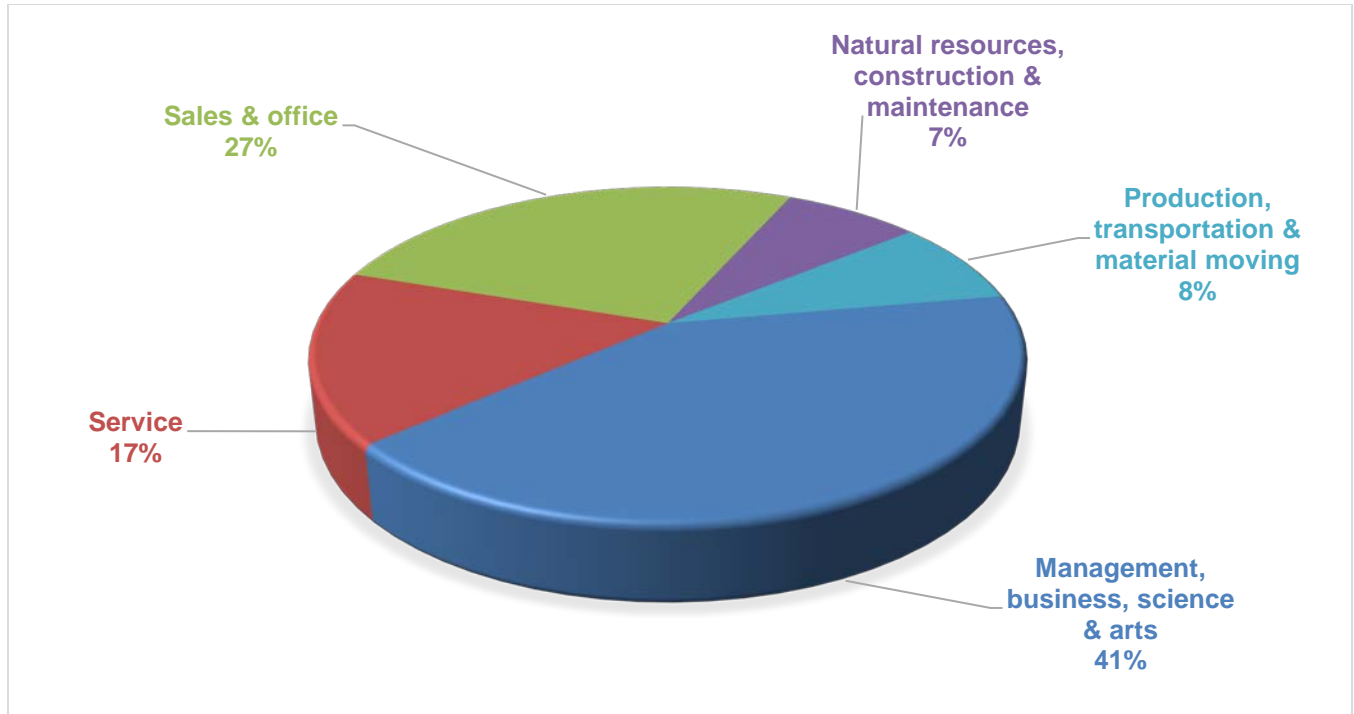


Figure 4-14. Occupations in Ada County

4.8 LAWS, ORDINANCES AND PROGRAMS

Existing laws, ordinances and plans at the federal, state and local level can support or impact hazard mitigation actions identified in this plan. Hazard mitigation plans are required to include a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information as part of the planning process (44 CFR, Section 201.6(b)(3)). Pertinent federal and state laws are described below. Each planning partner has individually reviewed existing local plans, studies, reports, and technical information in its jurisdictional annex, presented in Volume 2.

4.8.1 Federal

Disaster Mitigation Act

The DMA is the current federal legislation addressing hazard mitigation planning. It emphasizes planning for disasters before they occur. It specifically addresses planning at the local level, requiring plans to be in place before Hazard Mitigation Grant Program funds are available to communities. This Plan is designed to meet the requirements of DMA, improving the planning partners' eligibility for future hazard mitigation funds.

Endangered Species Act

The federal Endangered Species Act (ESA) was enacted in 1973 to conserve species facing depletion or extinction and the ecosystems that support them. The act sets forth a process for determining which species are threatened and endangered and requires the conservation of the critical habitat in which those species live. The ESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered. Provisions are made for listing species, as well as for recovery plans and the designation of critical habitat for listed species. The ESA outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species and contains exceptions and exemptions. It is the enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Criminal and civil penalties are provided for violations of the ESA and the Convention.

Federal agencies must seek to conserve endangered and threatened species and use their authorities in furtherance of the ESA's purposes. The ESA defines three fundamental terms:

- **Endangered** means that a species of fish, animal or plant is “in danger of extinction throughout all or a significant portion of its range.” (For salmon and other vertebrate species, this may include subspecies and distinct population segments.)
- **Threatened** means that a species “is likely to become endangered within the foreseeable future.” Regulations may be less restrictive for threatened species than for endangered species.
- **Critical habitat** means “specific geographical areas that are...essential for the conservation and management of a listed species, whether occupied by the species or not.”

Five sections of the ESA are of critical importance to understanding it:

- **Section 4: Listing of a Species**—The National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) is responsible for listing marine species; the U.S. Fish and Wildlife Service is responsible for listing terrestrial and freshwater aquatic species. The agencies may initiate reviews for listings, or citizens may petition for them. A listing must be made “solely on the basis of the best scientific and commercial data available.” After a listing has been proposed, agencies receive comment and conduct further scientific reviews for 12 to 18 months, after which they must decide if the listing is warranted. Economic impacts cannot be considered in this decision, but it may include an evaluation of the adequacy of local and state protections. Critical habitat for the species may be designated at the time of listing.

- **Section 7: Consultation**—Federal agencies must ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed or proposed species or adversely modify its critical habitat. This includes private and public actions that require a federal permit. Once a final listing is made, non-federal actions are subject to the same review, termed a “consultation.” If the listing agency finds that an action will “take” a species, it must propose mitigations or “reasonable and prudent” alternatives to the action; if the proponent rejects these, the action cannot proceed.
- **Section 9: Prohibition of Take**—It is unlawful to “take” an endangered species, including killing or injuring it or modifying its habitat in a way that interferes with essential behavioral patterns, including breeding, feeding or sheltering.
- **Section 10: Permitted Take**—Through voluntary agreements with the federal government that provide protections to an endangered species, a non-federal applicant may commit a take that would otherwise be prohibited as long as it is incidental to an otherwise lawful activity (such as developing land or building a road). These agreements often take the form of a “Habitat Conservation Plan.”
- **Section 11: Citizen Lawsuits**—Civil actions initiated by any citizen can require the listing agency to enforce the ESA’s prohibition of taking or to meet the requirements of the consultation process.

The Clean Water Act

The federal Clean Water Act (CWA) employs regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation’s surface waters so that they can support “the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.”

Evolution of CWA programs over the last decade has included a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach, equal emphasis is placed on protecting healthy waters and restoring impaired ones. A full array of issues are addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining water quality and other environmental goals is a hallmark of this approach.

National Flood Insurance Program

The National Flood Insurance Program (NFIP) provides federally backed flood insurance in exchange for communities enacting floodplain regulations. Participation and good standing under NFIP are prerequisites to grant funding eligibility under the Robert T. Stafford Act. The County and most of the partner cities for this plan participate in the NFIP and have adopted regulations that meet the NFIP requirements. At the time of the preparation of this plan, all participating jurisdictions in the partnership were in good standing with NFIP requirements.

National Incident Management System

The National Incident Management System is a systematic approach for government and nongovernmental organizations and the private sector to work together to manage incidents involving hazards. The system provides a flexible but standardized set of incident management practices. Incidents typically begin and end locally, and they are managed at the lowest possible geographical, organizational, and jurisdictional level. In some cases, success depends on the involvement of multiple jurisdictions, levels of government, functional agencies, and emergency responder disciplines. These cases necessitate coordination across a spectrum of organizations. Communities using the National Incident Management System follow a comprehensive national approach that improves the effectiveness of emergency management and response personnel across the full spectrum of

potential hazards (including natural hazards, terrorist activities, and other human-caused disasters) regardless of size or complexity.

Americans with Disabilities Act and Amendments

The Americans with Disabilities Act (ADA) seeks to prevent discrimination against people with disabilities in employment, transportation, public accommodation, communications, and government activities. Title II of the ADA deals with emergency management and disaster-related programs, services, and activities. It applies to state and local governments as well as third parties, including religious entities and private nonprofit organizations.

The ADA has implications for sheltering requirements and public notifications. During an emergency alert, officials must use a combination of warning methods to ensure that all residents have all necessary information. Those with hearing impairments may not hear radio, television, sirens, or other audible alerts, while those with visual impairments may not see flashing lights or visual alerts. Two technical documents for shelter operators address physical accessibility needs of people with disabilities as well as medical needs and service animals.

The ADA intersects with disaster preparedness programs in regards to transportation, social services, temporary housing, and rebuilding. Persons with disabilities may require additional assistance in evacuation and transit (e.g., vehicles with wheelchair lifts or paratransit buses). Evacuation and other response plans should address the unique needs of residents. Local governments may be interested in implementing a special-needs registry to identify the home addresses, contact information, and needs for residents who may require more assistance.

Civil Rights Act of 1964

The Civil Rights Act of 1964 prohibits discrimination based on race, color, religion, sex or nation origin and requires equal access to public places and employment. The Act is relevant to emergency management and hazard mitigation in that it prohibits local governments from favoring the needs of one population group over another. Local government and emergency response must ensure the continued safety and well-being of all residents equally, to the extent possible.

Rural Development Program

The mission of the U.S. Department of Agriculture (USDA) Rural Development Program is to help improve the economy and quality of life in rural America. The program provides project financing and technical assistance to help rural communities provide the infrastructure needed by rural businesses, community facilities, and households. The program addresses rural America's need for basic services, such as clean running water, sewage and waste disposal, electricity, and modern telecommunications and broadband. Loans and competitive grants are offered for various community and economic development projects and programs, such as the development of essential community facilities including fire stations (USDA, 2015b).

Community Development Block Grant Disaster Recovery Program

In response to disasters, Congress may appropriate additional funding for the U.S. Department of Housing and Urban Development Community Development Block Grant programs to be distributed as Disaster Recovery grants (CDBG-DR). These grants can be used to rebuild affected areas and provide seed money to start the recovery process. CDBG-DR assistance may fund a broad range of recovery activities, helping communities and neighborhoods that otherwise might not recover due to limited resources. CDBG-DR grants often supplement disaster programs of the Federal Emergency Management Agency, the Small Business Administration, and the U.S. Army Corps of Engineers. Housing and Urban Development generally awards noncompetitive, nonrecurring CDBG-DR grants by a formula that considers disaster recovery needs unmet by other federal disaster assistance programs. To be eligible for CDBG-DR funds, projects must meet the following criteria:

- Address a disaster-related impact (direct or indirect) in a presidentially declared county for the covered disaster
- Be a CDBG-eligible activity (according to regulations and waivers)
- Meet a national objective.

Incorporating preparedness and mitigation into these actions is encouraged, as the goal is to rebuild in ways that are safer and stronger.

Emergency Watershed Program

The USDA Natural Resources Conservation Service (NRCS) administers the Emergency Watershed Protection (EWP) Program, which responds to emergencies created by natural disasters. Eligibility for assistance is not dependent on a national emergency declaration. The program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. EWP is an emergency recovery program. Financial and technical assistance are available for the following activities (National Resources Conservation Service, 2016):

- Remove debris from stream channels, road culverts, and bridges
- Reshape and protect eroded banks
- Correct damaged drainage facilities
- Establish cover on critically eroding lands
- Repair levees and structures
- Repair conservation practices.

Presidential Executive Orders 11988 and 13690

Executive Order 11988 requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. It requires federal agencies to provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve the natural and beneficial values of floodplains. The requirements apply to the following activities (FEMA, 2015e):

- Acquiring, managing, and disposing of federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing.

Executive Order 13690 expands Executive Order 11988 and acknowledges that the impacts of flooding are anticipated to increase over time due to the effects of climate change and other threats. It mandates a federal flood risk management standard to increase resilience against flooding and help preserve the natural values of floodplains. This standard expands management of flood issues from the current base flood level to a higher vertical elevation and corresponding horizontal floodplain. The goal is to address current and future flood risk and ensure that projects funded with taxpayer dollars last as long as intended (Office of the Press Secretary, 2015).

Presidential Executive Orders 11990

Executive Order 11990 requires federal agencies to provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The requirements apply to the following activities (National Archives, 2016):

- Acquiring, managing, and disposing of federal lands and facilities

- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing.

Emergency Relief for Federally Owned Roads Program

The U.S. Forest Service’s Emergency Relief for Federally Owned Roads Program was established to assist federal agencies with repair or reconstruction of tribal transportation facilities, federal lands transportation facilities, and other federally owned roads that are open to public travel and have suffered serious damage by a natural disaster over a wide area or by a catastrophic failure. The program funds both emergency and permanent repairs (Office of Federal Lands Highway, 2016).

4.8.2 State

State and Local Building Codes

Idaho’s building code largely reflects international codes, with provisions for wind, seismic and snow loading. As of October 1, 2008, the Idaho building code became mandatory for all municipalities in the state. As of January 1, 2015, the building codes include the following:

- 2012 International Building Code
- 2012 International Residential Code Parts I, II, III, IV and IX
- 2012 International Energy Conservation Code
- 2012 International Existing Building Code
- Idaho administrative rules 07.03.01 (Rules of Building Safety), amending the above codes. There are significant changes to the energy conservation provisions for one- and two-family dwellings.

Subdivision Regulations

Subdivision regulations form part of the process utilized by local governments to carry out the requirements of their comprehensive plans and zoning ordinances. In Idaho, local governments have the authority to define the term “subdivision” as they prefer. State enabling authority does not contain standards or requirements that would be considered to exceed those commonly found elsewhere, nor are subdivision regulations mandated. Subdivision regulations are important in hazard prone areas as they can specify requirements for layout and location of infrastructure, lots and other facilities as land is developed.

Comprehensive Plans and Zoning

Title 67, Chapter 65, which is Idaho’s local land use enabling authority, includes a stated, specific purpose of local land use regulation “to protect life and property in areas subject to natural hazards and disasters.” Tools to do this include comprehensive planning and zoning. Consistent with Idaho law, a comprehensive plan provides the policy basis for a community’s zoning ordinance, which contains the specific standards and requirements and processes for making land use and development decisions. In Idaho, a comprehensive plan is required to include a section on hazards (67-6508(g)):

The plan with maps, charts, and reports shall be based on the following components as they may apply to land use regulations and actions unless the plan specifies reasons why a particular component is unneeded ... Hazardous Areas -- An analysis of known hazards as may result from susceptibility to surface ruptures from faulting, ground shaking, ground failure, landslides or mudslides; avalanche hazards resulting from development in the known or probable path of snow slides and avalanches, and floodplain hazards.

As part of comprehensive planning, a future land use map is prepared indicating suitable projected land uses for the jurisdiction. The implementation tool to realize the vision in the comprehensive plan is the zoning ordinance. Zoning protects the rights of property owners while promoting the general welfare of the community. By dividing land into categories according to use, and setting regulations for these categories, a zoning ordinance can govern private land use and segregate incompatible uses. The purpose of zoning is to locate particular land uses where they are most appropriate, considering public utilities, road access and the established development pattern.

Floodplain Zoning

Idaho communities are authorized to adopt floodplain zoning to regulate any mapped or unmapped flood hazard area. Additionally, Idaho communities may adopt standards that exceed the minimum standards of the NFIP. In March 2010, the Idaho Legislature passed House Bill 556, which changes Idaho's floodplain zoning enabling authority to exempt operation, maintenance, cleaning or repair of any of any canal ditch, irrigation, drainage or diversion structure from floodplain zoning. Floodplain zoning is important in flood hazard areas to provide for appropriate development standards and enable communities to participate in the NFIP and therefore be eligible for flood insurance and flood mitigation programs. The recent law change would appear to be in conflict with federal minimum regulatory standards for communities participating in the NFIP and could therefore endanger community participation in the program.

Idaho Disaster Preparedness Act of 1975

The Idaho Disaster Preparedness Act of 1975 (Chapter 10, Title 46 of the Idaho Code) created the Bureau of Disaster Services and subsequently the Office of Emergency Management, and provided for the creation of local organizations for disaster preparedness. According to the Act, it is the policy of the State of Idaho to plan and prepare for disasters and emergencies resulting from natural or manmade causes, enemy attack, sabotage or other hostile action. State law was put into place to do the following:

- Create an Office of Emergency Management.
- Prevent and reduce damage, injury, and loss of life and property resulting from natural or man-made catastrophes.
- Prepare assistance for prompt and efficient search, rescue and care.
- Provide for rapid restoration and rehabilitation.
- Prescribe the roles of government in prevention, preparation and response to disaster.
- Authorize and encourage cooperation in disaster prevention, preparation and response.
- Provide for coordination of activities.
- Provide a disaster management system.
- Provide for payment of obligations and expenses incurred by the state of Idaho through the Office of Emergency Management.

Idaho Silver Jackets Program

The Silver Jackets Program is the state-level implementation of the Army Corps of Engineers National Flood Risk Management Program. The core member agencies will establish a continuous intergovernmental collaborative team working with other state and federal agencies to do the following:

- Provide assistance in identifying and prioritizing actions to reduce the threat, vulnerability and consequences of flooding in the State of Idaho.
- Facilitate strategic planning and implementation of life-cycle mitigation, response and recovery actions to reduce the threat, vulnerability and consequences of flooding in the State of Idaho.
- Create or supplement a process to collaboratively identify issues and implement or recommend solutions.
- Identify and implement ways to leverage available resources and information between agencies.

- Increase and improve flood risk communication and outreach.
- Promote wise stewardship of the taxpayers' investments.
- Develop more comprehensive state flood risk management policies and strategies.
- Develop advanced hydrologic predictive services to reduce loss of life and property damage from flooding.

4.8.3 Local Programs

Each planning partner has prepared a jurisdiction-specific annex to this plan (see Volume 2). In preparing these annexes, each partner completed a capability assessment that looked at its regulatory, technical and financial capability to carry out proactive hazard mitigation. Refer to these annexes for a review of regulatory codes and ordinances applicable to each planning partner.

5. HAZARDS OF CONCERN FOR RISK ASSESSMENT

Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards. It allows emergency management personnel to establish early response priorities by identifying potential hazards and vulnerable assets. The process focuses on the following elements:

- Hazard identification—Use all available information to determine what types of disasters may affect a jurisdiction, how often they can occur, and their potential severity.
- Vulnerability identification—Determine the impact of natural hazard events on the people, property, environment, economy and lands of the region.
- Cost evaluation—Estimate the cost of potential damage or cost that can be avoided by mitigation.

The risk assessment for this hazard mitigation plan evaluates the risk of natural hazards prevalent in the planning area and meets requirements of the DMA (44 CFR, Section 201.6(c)(2)).

For this update, the Steering Committee considered the full range of natural hazards that could impact the planning area and then ranked the hazards that present the greatest concern. The process incorporated review of state and local hazard planning documents, as well as local, state and federal information on the frequency, magnitude and costs associated with hazards that have impacted or could impact the planning area. Anecdotal information regarding natural hazards and the perceived vulnerability of the planning area's assets to them was also used. Based on the review, this plan update addresses the following hazards of concern:

- Dam/canal failure
- Drought
- Earthquake
- Flood
- Landslide
- Severe weather
- Volcano (ash fall)
- Wildfire.

For this plan update, the Steering Committee elected to add two chapters to the risk assessment. One new chapter summarizes the potential impacts of climate change on the identified hazards of concern. This is a qualitative profile and is not intended to recognize climate change as a stand-alone hazard of concern. This addition ensures that this plan update is in compliance with Presidential Executive Order #13690.

The second new chapter addresses non-natural (human-caused) hazards that are of the most concern for the planning area. This discussion highlights the extensive capability within the planning area to address non-natural hazards. The hazards profiled in this chapter are those addressed in the Ada County Threat Hazard Inventory and Risk Assessment prepared and maintained by ACEM.

6. RISK ASSESSMENT METHODOLOGY

The risk assessments in Chapters 7 through 14 describe the risks associated with each identified hazard of concern. Each chapter describes the hazard, the planning area’s vulnerabilities, and probable event scenarios. The following steps were used to define the risk of each hazard:

- Identify and profile each hazard—The following information is given for each hazard:
 - Geographic areas most affected by the hazard
 - Event frequency estimates
 - Severity estimates
 - Warning time likely to be available for response.
- Determine exposure to each hazard—Exposure was determined by overlaying hazard maps with an inventory of structures, facilities, and systems to determine which of them would be exposed to each hazard. For each identified hazard of concern, the best available existing data delineating a hazard area was selected. Data sets were evaluated based on scale, age and source. Additionally, data available in a GIS-compatible format with coverage of the full extent of the planning area were preferentially selected for use in the analysis.
- Assess the vulnerability of exposed facilities—Vulnerability of exposed structures and infrastructure was determined by interpreting the probability of occurrence of each event and assessing structures, facilities, and systems that are exposed to each hazard. Tools such as GIS and FEMA’s hazard-modeling program called Hazus-MH were used to perform this assessment for the flood, dam failure and earthquake hazards. Outputs similar to those from Hazus were generated for other hazards, using maps generated by the Hazus program.

6.1 MAPPING

A review of national, state and county databases was performed to locate available spatially based data relevant to this planning effort. Maps were produced using GIS software to show the spatial extent and location of identified hazards when such data was available. These maps are included in the hazard profile chapters of this document. Information regarding the data sources and methodologies employed in these mapping efforts is located in Appendix C.

6.2 DAM FAILURE, EARTHQUAKE AND FLOOD—HAZUS-MH

6.2.1 Overview

In 1997, FEMA developed the standardized Hazards U.S., or Hazus, model to estimate losses caused by earthquakes and identify areas that face the highest risk and potential for loss. Hazus was later expanded into a multi-hazard methodology, Hazus-MH, with new models for estimating potential losses from hurricanes and floods.

Hazus-MH is a GIS-based software program used to support risk assessments, mitigation planning, and emergency planning and response. It provides a wide range of inventory data, such as demographics, building stock, critical facility, transportation and utility lifeline, and multiple models to estimate potential losses from natural disasters. The program maps and displays hazard data and the results of damage and economic loss estimates for buildings and infrastructure. Its advantages include the following:

- Provides a consistent methodology for assessing risk across geographic and political entities.
- Provides a way to save data so that it can readily be updated as population, inventory, and other factors change and as mitigation planning efforts evolve.
- Facilitates the review of mitigation plans because it helps to ensure that FEMA methodologies are incorporated.
- Supports grant applications by calculating benefits using FEMA definitions and terminology.
- Produces hazard data and loss estimates that can be used in communication with local stakeholders.
- Is administered by the local government and can be used to manage and update a hazard mitigation plan throughout its implementation.

6.2.2 Levels of Detail for Evaluation

Hazus-MH provides default data for inventory, vulnerability and hazards; this default data can be supplemented with local data to provide a more refined analysis. The model can carry out three levels of analysis, depending on the format and level of detail of information about the planning area:

- **Level 1**—All of the information needed to produce an estimate of losses is included in the software’s default data. This data is derived from national databases and describes in general terms the characteristic parameters of the planning area.
- **Level 2**—More accurate estimates of losses require more detailed information about the planning area. To produce Level 2 estimates of losses, detailed information is required about local geology, hydrology, hydraulics and building inventory, as well as data about utilities and critical facilities. This information is needed in a GIS format.
- **Level 3**—This level of analysis generates the most accurate estimate of losses. It requires detailed engineering and geotechnical information to customize it for the planning area.

6.2.3 Application for This Plan

The following methods were used to assess specific hazards for this plan:

- **Flood**—A Level 2 analysis was performed. GIS building and assessor data (replacement cost values and detailed structure information) for over 146,000 facilities were loaded into Hazus-MH. An updated inventory was used in place of the Hazus-MH defaults for essential facilities, transportation and utilities. Current and preliminary Ada County DFIRMs were used to delineate flood hazard areas and estimate potential losses from the FEMA 100- and 500-year flood events. The preliminary Ada County flood boundary data and depth grids came from the U.S. Army Corps of Engineers and FEMA Region X. Effective DFIRM flood boundaries were used in seclusion zones designated by FEMA Region X. A flood depth grid was generated using those flood boundaries, detailed flood study cross sections, and multiple digital elevation models, including 1-foot Boise Foothills LiDAR, 3-meter Boise River LiDAR, and a 10-meter USGS elevation model.
- **Dam Failure**—Dam failure inundation mapping for Ada County was provided by the Corps of Engineers for the Lucky Peak Reservoir. This data was imported into Hazus-MH and a modified Level 2 analysis was run using the flood methodology described above that included an updated inventory of over 35,000 user-defined facilities in the exposed area.

- **Earthquake**—A Level 2 analysis was performed to assess earthquake risk and exposure. Hazus pre-loaded fault and probabilistic data prepared by the U.S. Geological Survey (USGS) were used for the analysis of this hazard. An updated general building stock inventory was developed using replacement cost values and detailed structure information from assessor tables. An updated inventory of essential facilities, transportation and utility features was used in place of the Hazus-MH defaults. One scenario event and two probabilistic events were modeled:
 - The scenario event was based on a 2012 U.S. Geological Survey scenario of the Squaw Creek fault, using a Magnitude of 7.0.
 - The standard Hazus analysis for the 100- and 500-year probabilistic events was run.

6.3 LANDSLIDE, SEVERE WEATHER, VOLCANO AND WILDFIRE

For most of the hazards evaluated in this risk assessment, historical data was not adequate to model future losses. However, GIS is able to map hazard areas and calculate exposures if geographic information is available on the locations of the hazards and inventory data. Areas and inventory susceptible to some of the hazards of concern were mapped and exposure was evaluated. For other hazards, a qualitative analysis was conducted using the best available data and professional judgment. County-relevant information was gathered from a variety of sources. Frequency and severity indicators include past events and the expert opinions of geologists, emergency management specialists and others. The primary data source was the Ada County GIS database, augmented with state and federal data sets. Additional data sources for specific hazards were as follows:

- **Landslide**—A dataset of steep slopes was generated using a combination of Boise Foothills 1-foot LiDAR and the USGS 10-meter digital elevation model. Two slope classifications were created: 15 to 30 percent; and greater than 30 percent.
- **Severe Weather**—Severe weather data was downloaded from the Natural Resources Conservation Service and the National Climatic Data Center.
- **Volcano**—Volcanic hazard data was obtained from the USGS Cascade Volcano Observatory.
- **Wildfire**—Information on wildfire hazard areas was provided by Idaho Bureau of Land Management as well as Ada County Development Services.

6.4 DROUGHT

The risk assessment methodologies used for this update focus on damage to structures. Because drought does not impact structures, the risk assessment for drought was more limited and qualitative than the assessment for the other hazards of concern.

6.5 LIMITATIONS

Loss estimates, exposure assessments and hazard-specific vulnerability evaluations rely on the best available data and methodologies. Uncertainties are inherent in any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from the following:

- Approximations and simplifications necessary to conduct a study
- Incomplete or outdated inventory, demographic or economic parameter data
- The unique nature, geographic extent and severity of each hazard
- Mitigation measures already employed
- The amount of advance notice residents have to prepare for a specific hazard event.

These factors can affect loss estimates by a factor of two or more. Therefore, potential exposure and loss estimates are approximate and should be used only to understand relative risk. Over the long term, Ada County and its planning partners will collect additional data to assist in estimating potential losses associated with other hazards.