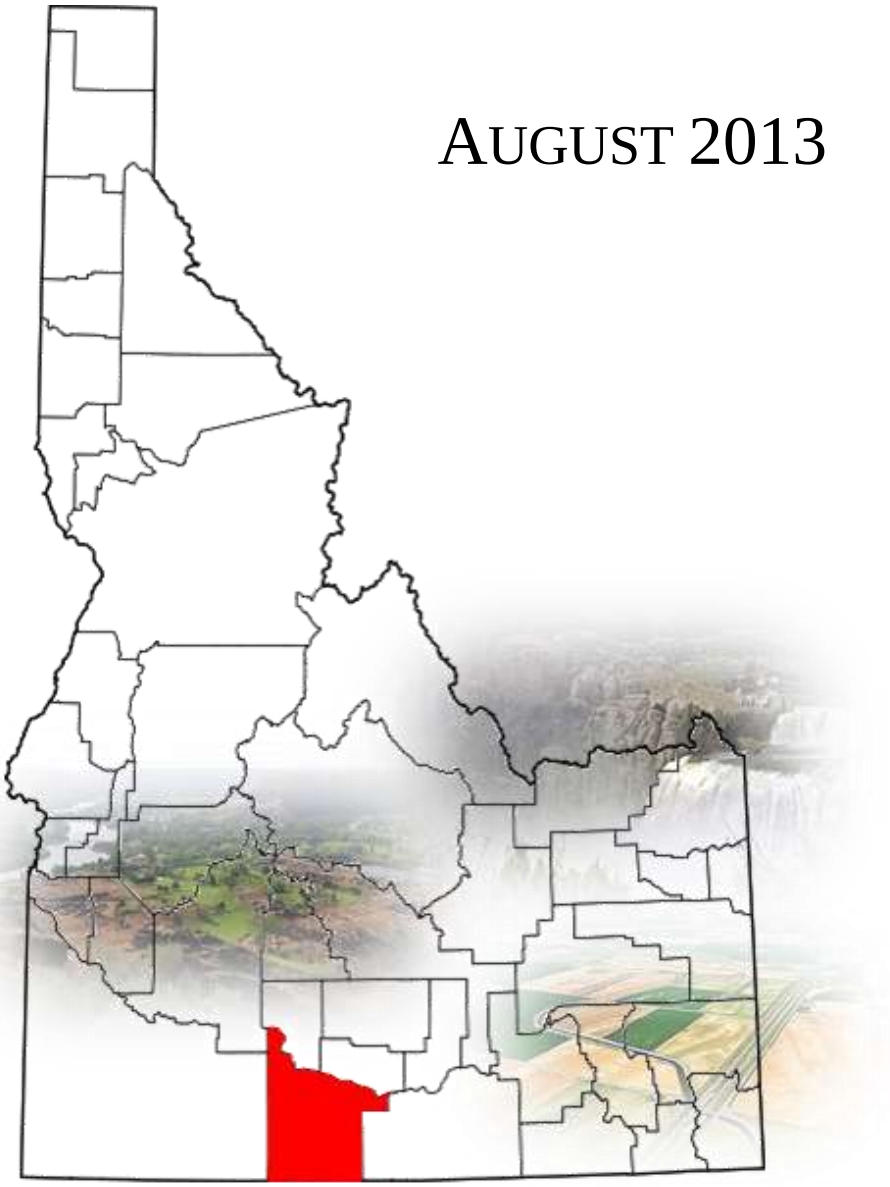
TWIN FALLS COUNTY
MULTI-JURISDICTION ALL HAZARD MITIGATION PLAN

AUGUST 2013



Executive Summary

The Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan 2013 is a complete revision of the 2008 Twin Falls County All Hazard Mitigation Plan. The entire Hazard and Vulnerability Assessment was updated. The hazard ranking was changed a new format deployed that ranks the hazards according to five indices, 1) historical occurrence, 2) probability, 3) vulnerability, 4) spatial extent, i.e, the extent impact based on geography, and 5) the magnitude which looks specifically at the loss of life, injuries, and economic impact. The Plan format was changed to match the FEMA Local Plan Crosswalk Guidance. The figure below contains the revised risk ranking for Twin Falls County.

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Drought	3	4	4	4	3	**18**	**H**
Wildfire	3	4	2	3	4	**16**	**H**
Severe Weather	3	4	3	3	3	**16**	**H**
Severe Winter Storms	3	4	2	4	2	**15**	**H**
Communicable Diseases	2	3	3	3	3	**14**	**H**
Structural Fire	3	4	1	1	4	**13**	**M**
H5N1 Bird Flu	0	1	4	4	4	**13**	**M**
West Nile Virus	3	4	1	1	3	**12**	**M**
Hazardous Materials	3	4	2	1	2	**12**	**M**
Terrorism	0	1	4	3	4	**12**	**M**
Vesicular Stomatitis	2	4	1	1	3	**11**	**M**
Flood	2	4	1	1	3	**11**	**M**
Flash Flood	2	4	2	1	2	**11**	**M**
Canal Failure	2	4	1	1	2	**10**	M
Lyme and Other Tick-Borne Diseases	1	4	1	1	3	**10**	**M**
Nuclear Event	0	1	3	3	3	**10**	**M**
Burrowing Rodents	1	4	1	1	2	**9**	**L**
Earthquake	0	2	1	2	2	**7**	**L**
Landslide	1	2	1	1	1	**6**	**L**
Dam Failure	0	1	1	1	3	**6**	**L**

The Twin Falls County Multi-Jurisdiction All Hazard Mitigation Planning Project was led by Ms. Jackie Frey, Coordinator, Twin Falls County Department of Emergency Services, who, under the direction of the Twin Falls County Commissioners, is responsible for implementing the mitigation actions recommended in this Plan.

The Twin Falls County All Hazard Mitigation Planning Committee was comprised of members of the Twin Falls County LEPC. Community involvement took two forms, 1) an electronic based community questionnaire, and 2) invitation to attend the local elected officials' briefings. There was excellent community participation for a county of this size.

While the focus of this Plan is on County-wide mitigation activities, it was developed through an integrated effort by representatives from many County jurisdictions. The following Cities and taxation districts have also participated in the development of this Plan:

- City of Buhl
- City of Castleford
- City of Filer
- City of Hansen
- City of Hollister
- City of Kimberly
- City of Murtaugh
- City of Twin Falls
- Buhl Highway District
- Filer Highway District
- Murtaugh Highway District
- Twin Falls Highway District
- Twin Falls County Pest Abatement District
- Twin Falls Canal Company
- Three Creek Rangeland Fire Protection Association, Inc.
- Saylor Creek Rangeland Fire Protection Association, Inc.

Mitigation Actions have been reviewed and a status provided by the Mitigation Committee. Goals and Objectives, as developed in the initially planning process, were maintained and additional mitigation actions added to the Plan. The mitigation actions were reviewed and analyzed using the STAPLEE Method with each action given a H, M, or L ranking.

Twin Falls County Projects	STAPLEE Score	Ranking
Install High Wind Warning devices at the entrances of the Hansen and Perrine Snake River Bridge	150	**H**
Organize a group to jointly apply for grants and other funding avenues to implement WUI Fire Mitigation Actions.	148.5	**H**
Emergency Power for Relocation Centers	146	**H**
Maintain the "Fight the Bite" program with the Health District.	144	**H**
Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	143	**H**
Incorporate new developments and structures into existing fire protection districts.	142	**H**

Twin Falls County Projects	STAPLEE Score	Ranking
Establish a National Flood Insurance Program for areas prone to flash flooding in Buhl and Castleford	139	**M**
Develop an ordinance which establishes the road widths, access, water supply, and building regulations suitable to ensure new structures can be protected.	136.5	**M**
Identify all Critical Infrastructure and Facilities in the County and participate with the new BHS Critical Infrastructure Protection Program.	132.5	**M**
Develop a listing of roads, bridges, cattle guards, culverts, and other limiting conditions and incorporate improvements into the Highway District Transportation Plans.	130	**M**
Develop a standard practice for roadside vegetation management in the Mellon Valley Area.	126	**M**
Conduct a Hazardous Materials Commodity Flow Study for the County.	124.5	**M**
Plant Wind Breaks along Highway 93 between Hollister and Rogerson	115	**M**
Develop an ordinance that restricts building on the Snake River Canyon Rim.	107	**L**
Post Evacuation Route Signs directing evacuees to Relocation Centers	102	**L**
Work with the Idaho Department of Agriculture to develop protection measures for livestock from Biological Threats.	99.5	**L**
Publish a special section in newspapers about the actual level of earthquake risk identified in the 2013 update.	97.5	**L**
Conduct a Law Enforcement Public Education Campaign on Civil Disobedience.	88	**L**

The Plan as developed is much more user friendly, and designed specifically to enhanced implementation. The jurisdictions have completed many of the mitigation actions and as funding is available, additional mitigation actions will be addressed

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Section 1 Planning Process

Introduction

Twin Falls, Idaho and the incorporated cities that lie within the County boundaries are vulnerable to natural, technological, and man-made hazards that have the potential to cause serious harm to the health, welfare, and security of its residents. The cost of response to, and recovery from, disaster events can be lessened when attention is turned to mitigating their impacts and effects before they occur or re-occur.

This Plan seeks to identify the County's hazards, understand the vulnerabilities to those hazards, and craft solutions that, if implemented, will significantly reduce threats to life and property. The Plan is based on the premise that hazard mitigation works! With increased attention to managing natural hazards, communities can reduce the threats to citizens and, through proper land use and emergency planning, avoid creating new problems in the future. Many solutions can be implemented at minimal cost and social impact.

This is not an emergency response or management plan. The Plan can certainly be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. The focus of this Plan, however, is to support better decision making directed toward avoidance of future risk, and to implement activities or projects that will eliminate or reduce current risks.

Hazard mitigation is defined as cost-effective actions that have the effect of reducing, limiting, or preventing the vulnerability of people, culture, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures which can be used to eliminate or minimize the risk to life, culture, and property fall into three categories:

1) Those that keep the hazard away from people, property, and structures,

2) Those that keep people, property, or structures away from the hazard, and

3) Those that reduce the impact of the hazard on victims, i.e., insurance.

Hazard mitigation measures must be practical, cost effective, and culturally, environmentally, and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not, in themselves, be more costly than the anticipated damages.

Hazard mitigation planning must be based on vulnerabilities, and its primary focus must be on the point where capital investment and land use decisions are made. The placement of capital investments, whether for homes, roads, public utilities, pipelines, power plants, or public works, determine to a large extent the nature and degree of a community's hazard vulnerability. Once a capital facility is in place, there is little opportunity to reduce hazard vulnerability through correction of errors in location or construction. It is for this reason that often the most effective mitigation tools are zoning and other ordinances that manage development in high vulnerability areas, and building codes that ensure that new buildings are constructed to withstand the damaging forces of anticipated hazards.

Because disaster events are generally infrequent, the nature and magnitude of the threat is often ignored or poorly understood. Thus, the priority to implement mitigation measures is low and

implementation is slowed. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management.

The Federal Emergency Management Agency has identified hazards to be analyzed by each jurisdiction completing an All Hazard Mitigation Plan. The hazards analyzed in this Plan include the following:

Natural Hazards

Weather: Severe Weather
- Extreme Heat
- Lightning
- Hail
- Straight Line Wind
- Tornado

Severe Winter Storm
- Extreme Cold

Drought

Flooding: Flash Flood
River Flooding
Dam Failure
Canal Failure

Geologic: Earthquake
Landslide/Mudslide

Other: Wildfire
Biological
- Burrowing Rodents
- Vector Borne Diseases
- Human Borne Disease (Pandemic)

Technological (Manmade) Hazards

Structural Fire
Nuclear Event
Hazardous Material Event
Riot/Demonstration/Civil Disorder
Terrorism

Participating Jurisdictions

This Plan covers all areas within Twin Falls County Idaho and the following:

- City of Buhl
- City of Castleford
- City of Filer

- City of Hansen
- City of Hollister
- City of Kimberly
- City of Murtaugh
- City of Twin Falls
- Buhl Highway District
- Filer Highway District
- Murtaugh Highway District
- Twin Falls Highway District
- Twin Falls County Pest Abatement District
- Twin Falls Canal Company
- Three Creek Rangeland Fire Protection Association, Inc.
- Saylor Creek Rangeland Fire Protection Association, Inc.

Twin Falls County All Hazard Mitigation Planning Committee

The Twin Falls County Multi-Jurisdiction All Hazard Mitigation Planning Committee was formed on October 25, 2006, and reorganized into a multi-jurisdiction committee on October 9, 2012 to oversee this update of the Plan. The Committee membership is comprised of representatives from the Twin Falls County Local Emergency Planning Committee, Twin Falls County Department heads, representatives from the Transportation Districts and the incorporated cities, representatives from the major utility providers, interested media, and members of the public. Minutes of the committee meetings are provided in Attachment 1.

The Committee Roster is provided below:

Representative	Agency	Position
Jackie Frey	Twin Falls County	Emergency Services Coordinator
Kathy Elwell	Idaho State University	RN Program Student
Roger Hinton	Red Cross	Partner in Plans Coordinator
Carl Voigt	Twin Falls School District	Twin Falls School District
Erik Zechmann	Bureau of Land Management	Safety and Health Officer
Kevin Hanners	Buhl Police Department	Sergent
Gary W Davis	Bureau of Homeland Security	Area Field Officer
Randy Sabin	Chobani	Security Supervisor
James Maxson	St. Luke's Magic Valley Medical Center	Security Supervisor
Ashlee Novak	St. Luke's Magic Valley Medical Center/ISU	CSI Student
Robert Storm	Idaho State Police	Captain

Representative	Agency	Position
Dennis Pullin	Twin Falls Police Department	Sergeant
Tami Pearson	South Central Public Health Department	Planner
Angie Durham	South Central Public Health Department	Planner
Dan Olmstead	Idaho Power	Director
Gilbert Schmidt	Magic Valley Paramedics	Paramedic Supervisor
Brent Blamires	Rock Creek Fire	
Jason Desler	Conagra/Lamb Weston	Plant Safety Manager
Dane Higdem	Glanbia Foods	Corporate Regulatory Manager
Larry Ford	CERT	Volunteer
Georgia Ford	CERT	Volunteer
Susan Cleverly	Bureau of Homeland Security	Mitigation Planner
Krista Anderson	Bureau of Homeland Security	Mitigation Program
Major Ed Patterson	The Salvation Army	Disaster Coordinator
Lori Stewart	Twin Falls Sheriff's Office	Public Information Officer/Victims Coordinator
Jim Ellington	College of Southern Idaho	Student
Mark Crane	Enviro Care	Sales Manager
Craig Stotts	Twin Falls City Police	Detective
Terry Kramer	TFCC	Commissioner
Ben Dunbar	Glanbia Foods	Supervisor
John Hathaway	Idaho Department of H&W	Regional Director
Mark Korsen	Buhl Fire Department	Fire Chief
Paul Walz	Idaho Power	Dam Safety
Brandon Mcgoldrick	Idaho Power	Dam Safety
Tom Askew	Twin Falls BLM	AML/HazMat Program Lead
Louis Zamora	Twin Falls Canal Company	Engineering Technician
Reggie Finney	City of Buhl	Supervisor – Water Department
Kirk Tubbs	Twin Falls Pest Abatement District	Director
Tim Reeves	Filer Police	Chief
Trish Heath	St. Luke's Magic Valley Medical Center	EM Coordinator

Representative	Agency	Position
Chuck Garner	Twin Falls Police	Admin Sergent
Ted Wasko	Kimberly School District	Director of Maintenance/Transportation
Cathi Leeming	CERT	Volunteer
Tim Miller	Twin Falls Sheriff's Office	Captain
Nick Wood	Williams NW Pipeline	Pipeline Technician
Melva Heinrich	LINK	Supervisor
Nate Sylvester	Twin Falls City Police	Officer
Brian Cunningham	Twin Falls Fire	Battalion Chief
Daron Brown	Twin Falls Sheriff's Office	Lieutenant
Garth Mickelson	Chobani	Worker
Jack Barnes	Twin Falls Department	Battalion Chief
Zan Mugleston	Lamb Weston	Team Lead Safety
Jenny Baumer	St. Luke's Magic Valley	RN
Clay Gorbett	Williams Pipeline	Pipeline Technician
Kali Sherrill	Twin Falls County Weed Department City of Murtaugh	Superintendent City Council Member
Eric Zechmann	BLM	Safety and Health Officer
John Moore	SIRCOMM	Director
Ron Aguirre	Twin Falls Fire	Battalion Chief
Dennis Chambers	Twin Falls County	Coroner
Megan Myers	Buhl Fire Department	Administrative Secretary
Dan McNitt	Bureau of Homeland Security	Regional Training/Exercise Coordinator

AHMP Committee Meetings

The Planning Process began in October 2012 with the kick off meeting. Planning meetings concluded with the Elected Officials briefings which were held during May and June. All the Planning Meetings were held in conjunction with the Twin Falls LEPC meetings.

Following the Planning Meetings the drafting of the Plan was completed and the Plan was submitted to the Planning Committee for review prior to sending the Plan to the Idaho Bureau of Homeland Security (BHS) for approval. Following the approval of the Plan by BHS the Plan will be reviewed and approved by FEMA Region 10.

October 9, 2012

Jackie Frey introduced Rick Fawcett, Whisper Mountain Inc. who did a power point presentation on the revision of the All Hazard Mitigation Plan for the County. Rick will participate in a number of the LEPC meetings to address the revision; his next scheduled visit will be at the December 11th, 2012 meeting.

Some of the key items addressed were:

- The process used to revise the AHMP, and why the plan must be revised or updated every 5 years
- The importance of bringing in those partners from local government, Planning and Zoning, Public Water Departments, Canal Companies, Fire, Industry, Road and Bridge, etc. to ensure the plan is thoroughly done
- That the plan is critical for jurisdictions because if jurisdictions are not a part of an approved AHMP they cannot receive federal funding for post disaster mitigation funding
- The importance of having a jurisdiction involved because if they are not part of an approved AHMP they are not eligible for pre-disaster mitigation project grants

November 13, 2012

Commissioner Kramer addressed the County All Hazard Mitigation Plan update from a single to a multi-jurisdictional plan, and encouraged all of the cities to participate. The need to address projects, and have a plan that is compliant with FEMA directives is critical when requesting funding.

December 11, 2012

Jackie Frey introduced Rick Fawcett, Whisper Mountain Inc. to update the LEPC on the revision of the All Hazard Mitigation Plan and Louis Zamora, Twin Falls Canal Company to present information dealing with the Canal Company.

Rick reported on the update to the AHMP for the County and the status of work that is being done at this time. Rick addressed the need for the support of the LEPC members to ensure the plan is accurate and projects addressed. At this time work is being done on the following:

- The Risk Assessment is 40% complete
- Burrowing rodents were addressed as a hazard in the plan
- Mapping of Critical Infrastructure
- Data collection for loss estimate is 75% completed
- Participation resolutions to include the highway and school districts
- Updated section 1 Planning Process
- Description of Partner jurisdictions
- Online Community Risk Survey
- Review of Comprehensive Plans
- Developed Project Status listing from 2008 projects

In closing, Rick discussed project goals and he will continue to work with the partners throughout the revision of the plan. Also, he encouraged everyone to go to https://www.surveymonkey.com/s/TwinFallsSurvey and do the survey addressing the

"perception of hazards" in Twin Falls County. Please note: This information will help improve coordination of risk reduction activities in the County.

Louis Zamora, Twin Falls Canal Company did an informational power point presentation on projects that the Canal Co. has done or are involved in; ponds, canal/dams, wetlands, moss removal, weed control, and dam maintenance. Louis also addressed the Twin Falls City Pressure Irrigation System, the Midway Power Plant, and their relationship with Idaho Power.

January 9, 2013

Jackie gave an update on the All Hazard Mitigation Plan and encouraged everyone to take or invite others to do the online survey which addresses the "perception of hazards" in the County at: https://www.surveymonkey.com/s/TwinFallsSurvey.This information will help improve coordination of risk reduction activities in the County.

February 12, 2013

Jackie Frey introduced Suzy Cavanaugh, Environmental Planning Group (EPG), who presented a power point presentation on the Liquefaction study of Twin Falls County. This information will be included in the revision of the Twin Falls County All Hazard Mitigation Plan. Also, Rick Fawcett, Whisper Mountain Inc., gave a brief update on the continued work he is doing on the revision to the AHMP. Rick addressed the AHMP and how the EPG information will be included in the plan, the results, threat to the County, and areas of impact, and the inclusion of a new subsection in the plan listing Vector Borne Disease.

Suzy's Report addressed the following:

1. The Mapping Process
2. How to Mitigate Potential Hazards
3. The estimation of how likely an earthquake would happen.
4. Categorization: Age, Soil texture, Depositional Environment
5. The ATE Classification
6. The ATE Score
7. 95% percent of the county is classed as low liquefaction, with 1% moderate, and 1% less than 1.
8. The NEHRP – National Earthquake Hazard Reduction Program
9. The NEHRP Site Classes
10. The NEHRP Site Class Maps
11. The Designating NEHRP Site Classes
12. The Topographic Sloped Based Method
13. The Site Class (threat ranking)

In closing, the potential for failure under seismic load came in low, with the greatest area of impact in the City because the soil is stiffer, and has a higher potential for damage from shaking; but, it was found that there were no active faults in the County, and the probability of damage from an earthquake event in Twin Falls County is extremely low.

April 9, 2013

Rick addressed the following items:

- The ranking approach in the plan; the data and chart for each of the following threats were reviewed and discussed by the LEPC members: Drought, Extreme Heat, Extreme Cold, Severe Winter Storm, Hail, Tornado, Straight Line Wind, Flash Flood, Flooding Canal Failure, Earthquake, Wildfire, Burrowing Rodents, Vector Borne Disease, and Hazardous Materials.
- The highest threat to Twin Falls County is straight line wind.
- The Risk Ranking from 2008 and the changes since that time.
- The Public Risk Ranking
- The 2013 Risk Ranking
- The Project Scoring Spreadsheet
- Project Priority Ranking

Please Note: Within the next few weeks, efforts will be made to visit each of the 8 cities to have their elected officials review the draft plan and address threats in their communities.

May 14, 2013

Rick Fawcett, Whisper Mountain reported on the following AHMP update process:

- Participating Jurisdictions
- The Hazards Analyzed
- The Ranking Criteria
- The Hazard Ranking for the County
- The Ranking Changes from 2008
- The Public Perception
- The Final Steps needed to adopt the plan by resolution with the Commissioners.

Jackie Frey reported that she is currently working with Rick Fawcett, Whisper Mountain Inc. on presentations to the 8 city councils and County Commissioners on the All Hazard Mitigation Plan.

July 13, 2013

A short update on the County All Hazard Mitigation Plan was done by Rick Fawcett, Whisper Mountain Inc. who addressed the STAPLEE Survey.

July 24, 2013

A Subcommittee comprised of six (6) members of the AHMP Committee met and scored the Mitigation Action Projects using the weighted STAPLEE method.

Update Process

The following strategy was taken to update the 2012 Plan. The Plan update builds on the existing mitigation strategy developed during the 2005 Planning Process. All of the hazard analyses were updated and additional hazards were added to the 2012 analysis.

Identify Hazards

Twin Falls County hazards were identified and their frequency of occurrence evaluated using a number of resources including:

- Hazard planning documents developed by state, federal, and private agencies,
- National Weather Service weather data from the past 50 years, and
- 100 year historical analysis of hazardous event occurrences published by federal, state, and local government agencies.

To determine frequency of occurrence, the historical analysis of hazardous events was conducted. One of the difficult tasks facing hazard mitigation professionals is the determination of the potential frequency of a natural hazard occurrence. Comparing historical facts against technically determined probability allows one to establish confidence, or not, in published scientific predictions. The process whereby the frequency is determined and then expressed in an expected reoccurrence interval, (see Table 1.1 below for an illustration) is based on research conducted at the University of South Carolina.

The estimated occurrence of the hazard is a useful element in the hazards assessment so one can distinguish between infrequent hazards, like volcano eruptions, and from frequent hazards, such as flooding. This calculation provides a useful indicator of the relative importance of each of the hazards that affect the jurisdictions, individually or collectively. The frequency of occurrence is a straight-forward calculation from the historical data and the length of that record in years. The number of hazard occurrences is divided by the number of years in the record. This yields the probability of the event occurring in any given year. For instance, if a hypothetical hazard “A” occurred 17 times in the County over the past 23 years, the probability of occurrence for that hazard in a given year would be 17 / 23 = .739, or 73.9%. The reverse of this equation results in a reoccurrence interval in years. For example, the reoccurrence interval of this hazard is calculated as 23 / 17 = 1.35. Hazard “A” can be expected to occur every 1.35 years. These frequencies are then correlated with magnitude to define the risk of a given hazard. To get the best calculation of return interval the largest span of years, i.e., 29 versus 5 is used even though the largest span may not be the most recent history. The reason for this is to get the greatest number of events across a large span of years.

Location	No. of Years	No. of Events	Frequency	Reoccurrence Interval
County	23	17	73.9%	1.35

Table 1.1: Example of Reoccurrence Interval

Identify Vulnerabilities

The Committee examined the potential effects on the County of the listed raw hazards by identifying vulnerable populations, infrastructure, critical services, facilities, and the environment. Vulnerabilities were geographically identified using Geographical Information System (GIS) technology and then linked to a GIS database describing the vulnerable target, including potential damage and estimates of losses.

Hazard Mapping

Hazard and vulnerability maps are extremely important in illustrating hazard and vulnerability locations. Information used to conduct the risk assessment and to make loss estimates have been linked electronically to the maps using GIS technology. The electronic versions of these maps were provided to the Committee and other reviewing agencies.

Risk Analysis

The risk analysis was updated using the information gathered in the steps above. To determine the risk posed by each hazard, several kinds of information are required: 1) the number of historical occurrences, 2) the probability or likelihood of the hazard occurrence, at times without regard to hazard history, 3) vulnerability, expressed as the percentage of people and property that would be affected by the hazard event, 4) spatial extent, the geographical area of the community that might be impacted, and 5) the magnitude or severity of impact based on an assessment in terms of fatalities, injuries, and property/economic losses. Tables illustrating this process are provided below.

1) **Historical Occurrence** – Number of historical occurrences within community.

Rating	Adjective Description	Number of Historical Occurrences (within 50 years)
0	None	• Never occurred
1	Low	• 5 or few occurrences
2	Medium	• 6-9 occurrences
3	High	• More than 10 occurrences

Table 1.2: Historical Occurrence Ranking Table

2) **Probability** – Likelihood of the hazard occurrence, sometimes without regard to hazard history.

Rating	Likelihood	Frequency of Occurrence
1	Rare	• Probability of occurrence = one chance in the next 50+ years
2	Low	• Probability of occurrence = at least one chance in the next 25-50 years
3	Medium	• Probability of occurrence = at least one chance in the next 10-25 years
4	High	• Probability of occurrence = at least one chance in the next 1 to 10 years

Table 1.3: Probability Ranking Table

3) **Vulnerability** –Percentage of people and property that would be affected by the hazard event.

Rating	Magnitude	Percentage of People and Property Affected
1	Negligible	• Less than 5%
2	Limited	• 5% to 10%
3	Critical	• 10% to 25%
4	Catastrophic	• More than 25%

Table 1.4: Vulnerability Ranking Table

4) **Spatial Extent** –The geographical area of the community that might be impacted.

Rating	Magnitude	Percentage of jurisdiction affected
1	Negligible	• Less than 10%
2	Limited	• 10% to 25%
3	Critical	• 25% to 50%
4	Catastrophic	• More than 50%

Table 1.5: Spatial Extent Ranking Table

5) **Magnitude (Severity of Impact)** – Assessment of severity in terms of fatalities, injuries, property/economic losses

Rating	Likelihood	Characteristics
1	Negligible	• Few if any injuries or illness • Minor quality of life lost with little or no property damage • Brief interruption of facilities/services less than 4 hrs
2	Limited	• Minor injuries and illness • Minor or short term property damage that does not threaten structural stability • Loss of essential facilities and services for 4 to 24 hours
3	Critical	• Serious injury and illness • Major/ long term property damage; threatens structural stability • Shutdown of essential facilities and services for 24 to 72 hours
4	Catastrophic	• Multiple deaths • Property destroyed or damaged beyond repair • Complete shutdown of essential facilities/services for 3+ days.

Table 1.6: Magnitude Ranking Table

Risk assessment methods included the use of FEMA's HAZUS but, because of limitations associated with this data, Twin Falls County's own current GIS property valuation data was primarily used to generate loss estimates.

Risk assessment activities also included the mapping of hazard occurrences, at-risk structures including critical facilities, and repetitive flood loss structures, land use, and populations.

Repetitive Loss

Repetitive Loss designations are used to eliminate or reduce the damage to property and the disruption of life caused by repeated damage, such as flooding, of the same properties. The criteria to determine repetitive loss includes the following:

- Four or more losses of more than $1,000 each in a 5 year period; or
- Two losses within a 10-year period that, in the aggregate, equal or exceed the current value of the insured property.

Quantify Risk

Once a hazard's risk has been evaluated, a picture of the over-all risk severity associated with that hazard emerges. The hazards with the highest total scores were considered the hazards of greatest concern for the County. The table below demonstrates the ranking of the eight natural hazards, with the priority hazards scoring highest and appearing in the light red rows, medium hazards appearing in light yellow, and the hazards ranking lowest appearing in green.

Natural Hazards Qualitative Risk Assessment EXAMPLE

	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Flood	3	4	3	3	3	16	H
Earthquake	3	3	3	3	3	15	H
Severe Storm	3	4	2	2	3	14	H
Wildland Fire	3	4	[illegible]	2	2	13	H
Volcano	1	1	2	2	2	8	M
Landslide	3	3	2	1	2	11	M
Avalanche	3	4	1	1	1	10	M
Drought	1	2	1	1	2	7	L

Example

Table 1.7: Risk Ranking Table

Once the numerical ranking was completed, in an effort to remain consistent with the local jurisdictions, as most utilize a High/Medium/Low ranking system, the total score was then converted to a High/Medium/Low method of priority ranking.

The breakdown of ranking is as follows:

- ✓ Low - Generating a total score of <=7
- ✓ Medium - Generating a score of 8-12
- ✓ High - Generating a score >13

Rank Severity

To assist in prioritizing mitigation activities, the severities of all hazards considered in the Plan are ranked relative to one another using the above plotting scheme. Prioritization is also based on goals and objectives developed and approved by the Twin Falls County Board of County Commissioners.

Develop Mitigation Strategy

As required by FEMA, this planning effort is centered on community supported hazard reduction goals to be implemented and evaluated based on measurable objectives. Mitigation projects are to be assessed against the established goals and objectives to ensure that the selected projects reduce risk as desired.

Capabilities Review

The ability of the participating jurisdictions to implement mitigation strategies is critical to the success of the Mitigation Program. The following table provides an assessment of each participating jurisdictions' capabilities in relationship to the mitigation strategy. Additionally each jurisdiction has planning processes which are in place to direct land use planning. Those documents were also reviewed and recommendations provided which will lead to a synergistic approach to mitigation in the communities.

Agency Name (Mission/Function	Programs, Plans, Policies, Regulations, Funding, ,or Practices	Point of Contact, Name, Address, Phone, Email	Effect of Loss Reduction*			Comments
			Support	Facilitate	Hinder	

*Definitions
Support: Programs, plans, policies, regulations, funding, or practices that help the implementation of mitigation actions
Facilitate: Programs, plans, policies etc., that make implementation actions easier
Hinder: Programs, plans, policies, etc., that pose obstacles to implementation of mitigation action

The Twin Falls County and incorporated cities' Comprehensive Plans and Land Use Ordinances were reviewed against the list of ranked hazards to determine if there were any restrictions or enabling powers that affect possible hazard mitigation alternatives. Additionally the community planning tools are reviewed in an effort to identify consistency between planning activities

Develop Mitigation Actions

Potential projects to address identified risk have been developed and listed in the Plan. The project descriptions were analyzed using the STAPLEE method which focused on several key areas, including but not limited to: economic (including benefits and cost), engineering, technical, legal, environmental, social, and political feasibility. Individual projects were given a weighted STAPLEE Score and then ranked High, Medium, and Low.

Revise Plan

This Plan meets, and in some instances exceeds, the requirements set forth by FEMA in the FEMA PDM Criteria Crosswalk. Plan drafts in hard and electronic copy were provided to the Committee for review. This Plan includes information on Plan adoption, including a promulgation page for the County, and an agreement to participate page for each incorporated city.

Plan Review

Plan review occurred at two distinctly different times. The initial plan review was conducted by the Planning Committee during development. Once the Plan was completed, it was submitted along with the completed FEMA PDM Criteria Cross Walk to the Idaho Bureau of Homeland Security's Hazard Mitigation Officer, and then to FEMA Region 10's Hazard Mitigation Officer for review. The Twin Falls County Board of County Commissioners also reviewed the Plan in a parallel time frame.

Participating Jurisdictions

Public Meetings

"Focused" Public Meetings were held in each of the participating incorporated cities with the elected officials, staff members, and the general public. Notices of the meetings were published in advance, as required by open meeting laws in Idaho, by placing notices of the meetings in the local newspapers and physically posting notices in public locations. The minutes of each city's meeting are contained in Attachment 1. In each City a presentation was given to the attendees outlining the purpose of the AHMP, why each jurisdiction is requested to participate, and the benefits of participation. In addition, the presentation outlined the risks posed to the communities, the potential losses, and then a request was made to those attending to propose any potential mitigation alternatives which might be undertaken to reduce the risk posed to the City's infrastructure, critical facilities, private residences, and businesses. The meetings were well attended by the elected officials; however, attendance by the general public was typically low.

A public meeting was also held with the County Commissioners with the same purpose. The Commissioners expressed a desire to support mitigation efforts and suggested some potential areas of concern. The meeting was supported by Coordinator from the Twin Falls County Department of Emergency Services. Even though the public was invited, none were present.

Twin Falls County

The Twin Falls County Board of County Commissioners and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 14, 2013 as part of the regularly scheduled Board of County Commissioners Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the Twin Falls County Hazard Ranking. Following the briefing Rick asked the Commissioners if they were aware of any additional mitigation projects beyond those proposed by the Planning Committee; they did not.

Representative	Agency	Position
Terry Kramer	Twin Falls County Board of County Commissioners	Chairman
George Urie	Twin Falls County Board of County Commissioners	Commissioner
Leon Mills	Twin Falls County Board of County Commissioners	Commissioner
Shannon Carter	Twin Falls County	Deputy Clerk
Jackie Frey	Twin Falls County Department of Emergency Services	Coordinator
Rick Fawcett	Whisper Mountain	President
Shana Fawcett	Whisper Mountain	Administrator

City of Filer

The City of Filer Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 7, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Filer Hazard Ranking. Following the briefing Rick asked the Mayor and Council if there were any potential mitigation projects. The Mayor asked that a project be added to address the naturally occurring arsenic in the City's drinking water.

Representative	Agency	Position
Russell Sheridan	City of Filer	Council Member
Richard Dunn	City of Filer	Council Member
Bob Templeman	City of Filer	Mayor
Don Barkley	City of Filer	Council Member
Fritz Wonderlich	Cities of Filer/Twin Falls	Attorney
Shari Hart	City of Filer	Clerk/Treasurer
Bud Compher	City of Filer	Fire Chief
John Swayze		Reporter
Shari Underwood	City of Filer	Citizen
Ruby Hile	City of Filer	Citizen
Donna Lineberry	City of Filer	Citizen
Peg Ostolal	City of Filer	Citizen
Joe Maloney	City of Filer	Citizen
Dave Dana	Idaho Department of Transportation	
Steven Tonks	Idaho Department of Transportation	
Nathan Robison	City of Filer	Citizen
Cleona Lohry	City of Filer	Citizen
Darryl Petrone	City of Filer	Building Inspector
Joe Baratti	City of Filer	Director of Public Works

City of Castleford

The City of Castleford Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 8, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Castleford Hazard Ranking. Following the briefing, Rick asked the Mayor and Council if there were any potential mitigation projects. There were no projects identified.

Representative	Agency	Position
Catarina Mavgues	City of Castleford	City Clerk
Curtis Harkins	City of Castleford	Council Member
Twila Crawford	City of Castleford	Mayor
Mevyk Paxman	City of Castleford	Council Member
Elzo Harkins	City of Castleford	Council Member
Tonya Nield	City of Castleford	Council Member
Victor Keen	City of Castleford	Maintenance Worker
A J Gray	City of Castleford	Water Master

City of Murtaugh

The City of Murtaugh Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 9, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Murtaugh Hazard Ranking. Following the briefing Rick asked the Mayor and Council if there were any potential mitigation projects. The Mayor asked that a project be added to address storm water flooding near the post office at the intersection of Boyd and 1st Streets. The water runs in the sewer manholes and overfills the lagoons.

Representative	Agency	Position
Jack Hart	City of Murtaugh	Planning and Zoning
Ryan Reeder	City of Murtaugh	Planning and Zoning
Voni Adams	City of Murtaugh	Clerk
Dee Hunsaker	City of Murtaugh	Mayor
Brenda Bowman	City of Murtaugh	Council Member
Robert Scheer	City of Murtaugh	Council Member
Yale Bussie	City of Murtaugh	Council Member
Bill Hollifield	City of Murtaugh	Attorney
Kali Sherrill	City of Murtaugh	Council Member

City of Hansen

The City of Hansen Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 10, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Hansen Hazard Ranking. Following the briefing Rick asked the Mayor and Council if there were any potential mitigation projects. There are residences being flooded occasionally from irrigation ditches. There is a need for better maintenance of the irrigation ditches.

Representative	Agency	Position
Linda Medley	City of Hansen	Council Member
Todd Stimpson	City of Hansen	Council Member
Joseph Ratto	City of Hansen	Mayor
Sarah Berry	City of Hansen	Council Member
Tom Kennedy	City of Hansen	Council Member
Bill Hollifield	Cities of Hansen/Murtaugh	Attorney
Linda Morrill	City of Hansen	City Clerk
Paul Will	City of Hansen	City Worker
Satea Thomson	City of Hansen	Citizen
Logan Every	City of Hansen	Citizen
Alex Veenstra	City of Hansen	Citizen
Katherine Sanchez	City of Hansen	Citizen
Kendra Urena	City of Hansen	Citizen
Alex Cup	City of Hansen	Citizen
Alex Neria	City of Hansen	Citizen
Clarence Robinson	Rock Creek Fire District	Fire Chief
Isione Briguela	City of Hansen	Citizen

City of Twin Falls

The City of Twin Falls Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 10, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Twin Falls Hazard Ranking.

Following the briefing Rick with the Mayor and Council the mitigation projects that were in the 2008 Twin Falls All Hazard Mitigation Plan for the City of Twin Falls. The projects were all related to earthquake hazards. With the lowering of the earth quake ranking, the Council decided to remove those particular projects from the list.

There were two suggested projects suggested by Council Member Talkington related to protection of the Perinne Bridge and the City's water supply. The City Manager suggested to the Council that he work with Staff to determine an appropriate list of mitigation projects to be added. The list will be provided within 30 days of the meeting.

Representative	Agency	Position
Josh Palmer	City of Twin Falls	Public Information Officer
Mike Williams	City of Twin Falls	Assistant to City Manager
Tami Lauda	City of Twin Falls	Information Services
Greg Lanting	City of Twin Falls	Mayor
Don Hall	City of Twin Falls	Vice-Mayor
Suzanne Hawkins	City of Twin Falls	Councilwoman
Rebecca Mills Sojka	City of Twin Falls	Councilwoman
Shawn Barigar	City of Twin Falls	Councilman
Chris Talkington	City of Twin Falls	Councilman
Jim Munn	City of Twin Falls	Councilman
Travis Rothweiler	City of Twin Falls	City Manager
Fritz Wonderlich	Cities of Filer/Twin Falls	Attorney
Lila Sanchez	City of Twin Falls	City Clerk

City of Hollister

The City of Hollister Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 14, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Hollister Hazard Ranking. Following the briefing Rick asked the Mayor and Council if there were any potential mitigation projects.

The Mayor and Council shared that they City of Hollister has been largely destroyed three (3) times since it was settled in the early 1900's from wildfire. The City would like to create a fire break within the city limits around the developed areas. The City would also like to develop and adopt a City ordinance to limit the buildup of "fire fuels" i.e., trash, weeds, debris, on private property.

Representative	Agency	Position
Rebecca Farrel	City of Hollister	Council Member
Betty Morris	City of Hollister	Council Member
Norman Schutler	City of Hollister	Council Member
Russell Weaver	City of Hollister	Council Member
Maureen Fleenor	City of Hollister	Council Member
Dixie Choate	City of Hollister	Mayor
Pablo Gonzales	City of Hollister	City Worker
Cassie Gonzales	City of Hollister	City Worker

City of Kimberly

The City of Kimberly Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on May 28, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Kimberly Hazard Ranking. Following the briefing Rick asked the Mayor and Council if there were any potential mitigation projects.

The Public Works Director indicated that there were three areas in the western portions of the older parts of the City where there is a flooding due to storm water drainage issues.

Representative	Agency	Position
Larry Hall	City of Kimberly	City Administrator
Jean Hopkins	City of Kimberly	Deputy Clerk
Bart Bingham	City of Kimberly	Community Development Director
Tim Stover	City of Kimberly	City Attorney
Burke Richman	City of Kimberly	Council Member
Connie Sowka	City of Kimberly	Council Member
Tracy Armstrong	City of Kimberly	Mayor
James Eisenhower	City of Kimberly	Council Member
Kip Thompson	City of Kimberly	Council Member
Kevan Hafer	City of Kimberly	Public Works
Pat Bermingham	City of Kimberly	Police Chief
Shane Bybee	City of Kimberly	Citizen
Alex Arrington	City of Kimberly	Citizen
Luke Schroeder	Kimberly School District	Superintendent
Roxanne Mumm	Kimberly School District	School Foods Supervisor
Tiffany Lund	City of Kimberly	Citizen
Tracy Ahrens	City of Kimberly	City Engineer

City of Buhl

The City of Buhl Elected Officials and Public briefing on the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan was held on June 10, 2013 as part of the regularly scheduled City Council Meeting.

Jackie Frey, Coordinator of the Twin Falls Department of Emergency Services provided an introduction of the Mitigation Planning Program and introduced Rick Fawcett, President of Whisper Mountain Professional Services, Inc. who then provided a briefing to those in attendance on the City of Buhl Hazard Ranking. Following the briefing Rick asked the Mayor and Council if there were any potential mitigation projects. The Mayor, Council, and the Public Works Director all spoke of a need to protect the water lines in the City from freezing.

Representative	Agency	Position
Wm L. Nungester	City of Buhl	City Council
Pam McClain	City of Buhl	City Council
Tom McCauley	City of Buhl	Mayor
Kyle Hansen	City of Buhl	City Council
Elizabeth Barker	City of Buhl	City Council
Karen Drown	City of Buhl	City Clerk
Gary Davis	Chamber of Commerce/BHS	AFO
Bob Linderman	City of Buhl	Citizen
Scott Bybee	City of Buhl	City Engineer
Susan Riddle	City of Buhl	Consultant
Regie Finney	City of Buhl	Public Works

Stakeholder Participation

Several Federal, State, and local agencies participated in the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Planning process. These Agencies also participate regularly in the Twin Falls County LEPC.

Non-County/City Agencies that participated in the Planning Process include:

- Idaho State University
- American Red Cross of Greater Idaho
- U. S. Bureau of Land Management
- Idaho Bureau of Homeland Security
- Idaho State Police
- South Central Public Health District
- The Salvation Army
- College of Southern Idaho
- Idaho Department of Health and Welfare
- Twin Falls Pest Abatement District
- SIRCOMM

Private Businesses that participated in the Planning Process include:

- Twin Falls Canal Company
- Chobani
- Conagra/Lamb Weston
- Glanbia
- Enviro Care
- Idaho Power
- Williams NW Pipeline
- LINK

Participating Twin Falls County Public Safety Agencies

Fire Protection

County fire protection is provided by six rural fire protection districts: Buhl, Castleford, Filer, Rock Creek, Salmon Tract, and Twin Falls. In the southern part of the County, fire protection and prevention assistance is also supported by the BLM and the Forest Service. Each district maintains its own staff and firefighting facilities as well as first response emergency medical services. EMS staff is largely volunteers, depending on the personnel structure of the individual RFD. Emergency medical transport is coordinated with the St. Luke's Magic Valley Medical Center in Twin Falls which serves as the primary emergency medical facility for the entire County.

In the extreme southwest and northwest portions of the County no fire protection authority exists. The Hagerman Fire District extends slightly across the Snake River into Twin Falls County, although the majority of the northwest County remains unprotected. In the southwest County, the BLM provides protection only from fires that have originated on BLM lands; otherwise, the BLM generally does not provide domestic fire protection assistance.

Public Safety

The Twin Falls County Sheriff's Office is a multi-faceted agency that provides several different functions through its various divisions and sections. The Sheriff's Office provides law enforcement and protection for the unincorporated areas of the County and for municipalities without police protection as well as support services for several city police departments and for countywide Search and Rescue. The Office maintains an adult detention facility for all law enforcement agencies in Twin Falls County and, on federally owned lands within the County, provides law enforcement and protection on a contractual basis with the respective Federal agencies.

Sections within the Office include, administrative services, training, public information and victims services, supply, internal affairs, and chaplain services. The Under Sheriff oversees rural patrol that encompasses the mountainous and desert regions, marine patrol on the waterways, animal control to include code enforcement within the County, and search and rescue operations. The Security Services Division provides court security and oversees the detention facility, providing food and medical for inmates and warrants and record keeping for that facility. The Support Services Division encompasses civil intake and civil paper service, driver license services, concealed weapon permits and sex offender registry. The Law Enforcement Services Division is the most public and diverse division within the Twin Falls County Sheriff's Office. Its Urban Patrol Section provides law enforcement and protection within the more populated areas of the County as well as towns without police departments and works closely with its Rural Patrol Section. Traffic enforcement, proactive patrol, K-9, criminal investigations, narcotics investigation, evidence storage, community services, explorer program, and the reserve deputy program are all facets of the Law Enforcement Services Division. The Sheriff's Office also maintains a Crisis Response Team.

The Sheriff's Office retains a staff of forty (40) certified law enforcement deputies, thirty-two (32) certified detention deputies, and twenty (20) to twenty-five (25) civilian employees. Headquarters are in Twin Falls, with a satellite office in Buhl.

Health Care

Most of the County's healthcare providers are located in Twin Falls. The St. Luke's Magic Valley Medical Center (SLMVMC) has 213 licensed beds (with an additional 20 transitional care beds), including a 19-bed intensive care unit, 18 maternal/child unit beds, and 22 pediatric unit beds. SLMVRMC is owned by St. Luke's Health System which also has facilities in Boise, Meridian, and Hailey. SLMVRMC has 124 physicians and surgeons on staff.

Emergency Services

The Twin Falls County Department of Emergency Services is responsible for the coordination of Federal, State, County and municipal resources and services during emergencies and disaster events. The Department's Emergency Operations Plan, which mirrors the Federal Office of Domestic Preparedness' National Response Plan, allows responding agencies within the County to draw upon listed resources and services in a coordinated manner when dealing with emergencies or disasters involving natural or man-made hazards or weapons of mass destruction. The Department has a continuing commitment to attain, with the assistance of the Federal and

State Bureaus of Homeland Security, higher levels of excellence in disaster and emergency preparedness, response, recovery, and mitigation.

Three Creek Rangeland Fire Protection Association, Inc.

The Three Creek Rangeland Fire Protection Association, Incorporated was created in March 2013. The boundaries of the Corporation are from the Balanced Rock Road extending to the Bruneau Canyon on the north (southern boundary of the Saylor Creek Rangeland Fire Protection Association), the west boundary of the Diamond A Ranch, up through the west edge of Wilkin's Island on the west, the northern border of the Humboldt/Toiyabe National Forest on the South and Little Salmon Falls Creek on the east; excluding within said boundary any lands located within the Castleford and Hollister Fire Districts. The Association is governed by a three member Board of Directors, a Chairman, and a Treasurer. The principle offices are at 112 East Main, Castleford, Idaho. There are 23 member property owners or ranches that are included in the Association.

The Protection Association is a volunteer fire department whose sole purpose is to respond to rangeland fires, initiate suppression activities, and support other firefighting organizations in the suppression of rangeland wildfires within the Corporation's boundaries. Members will provide resources and personnel on a voluntary basis and will not be reimbursed for any expenses. The Corporation is organized exclusively for charitable, educational and scientific purposes that qualify it as an exempt organization under section 501(c)(3) of the Internal Revenue Code, or

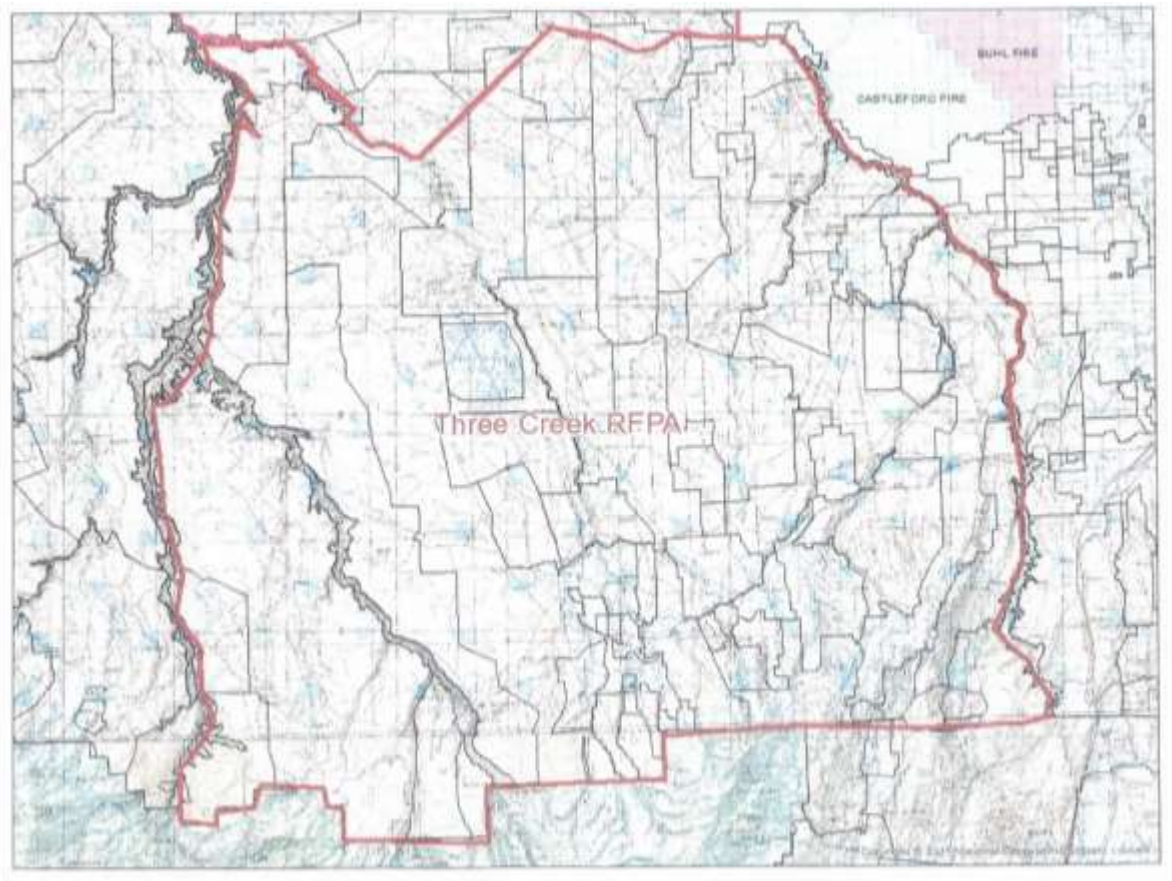


Figure 1.1Three Creek Rangeland Fire Protection Association Map

any future federal tax code.

Saylor Creek Rangeland Fire Protection Association, Inc.

The Saylor Creek Rangeland Fire Protection Association (Saylor Creek RFPA) is a volunteer fire department whose sole purpose is to respond to rangeland fires, initiate suppression activities, and support other firefighting organizations in the suppression of rangeland wildfires within the Corporation's boundaries. It was incorporated in December 2012 and currently has approximately 53 members who provide rangeland fire suppression resources and personnel on a voluntary basis and are not to be reimbursed for any expenses.

The principle offices are at 1301 Hwy 67, Grandview, Idaho. The boundaries of the Corporation are the Snake River from its confluence with the Bruneau River upstream to its confluence with Salmon Falls Creek; thence upstream along Salmon Falls Creek to its junction with the Balanced Rock/Clover Crossing Road; thence along said road to its junction with Clover Creek; then following Clover Creek downstream to its confluence with the Bruneau River; and thence following the Burneau River downstream to its confluence with the Snake River, the point of beginning; excluding within said boundary any lands located within the Bruneau, King Hill, Hagerman, Buhl, or Castleford Fire Districts. Mutual Aid Agreements, which allow Saylor Creek RFPA to suppress rangeland fire within the listed Fire Districts, have been entered into. The Saylor Creek RFPA has also entered into a mutual aid agreement with the Three Creek Rangeland Protection Association and a Memorandum of Understanding with the Boise and Twin Falls Bureau of Land Management Districts./

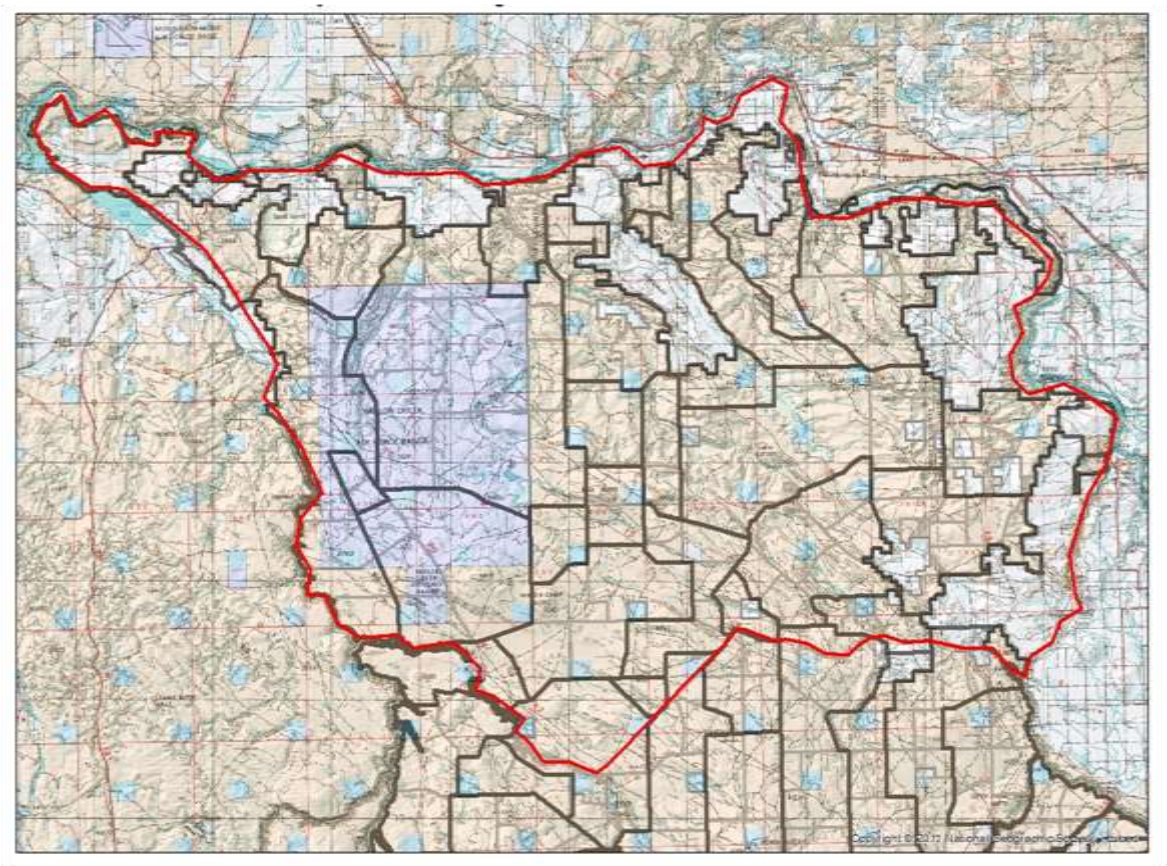


Figure 1.2Three Creek Rangeland Fire Protection Association Map

Participating Taxation Districts

Highway Districts

There are four highway districts located in Twin Falls County, including Buhl Highway District, Twin Falls Highway District, Filer Highway District, and the Murtaugh Highway District.

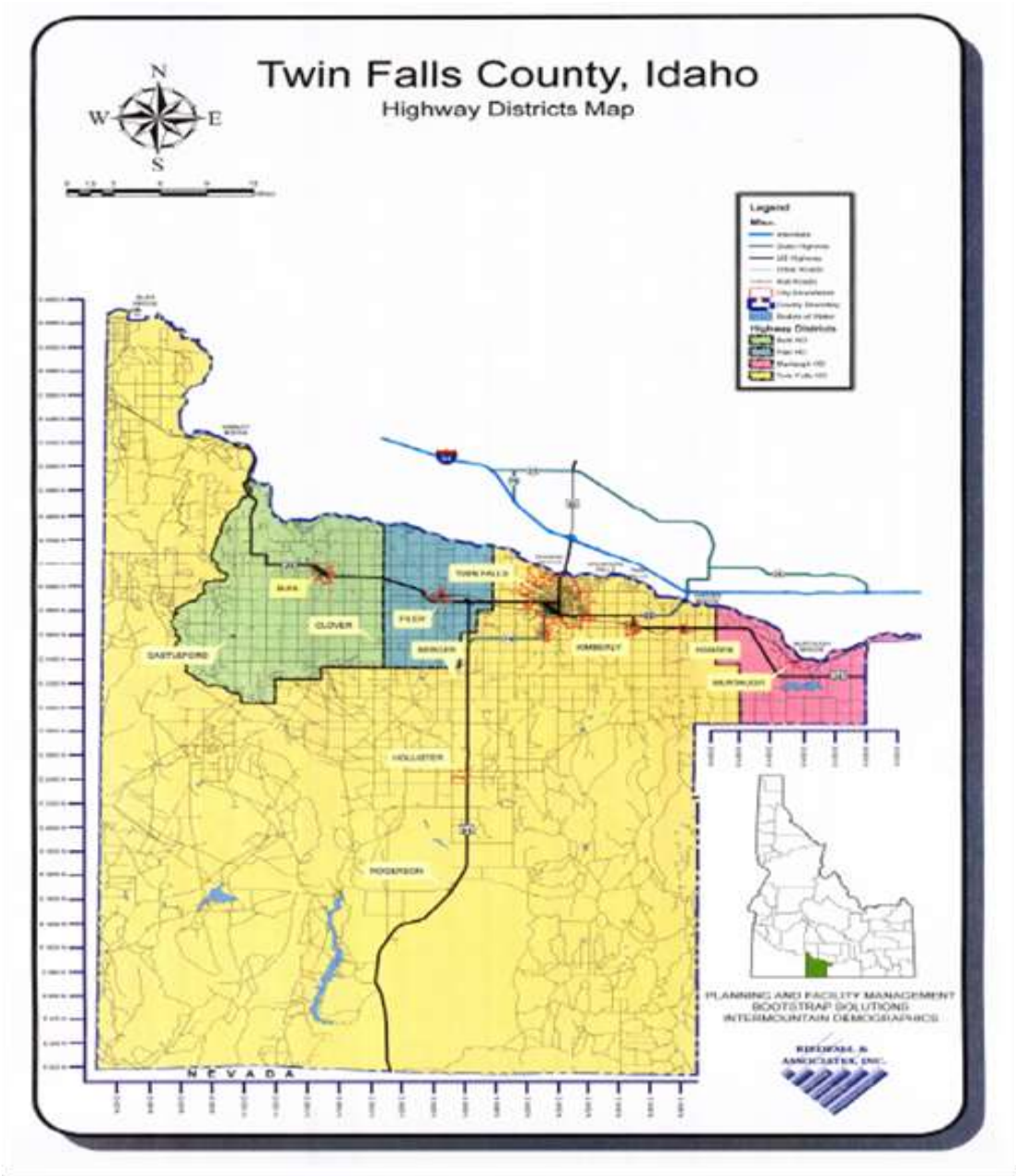


Figure 1.3

Twin Falls County Highway Districts Map

Twin Falls County Pest Abatement District

The Twin Falls County Pest Abatement District (TFCPAD) operates within the political boundaries of Twin Falls County, Idaho (USA) including all private and public lands within the boundaries of Twin Falls County. While Twin Falls County has limited surface water available source habitats for pests of concern are supplemented by a large complex of irrigation and canal constructs. Focused primarily on the protection of the human population of Twin Falls County the District also protects innumerable potential livestock and wild animal hosts in the County which may also be subject to pest impact.

According to its mission statement TFCPAD may operate outside of the county boundaries, in adjacent pest source and breeding areas which directly affect the District, and in cooperative or collaborative agreement with appropriate property owners or managers. The TFCPAD works in collaboration with the public, and with private or governmental organizations and agencies that are stakeholders and responsible owners or managers of lands and waters designated for pest abatement activities. These activities include surveillance, modifications of source habitats and direct abatement processes.

Surveillance and monitoring efforts, which continue at the time of this Plan, began as part of an Interim Abatement District Program for Twin Falls County prior to 2009. Both proactive and reactive surveillance and monitoring programs target the viable reproduction habitat in the County for Mosquitoes and Black Flies. Surveillance for these pests includes referral to previous abatement activity records, current stakeholder reports, and ongoing reconnaissance for locales likely to benefit from abatement treatments. Aquatic nursery and breeding areas, adult abundance estimates, and ranges of distribution, as well as habitats where harborages for the targeted pests are known, have been identified.

The TFCPAD employs a District Manager who oversees and manages all activities of the district with the primary responsibility of carrying out the current Pest Abatement Plan. Additional temporary seasonal employees are added as necessary to complete abatement actions. [1]

Participating Private Entities

Twin Falls Canal Company

In 1894 the United States Congress passed the Carey Act that allowed states to request the setting aside of large tracts of Federal land for private investors. Irrigation systems were to be developed in accordance with approved plans for an irrigation system. This prompted the interest of I.B. Perrine and other investors and led to the construction and development of the Twin Falls Canal Company System. The entry men paid the Twin Falls Land and Water for the water, developed 20 acres with irrigation water, paid the state fifty (.50) cents per acre, and obtained patents for the land.

Many have said that the Twin Falls system is the most successfully developed Carey Act project in the West. Since 1909, the Twin Falls Canal Company (TFCC) has operated the canal system. In addition to dependable Snake River water supplies, portions of return flows from Deep Creek

[1] Twin Falls County Pest Abatement Plan, April 8, 2009

and Cedar Draw are also diverted into the system. The coulees allow for the recapture of wastewater and other subterranean seepage flows which further increases efficiency.[2]

Milner Dam

In 1900 the entire strip of country we know as the Magic Valley was but a vast desert covered with sagebrush. The irrigation works had not been commenced, and in fact, the whole scheme of irrigation was little more than a dream

Milner Dam came about because of the vision of Ira Burton Perrine, a rancher who had developed a Shoshone Falls resort and a Blue Lakes farm downstream. Perrine chose the site of the dam and acted as his own engineer. He obtained financing for the project through Stanley B. Milner, a banker and financier from Salt Lake City, and easterners Frank H. Buhl and Peter L. Kimberly.

As a result, the Buhl-Kimberly Corp. was formed and in 1903 a contract was entered into between the State of Idaho and the Twin Falls Land and Water Co. for construction of the project. The dam was formed by three earth and rockfilled embankments, abutting against the river banks and two islands.

Figure 1.4 Milner Dam

In 1905 construction on the dam was completed. Men with mules and scrapers had also finished their work on the canals and all was ready for the water.

"On March 1, 1905, Frank Buhl gave a ceremonial pull on the wheel on a winch and the gates of Milner Dam were closed, and the gates to a thousand miles of canal and laterals were opened, and the Snake River was diverted, and that night Shoshone Falls went dry as the water rushed across the desert far above, and Perrine's vision was realized, and 262,000 acres of desert were shortly transformed."

[2] http://www.tfcanal.com/history.htm

Milner Dam and its canal system have national significance in agricultural history. They are one of the rare examples of successful state supervised private irrigation development.

The dam performed well for decades. There were instances of leakage through the dam that required immediate repair, but it fulfilled its purpose and today provides irrigation water to more than 500,000 acres of prime Idaho farmland.

After decades of use the dam began to show signs of aging. In December 1988, the Federal Energy Regulatory Commission's Division of Dam Safety and Inspection determined there was a high risk of Milner Dam failing during an earthquake unless it was rebuilt.

The price tag to rebuild the dam was about $11 million.

The Twin Falls and North Side canal companies determined that the costs of reconstruction would result in severe economic hardship to their 7,500 shareholders who depend on irrigation water from the dam for their livelihoods.

To pay for reconstruction the canal companies made a mutually beneficial agreement with Idaho Power to rehabilitate the dam and build a new 57.5-megawatt power plant downstream. Idaho Power would loan the canal companies funds to refurbish the dam. Repayment would come in the form of royalties from the hydro project.

The new Milner power plant has two main generating units, one with an 11.5-megawatt generating capacity and the other with 46 megawatts of capacity. A small 800-kilowatt powerhouse also has been built at the dam to take advantage of minimum streamflows that must be spilled at the dam to maintain a flow in the main river channel.

The Milner project is different from most of the hydro projects Idaho Power has constructed because it is spread out over a large area. The dam is located approximately 1.5 miles upstream from the powerhouse. At the dam, water is diverted into irrigation canals where it is dispersed to the surrounding farmland through the canal systems during the irrigation season. When farmers do not need the water, it flows through a widened section of the Twin Falls Canal to an intake structure that directs the water through penstocks that stretch down the steep canyon wall and into the powerhouse. From the powerhouse the water flows back into the main river channel.[3]

Twin Falls Canal Company System

Area Irrigated	202,691 acres
Major Canals	110 miles
Laterals	1,000 miles
Number of water users	4,000
Number of service gates	3,000

Water Rights
3,000 cfs natural flow, Priority Date: October 11, 1900
600 cfs natural flow, Priority Date: December 22, 1915
180 cfs natural flow, Priority Date: April 1, 1939

Storage Rights

[3] http://www.tfcanal.com/milner.htm

151, 185 acre feet in American Falls Reservoir
97,183 feet in Jackson Reservoir

Irrigation Season	April 1st - October 31st
Diversion	per demand up to 3,800 cfs[4]

Public Participation

Public Involvement in the All Hazard Mitigation Process has three distinct objectives; documenting risk perception, development of risk reduction requirements, and solicitation of support for mitigation actions. A public questionnaire was utilized to gain a subjective measure of how the public and committee participants believe that hazards impact their community. These results were then used to assist in the development of requirements for risk reduction projects. This involvement of the public serves to validate and raise awareness of the planning process and, thus, generate support for elected and appointed officials as they seek to implement the mitigation actions identified in the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan.

Public Questionnaire

Risk perception is the subjective judgment that people make about the characteristics and severity of a risk. The phrase is most commonly used in reference to natural hazards and threats to the environment or health, such as nuclear power. Several theories have been proposed to explain why different people make different estimates of the magnitude of risks. Risk perception is a significant part of the Public Involvement Section of the Twin Falls County All Hazard Mitigation Planning Process. An electronic survey instrument was used to gather public input and to measure the public attitudes towards the risk posed by the hazards in Twin Falls County. The survey was first administered to members of the All Hazard Mitigation Committee. Following completion of the survey by the Committee the public was invited to participate. The complete results of the survey are presented in Attachment 2. A summary of the survey is presented below.

Twin Falls County All-Hazard Mitigation Plan Public Survey

We need your help! Twin Falls County is embarking on an initiative to assist communities in reducing risk from natural and man-made hazards. We are conducting a survey designed to help us understand your perceptions of those hazards. The information you provide will help improve coordination of risk reduction activities within the County.

You can access the survey entering in the following url into our web browser.

https://www.surveymonkey.com/s/TwinFallsSurvey

or scan the QR code below onto your Smartphone and tap to access the survey.

If you have questions regarding the survey, feel free to contact Whisper Mountain Professional Services, Inc. at (208) 478-1099.

Thank you for your participation!

Sincerely,
Jackie Frey, Coordinator
Twin Falls County Department of Emergency Services
660 Shoshone Street East
P.O. Box 126
Twin Falls, Idaho 83303-0126

Figure 1.5 Invitation to Participate

The survey was provided to members of the All Hazard Mitigation Committee electronically via email. Sixteen members of the Committee participated in the survey. The survey was provided in three ways to

[4] http://www.tfcanal.com/system_information.htm

the public. Non-committee members, representing participating jurisdictions were sent an electronic link via email inviting them to participate. Two Hundred post cards were mailed to a sample of the residences in Twin Falls County listing the electronic link. Figure 1.5 is a replication of the invitation. A press release was also provided to the local newspaper. The newspaper chose not to publish the press release. Figure 1.9 is a copy of the press release. In all there were a total of seventy respondents.

Figure 1.6 provides an overview of where the respondents live in the community.

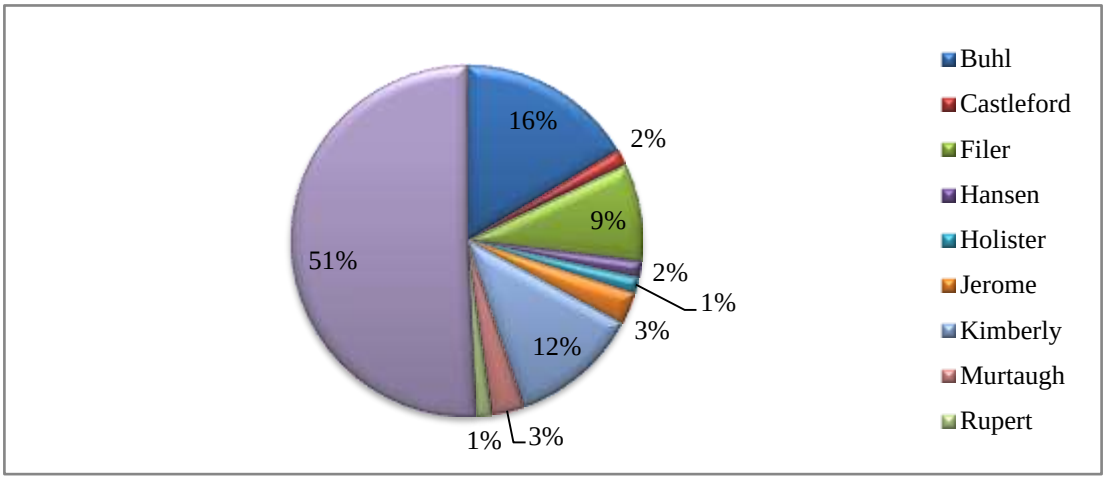


Figure 1.6 Location

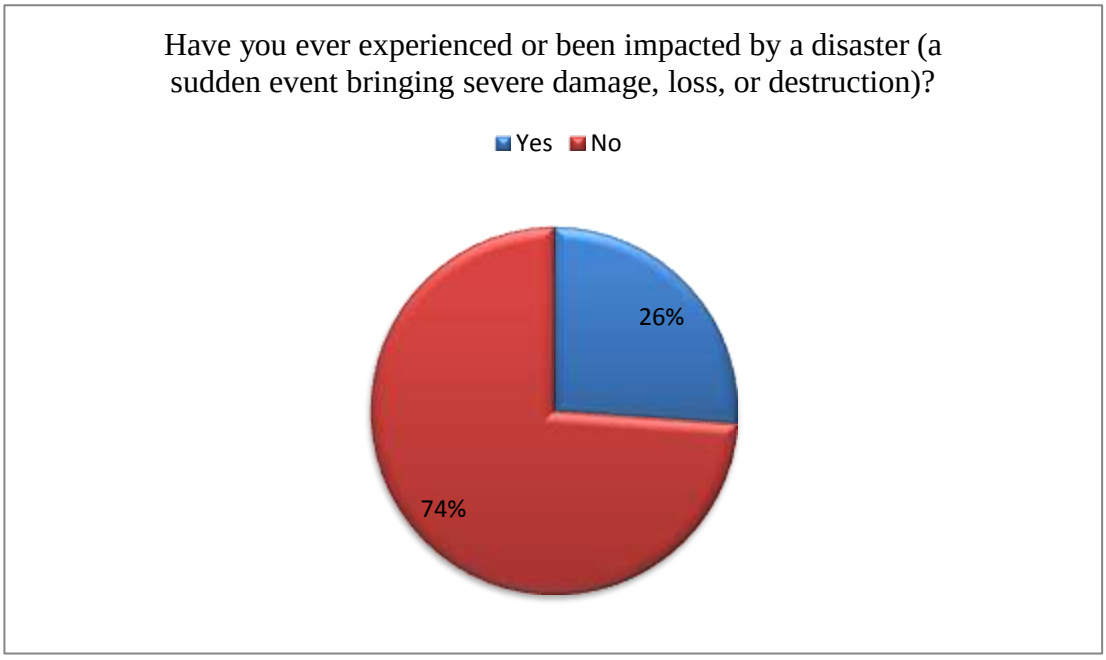


Figure 1.7 Disaster Experience

Figure 1.8 provides the ranking of the hazards in the community by respondents.

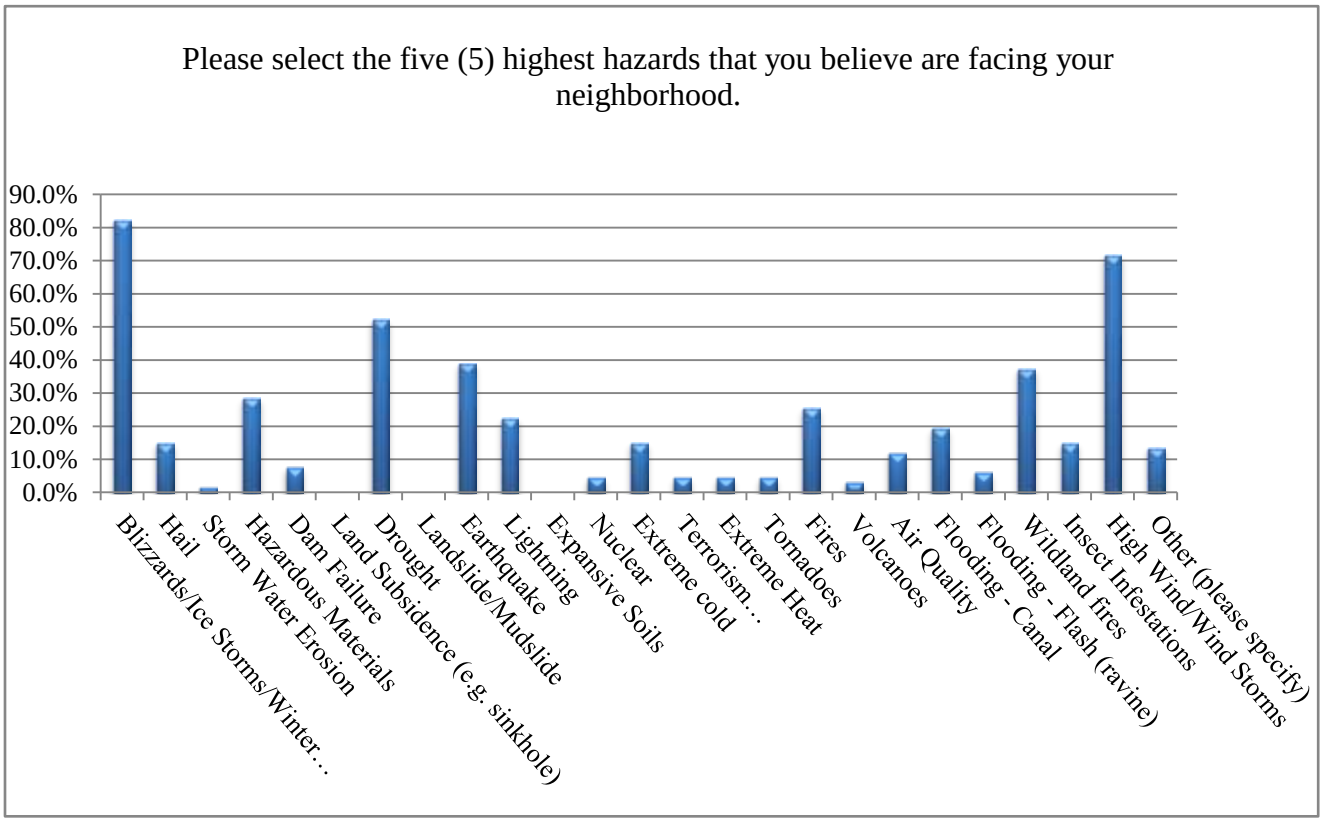


Figure 1.8 Hazard Ranking

The top five hazards as perceived by the Community are:

1. Blizzards/Ice Storms, Winter Storms
2. High Winds/Wind Storms
3. Drought
4. Earthquake
5. Wildland Fires

Twin Falls County All-Hazards Mitigation Plan

Press Release

January 7, 2013

Twin Falls County Seeks Input Hazard Mitigation Plan Update

The Twin Falls County Department of Emergency Services announced the beginning of the public input process for the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan five year update. The Plan was originally developed in 2008 and covers Twin Falls County. The Plan is being revised in a multi-jurisdiction framework focused on the inclusion all of the incorporated Cities in Twin Falls County, those Highway Districts that provide services within the boundaries of Twin Falls County, the Twin Falls Pest Abatement District, and the Twin Falls Canal Company. Other interested public and private entities are also invited to participate.

The Multi-Jurisdiction All Hazard Mitigation Plan is comprised of two important components; 1) the Community Hazard Assessment, and 2) the identification of Mitigation Projects. The Community Hazard Assessment identifies the natural and man-made hazards that have a potential to affect the greater Twin Falls County Community. The mitigation projects are those actions that are proposed to be taken to reduce the risks presented by the hazards on the Community.

Typical Hazards include flooding, wildfire, and severe weather. Protection projects might include the repair or enlargement of culverts or bridges, creating green space around structures, or construction wind breaks.

The Plan update will be completed by Whisper Mountain Professional Services, Inc. from Pocatello, Idaho. Whisper Mountain developed the original Twin Falls County All Hazard Mitigation Plan along with similar Hazard Mitigation Plans in over 25 counties in Idaho, northern Nevada, and northeastern Washington.

Whisper Mountain is conducting a community survey seeking input from the public as part of the update process. The survey is designed to identify what members of the community consider to be the risks posed by natural and man-made hazards. It also measures the community's perception of the level of risk those hazards pose. The survey can be accessed online at https://www.surveymonkey.com/s/TwinFallsSurvey . Two Hundred post cards were mailed out this week to residents of the Community requesting their participation in the Survey; however, others members of the community who are interested are also encouraged to go to the internet link provided and complete the survey.

If you have questions regarding the survey or would like to participate in any way in the planning process please feel free to contact Ms. Jackie Frey, the Twin Falls County Department of Emergency Services Coordinator at (208) 736-4264 or Dr. Rick Fawcett at Whisper Mountain Professional Service, Inc. at (208) 478-1099.

Figure 1.9 Press Release

Continued Public Participation

The Twin Falls Department of Emergency Services is dedicated to the concept of public involvement in the planning process, including the review and updating of the Plan. Copies of the Plan will be made available to the public by appropriate County departments and outside agencies. The public will be provided with the opportunity to provide input into Plan revisions and updates. To this end, public meetings will be held when deemed necessary by the Coordinator, providing a forum where the public can express concerns, opinions, or new alternatives. These will be recorded and considered by the Committee when updating the plan. Under the direction of the Board of County Commissioners, the Twin Falls Department of Emergency Services Coordinator will be responsible for using County resources to publicize public meetings and to maintain public involvement.

Plan Monitoring and Review

The Twin Falls County AHMP maintenance process includes a schedule for annually monitoring and evaluating the programmatic outcomes called for in the Plan, and for producing a Plan revision every five years.

The Plan will be reviewed on an annual basis by the Twin Falls Department of Emergency Services Coordinator and reviewed and revised every five years by the committee to determine the effectiveness of programs and to reflect changes that may affect mitigation priorities. The Coordinator, or designee, will be responsible for contacting the Mitigation Committee members and organizing the review. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan. The Committee will review the goals and action items to determine their relevance to changing situations in the County as well as changes in Federal policy, and to insure that they address current and expected conditions. The Committee will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The organizations responsible for the various action items will report on the status of the projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised or removed.

The Coordinator or designee will be responsible to insure the update of the Plan. The Coordinator will also notify all holders of the Twin Falls County AHMP and affected stakeholders when changes have been made. Every five years the updated plan will be submitted to the State of Idaho Bureau of Homeland Security's Mitigation Program and the Federal Emergency Management Agency for review.

Section 2 Hazard Identification and Risk Assessment

Hazard Definitions

Hazards that pose a threat to human life, health, and well-being are myriad and no attempt is made here to compile an exhaustive list. Those that are addressed in disaster planning are generally categorized as "natural" or "technological. FEMA contains a thorough discussion of hazards in the section entitled "FEMA's Multi-Hazard Identification and Risk Assessment (MHIRA)"[5]. Some hazards are a threat to all geographic areas while others (e.g. Tsunami in coastal regions) are not. Hazards that have been identified as significant in this County and that are considered in this Plan are:

Natural Hazards

- Weather:
  - Severe Weather
    - Extreme Heat
    - Lightning
    - Hail
    - Straight Line Wind
    - Tornado
  - Severe Winter Storm
    - Extreme Cold
  - Drought
- Flooding:
  - Flash Flood
  - River Flooding
  - Dam Failure
  - Canal Failure
- Geologic:
  - Earthquake
  - Landslide/Mudslide
- Other:
  - Wildfire
  - Biological
    - Burrowing Rodents
    - Vector Borne Diseases
    - Human Borne Disease (Pandemic)

Technological (Manmade) Hazards

- Structural Fire
- Nuclear Event
- Hazardous Material Event
- Riot/Demonstration/Civil Disorder
- Terrorism

[5] http://www.fema.gov/plan/prevent/fhm/ft_mhira.shtm

Section 2.1 Weather Hazards

The impact of weather hazards may be widespread (drought) or more localized (lightning), but all have the potential to be severe and directly life-threatening. Historical weather data is generally available in good detail over long time periods, allowing for reasonably accurate risk assessment for planning purposes.

For the purposes of this analysis Weather Hazards has analyzed in three categories, 1) severe weather, 2) severe winter storms, and 3) drought. Related attributes to them have been analyzed and a brief analysis of each with a sub-hazard ranking provided. The sub-rankings have been taken into account in the determination of the overall hazard rankings for each category.

Severe Weather

Severe Weather includes those hazards that are typically found during the spring, summer, and early fall season of the year in Twin Falls County. Included in this category are extreme heat, lightning, hail, straight line wind, and tornado. Each hazard is examined independently; however, it is recognized that these hazards typically occur together.

Extreme Heat

Description

The term “extreme heat,” sometimes called “heat wave,” is to some extent a relative one describing a period when weather conditions include temperatures and humidity significantly higher than those usual for a particular geographic area. The National Weather Service (NWS) issues alerts to the public based on its Heat Index which takes both temperature and humidity into account (see Figure 2.1.1). The NWS will initiate alert procedures when the HI is expected to exceed 105°- 110°F (depending on local climate) for at least two consecutive days. The effects of extreme heat are often exacerbated in large urban areas due to the heat island effect and because stagnant atmospheric conditions may trap pollutants. Extreme heat conditions are not common to Idaho where, in general, humidity is low and weather patterns vary.[6]

Historical Frequencies

The record high for Twin Falls County is 110 degrees F in the City of Twin Falls on July 10, 2003. The record high for Castleford is 105 degrees F which occurred on July 14, 1978. The record high temperature for the Buhl was 106 degrees F occurring on July 24, 2003. The following charts show the extreme maximum and minimum temperatures for Twin Falls, Castleford, and Buhl, Idaho.

[6] http://www.nws.noaa.gov/om/brochures/heat_wave.shtml

NOAA's National Weather Service Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

Figure 2.1.1: National Weather Service Heat Index Chart

Because humidity has a rather large effect on the NWS Heat Index, temperature and humidity data from the Twin Falls Airport were used to calculate the maximum heat index for Twin Falls Idaho. The annual maximum temperature in Twin Falls County ranges from 100 to 110 degrees Fahrenheit, but because of the low relative humidity the heat index temperature is usually lower than the actual temperature. The chart below shows the results of the Heat Index analysis. The adapted temperature is an increase of the Heat Index by 15 degrees because exposure to full sunshine can increase the heat index values by up to 15 degrees Fahrenheit[7].

Year	Annual Maximum Temperature	Heat Index	Adapted Heat Index
1998	104	95	110
1999	99	91	106
2000	101	92	107
2001	101	92	107
2002	106	97	112
2003	107	97	112
2004	98	89	104
2005	100	91	106
2006	103	94	109

[7] http://www.weatherimages.org/data/heatindex.html

Year	Annual Maximum Temperature	Heat Index	Adapted Heat Index
2007	105	96	111
2008	101	92	107
2009	101	92	107
2010	100	91	106
2011	99	90	105

Table 2.1.1: Annual Maximum Temperatures

Impacts

The primary impact of extreme heat is on human health causing such disorders as sunstroke, heat exhaustion, and heat cramps. Particularly susceptible are the elderly, small children, and persons with chronic illnesses. There are also undoubtedly indirect and chronic health effects from extreme heat, the magnitude of which are difficult or impossible to estimate. Environmental effects can include loss of wildlife and vegetation and increased probability of wildfires.

Loss Estimates

Extreme heat places high demands on electrical power supplies that can lead to blackouts or brownouts. Economic impacts result from such factors as increased energy prices, loss of business as people avoid leaving their homes to avoid the heat, and agricultural losses. The magnitude of these and other, more indirect impacts is, again, difficult to assess, but for severe heat waves have been estimated to be in the billions to hundreds of billions of dollars.

Hazard Evaluation

Repetitive Loss - none

Extreme Heat		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	3	Medium
Vulnerability	1	Negligible
Spatial Extent	4	Catastrophic
Magnitude	2	Limited
Total	**12**	**Low**

Lightning

Description

Lightning is defined by the NWS as follows: "A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground, or between the ground and a cloud." A lightning discharge may be over five miles in length, generate temperatures upwards of 50,000^{o}F, and carry 50,000 volts of electrical potential. Lightning is most often associated with thunderstorm clouds, but lightning can strike as far as five to ten miles from a storm. Thunder is caused by the rapid expansion of air heated by a lightning strike. Cloud-to-ground lightning strikes occur with much less frequency in the northwestern U.S. than in other parts of the country.

Historical Frequencies

Place	Date	Time	Event	Magnitude/details
Hollister	May 23, 1911	unk	Lightning	One fatality
Filer	June 4, 1913	unk	Lightning	Struck a house, one fatality
Twin Falls County	July 22, 1913	unk	Lightning	One fatality, destroyed haystacks and killed several horses
Twin Falls County	June 18, 1918	unk	Lightning	Struck a house, no fatalities
Twin Falls County	July 23, 1923	unk	Lightning	Struck a home and burned to ground
Rogerson	July 29, 1942	Unk	Lightning	Started fire
Buhl	July 30, 1946	unk	Lightning	Power outages, struck and killed 7 cows
Twin Falls County	May 19, 1962	unk	Lightning	Struck irrigation pump

Table 2.1.2: Twin Falls County Historical Lightning Events

No bodily harm or economic loss has been reported in Twin Falls County in recent history. The most significant damage done by lightning is the starting of wildfires. Those effects are discussed in the wildfire section of this Plan.

Weather data indicates that lightning occurs fairly frequently in Twin Falls County although strikes affecting the public are relatively rare. As can be seen in Table 2.1.2, however, there have been fatalities and property loss in the County due to lightning and the potential for such events is always present during thunderstorms.

Impacts

Lightning is the second most deadly weather phenomenon in the U.S., being second only to floods. On average, sixty to seventy deaths per year are attributed to lightning nationally. In Idaho the average is less than one per year. Despite the enormous energy carried by lightning, only about 10% of strikes are fatal. Injuries include central nervous system damage, burns, cardiac effects, hearing loss, and trauma. The effects of central nervous system injures tend to be long-lasting and severe, leading to such disorders as depression, alcoholism, and chronic fatigue and in some cases to suicide. Lightning also strikes structures causing fires and damaging

electrical equipment. Wildland fires are often initiated by lightning strikes, as are petroleum storage tank fires. About one third of all power outages are lightning-related.

Loss Estimates

The magnitude of economic losses is difficult to estimate. Government figures suggest annual national costs at around $30 million, but some researchers find evidence that losses may be in the billions of dollars.

Hazard Evaluation

Lightning strikes occur with some regularity in Twin Falls County. Of special concern are the wide open fields and metal farm equipment. Several of the fatal lighting strikes happened while the individual was working in a field.

Repetitive Loss - none

Lightning		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	3	Critical
Total	**11**	**Low**

Hail

Description

The NWS definition of "hail" is: Showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud. Its size can vary from the defined minimum, a little over a quarter of an inch, up to 4.5 inches or larger. "Severe hail" is defined as being 0.75 inches or more in diameter. The largest hailstones are formed in supercell thunderstorms because of their sustained updrafts and long duration. Hail and severe hail are relatively uncommon in Idaho. In the ten year period from 1986 to 1995 the national weather service recorded severe hail in Idaho on 113 occasions, while in the same time period severe hail was recorded in Colorado nearly 1,400 times.[8]

Historical Frequencies

Place	Date	Time	Event	Magnitude	Reported Damage
Twin Falls County	6/20/1963	8:00 PM	Hail	1.50 in.	unk
Twin Falls County	6/15/1967	6:00 PM	Hail	unk	unk
Twin Falls County	6/21/1967	8:00 PM	Hail	0.75 in.	unk
Twin Falls County	7/21/1970	5:00 PM	Hail	2.00 in.	unk
Twin Falls County	8/14/1979	1:30 PM	Hail	1.75 in.	unk

[8] http://www.ems.psu.edu/~nese/ch9web.htm

Place	Date	Time	Event	Magnitude	Reported Damage
Twin Falls County	8/14/1979	3:00 PM	Hail	1.00 in.	unk
Twin Falls County	6/14/1984	5:45 PM	Hail	0.75 in.	unk
Twin Falls County	7/14/1985	7:30 PM	Hail	1.75 in.	unk
Twin Falls County	4/30/1987	2:30 PM	Hail	1.00 in.	unk
Twin Falls County	8/4/1991	3:30 PM	Hail	0.75 in.	unk
Twin Falls City	3/17/1993	6;15 PM	Hail	0.75 in.	unk
Twin Falls County	10/11/1994	5:30 PM	Hail	unk	unk
Rogerson, Murtaugh	6/13/1996	2:00 PM	Hail	1.00 in.	unk
Rogerson	6/27/1996	8:30 PM	Hail	0.75 in.	unk
Kimberly	5/31/1997	2:35 PM	Hail	0.75 in.	unk
Twin Falls Airport	8/7/1997	6:30 PM	Hail	0.75 in.	unk
Hollister	8/12/1997	2:30 PM	Hail	0.75 in.	unk
Rogerson	9/6/1997	2:25 PM	Hail	1.25 in.	unk
City of Buhl	5/16/1998	1:25 PM	Hail	0.75 in.	unk
Twin Falls City	6/25/1998	3:20 PM	Hail	1.00 in.	unk
Twin Falls City	8/9/1998	2:40 PM	Hail	0.88 in.	unk
Hollister	6/29/2004	2:55 PM	Hail	1.00 in.	unk
City of Buhl	5/5/2005	5:05 PM	Hail	0.75 in.	$5,000
Rogerson	5/29/2005	1:20 PM	Hail	0.75 in.	$3,000
Twin Falls City	6/25/2005	2:35 PM	Hail	0.75 in.	unk
Hollister	6/8/2006	11:35 AM	Hail	0.88 in.	unk
Twin Falls City	7/6/2006	2:45 PM	Hail	0.88 in.	unk
Filer	5/28/2008	1:24 PM	Hail	1.00 in.	unk
Amsterdam	7/22/2008	1:20 PM	Hail	0.75 in.	unk
Twin Falls	6/5/2009	1:00 PM	Hail	1 in.	unk
Twin Falls	7/5/2009	3:50 PM	Hail	1 in.	unk

Table 2.1.3: Reported Hails Storm Events with Damage

In any given year there is a 61% chance that a severe hail event will occur that will cause damage either to personal property or agricultural crops. From 1963 to 2011 there were 30 recorded damage-causing hail storm events. Damage ranged from broken windows to destroyed crops with the most costly damages being to crops. In May of 2005, two hail events caused $8,000 worth of damage (see Table 2.1.3) On June 20, 1963 a hailstorm destroyed nearly $4 Million in crops over three counties: Jerome, Twin Falls, and Cassia. Another hailstorm was

reported on July 21, 1970. This storm focused on the Rogerson area and "completely destroyed all of the crops."[9]

As shown in Figure 2.1.2, hail events occur most frequently in the northern portion of the County, in the Snake River plain crossing the Magic Valley. Storms also follow the U.S. Highway 93 corridor down the center of the County into Nevada. The Magic Valley is the most populous area in the County and the County's major agricultural lands lie along the Snake River Plain and south across the central part of the County. Thus, both the population and the agricultural centers of Twin Falls County fall within the area most susceptible to major hail storms.

Impacts

Deaths and injuries due to hail have occurred but are rare.

Loss Estimates

Economic loss can be extensive, especially to agricultural based economies. Hail is very damaging to crops. Severe hail may cause extensive property damage including damage to vehicle paint and bodywork, glass, shingles and roofs, plastic surfaces, etc. Hail loss nationally is estimated at over one billion dollars annually. Twin Falls County has only had two incidents where monetary losses were reported totaling $8,000.

[9] http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

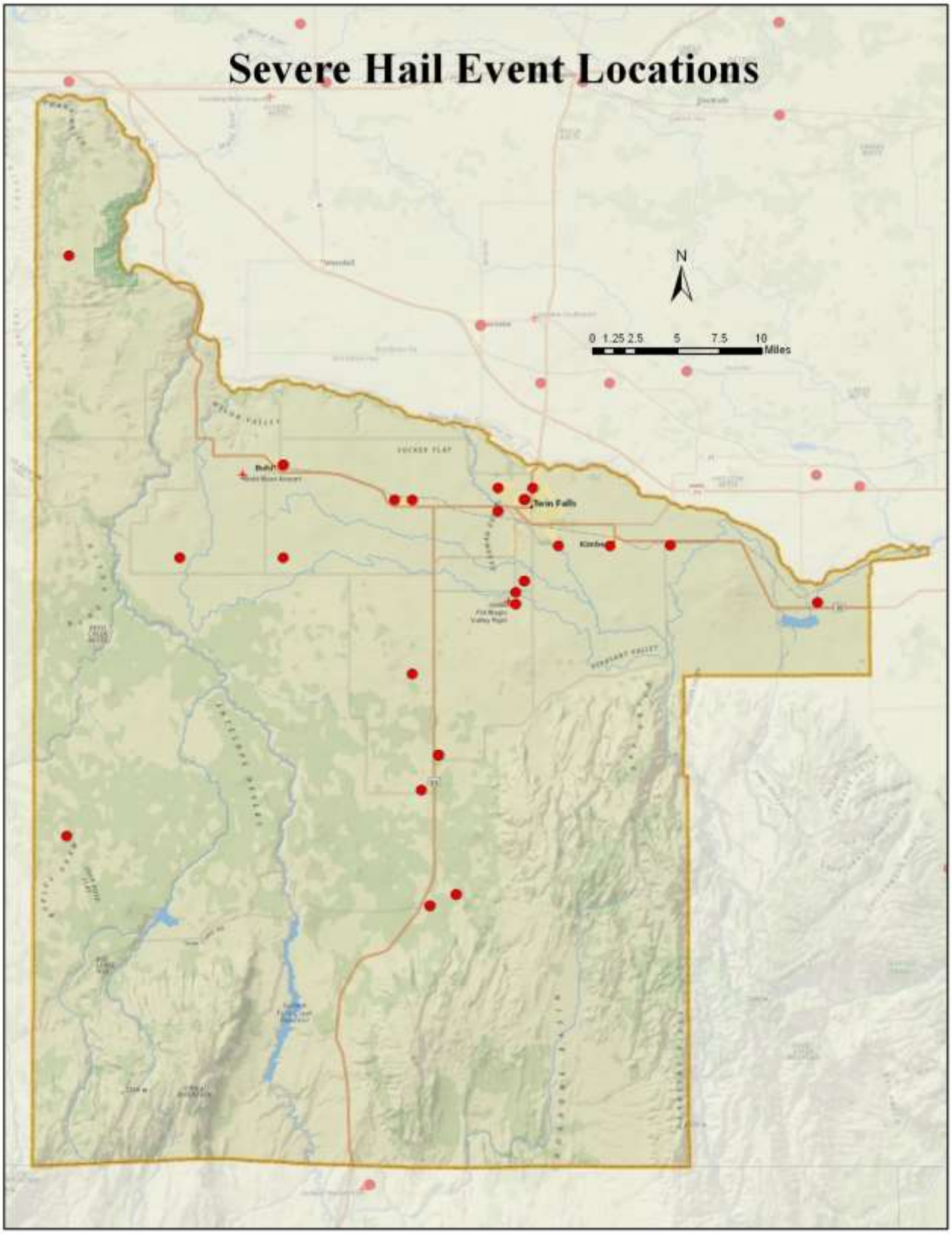


Figure 2.1.2 Twin Falls County Historic Hail Events Map

Hazard Evaluation

Repetitive Loss - none

Hail		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	2	Limited
Spatial Extent	1	Negligible
Magnitude	2	Limited
Total	**12**	**Low**

Tornado

Description

The NWS describes tornado as, "a violently rotating column of air, usually pendant to a cumulonimbus, with circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a local scale, it is the most destructive of all atmospheric phenomena." Like hail, most tornadoes are spawned by supercell thunderstorms. They usually last only a few minutes although some have lasted more than an hour and traveled several miles. Wind speeds within tornadoes are estimated based on the damage caused and expressed using the Enhanced Fujita (EF) Scale (Table 2.1.4)

EF scale	Class	Wind speed		Description
		mph	km/h	
F0	**weak**	**65-85**	**105-137**	**Gale**
F1	**weak**	**86-110**	**138-177**	**Moderate**
F2	**strong**	**111-135**	**178-217**	**Significant**
F3	**strong**	**136-165**	**218-266**	**Severe**
F4	**violent**	**166-200**	**267-322**	**Devastating**
F5	**violent**	**> 200**	**> 322**	**Incredible**

Table 2.1.4: EF Scale

Idaho has relatively few tornadoes, averaging three reported per year between 1953 and 2004. Tornadoes of F2 strength or greater are extremely rare in Idaho.

Historical Tornado Events

Place	Date	Time	Event	Magnitude	Reported Damage
Twin Falls	9/8/1930		Tornado		UNK
Twin Falls County	6/5/1957	3:45 PM	Tornado	F1	UNK
Twin Falls County	9/8/1985	6:00 PM	Tornado	F1	$25,000.00
Twin Falls County	6/24/1986	9:00 PM	Tornado	F1	$3,000.00
Twin Falls County	4/20/1990	2:24 PM	Tornado	F0	UNK
Twin Falls County	9/3/1990	3:15 PM	Tornado	F0	UNK
Twin Falls County	9/10/1991	3:00 PM	Tornado	F0	UNK
Twin Falls City	3/17/1993	6:00 PM	Tornado	F0	UNK
Twin Falls County	3/17/1993	7:14 PM	Tornado	F0	UNK
Twin Falls County	5/15/1993	2:45 PM	Funnel Cloud	NA	UNK
Twin Falls County	8/11/1993	2:00 PM	Funnel Cloud	NA	UNK
Twin Falls County	6/9/1995	2:45 PM	Funnel Cloud	NA	UNK
Twin Falls County	6/12/1997	5:45 PM	Funnel Cloud	NA	UNK
City of Buhl	5/12/1998	1:45 PM	Tornado	F0	UNK
Twin Falls	6/10/1998	11:13 AM	Funnel Cloud	NA	UNK
Twin Falls	7/22/2008	1:30 PM	Tornado	NA	UNK
Twin Falls	3/16/2011	3:00 PM	Tornado	NA	UNK

Table 2.1.5 – Twin Falls County Historical Tornado Events

According the NWS Storm Event Database, Twin Falls County has experienced eleven (11) tornadoes since 1957 (Table 2.1.5). Three (3) of those tornadoes were magnitude F1 on the EF Scale. Those three (3) events caused an estimated $28,000 in damage. Of the remainingeight, six (6) tornadoes registered F0 on the EF Scale and caused little to no damage. The following map (Figure 2.1.3) shows the locations of those tornadoes which follow the Snake River Plain through the Magic Valley. This area is the most heavily populated and farmed in Twin Falls County.

While the frequency of tornado occurrences in the County is relatively low according to historical data, there is an increase in the number of events from 1985 to the present. This increase is probably due, in large part, to the evolution of remote sensing and data collection technology rather than an actual increase in the numbers of tornadoes.

Impacts

Loss of utilities (primarily due to fallen trees) is common following tornadoes and, depending on circumstances, communities might be deprived of almost any kind of goods and services including food, water and medical care. Agriculturally, crop and livestock loss is also possible as is loss of timber production.

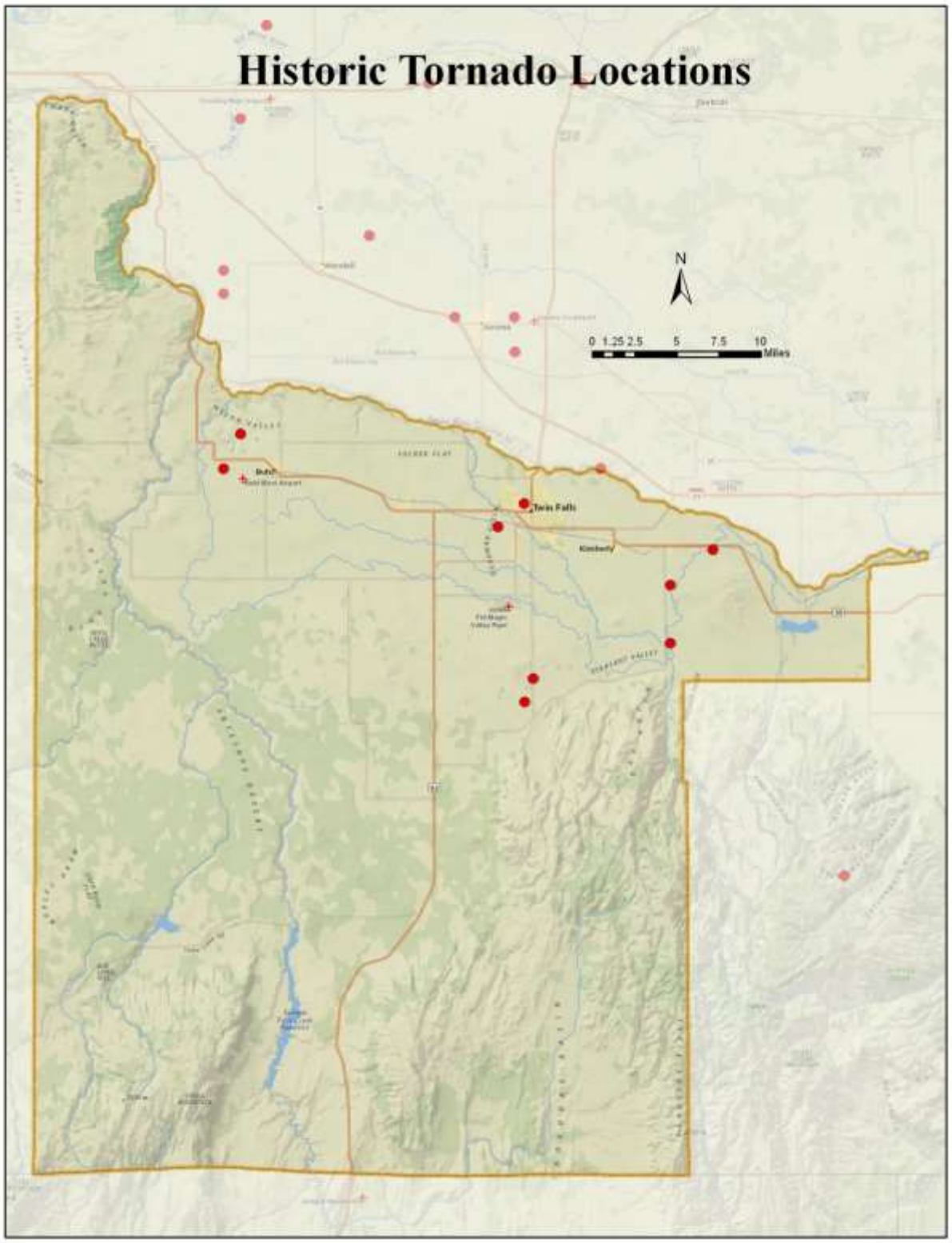


Figure 2.1.3: Tornado Event Locations

Loss Estimates

Since 1930, Twin Falls County has experienced twelve (12) tornados with reported losses totaling $28,000. Only two (2) tornados were reported to have created a property loss.

Hazard Evaluation

Historically, tornadoes are rare in Twin Falls County and, when they do occur, are not severe. They do, however, occur most frequently in the County's most highly populated area.

Repetitive Loss - none

Tornado		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	4	Catastrophic
Total	**12**	**Low**

Straight Line Wind

Description

The term "straight line wind" is used to describe any wind not associated with rotation, particularly tornadoes. Of concern is "high wind," defined by the NWS as, "Sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration." Like tornadoes, strong, straight line winds are generated by thunderstorms and they can cause similar damage. Straight line wind speeds can approach 150 mph, equivalent to those in an F3 tornado.

Historical Frequencies

Table 2.1.6 lists high wind events in Twin Falls County. The Team found thirty-three (33) recorded high wind events with the National Climatic Data Center. The winds follow the Snake River Plain and extend South following US Hwy 93 into Nevada (Figure 2.1.4). Again, these are the most populous and heavily farmed areas in the County. However, not all recorded high wind events are found on the map due to reporters not giving exact locations.

Place	Date	Time	Event	Magnitude	Estimated Damage
Twin Falls County	7/24/1958	3:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	7/26/1965	4:30 AM	Thunderstorm Winds	unk	$0.00
Twin Falls County	9/9/1967	6:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	9/29/1969	7:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	7/18/1970	9:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	6/22/1973	8:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	7/9/1983	5:00 PM	Thunderstorm Winds	unk	$0.00

Place	Date	Time	Event	Magnitude	Estimated Damage
Twin Falls County	8/22/1983	5:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	4/8/1984	3:00 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	5/13/1984	7:00 PM	Thunderstorm Winds	52 kts.	$0.00
Twin Falls County	7/6/1985	8:30 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	3/23/1988	10:45 AM	Thunderstorm Winds	50 kts.	$0.00
Twin Falls County	5/10/1989	4:30 PM	Thunderstorm Winds	50 kts.	$0.00
Twin Falls County	3/4/1991	9:38 PM	Thunderstorm Winds	60 kts.	$0.00
Twin Falls County	8/4/1991	3:10 PM	Thunderstorm Winds	55 kts.	$0.00
Twin Falls County	8/27/1991	5:30 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	9/10/1991	3:30 PM	Thunderstorm Winds	unk	$0.00
Twin Falls County	4/17/1992	11:40 AM	Thunderstorm Winds	60 kts.	$0.00
Kimberly	3/17/1993	5:10 PM	Thunderstorm Winds	unk	$500,000.00
Twin Falls County	5/3/1993	5:00 PM	Thunderstorm Winds	unk	$50,000.00
Twin Falls County	5/6/1994	6:53 PM	Thunderstorm Winds	unk	$500,000.00
Hollister	6/13/1996	3:20 PM	Thunderstorm Winds	60 kts.	$0.00
Filer	7/16/1996	2:20 PM	Thunderstorm Winds	60 kts.	$15,000.00
Twin Falls City	7/16/1996	3:00 PM	Thunderstorm Winds	60 kts.	$50,000.00
Filer	7/7/1998	7:00 PM	Thunderstorm Winds	50 kts.	$25,000.00
Filer	7/30/1998	3:14 PM	Thunderstorm Winds	61 kts.	$200,000.00
South TF County	2/14/2000	12:00 PM	High Wind	74 kts	$0.00
Twin Falls City	8/4/2000	3:29 PM	Thunderstorm Winds	60 kts.	$0.00
Twin Falls Airport	6/26/2002	2:58 PM	Thunderstorm Winds	53 kts.	$0.00
Rogerson	7/14/2002	6:25 PM	Thunderstorm Winds	50 kts.	$0.00
Kimberly	8/22/2003	5:51 PM	Thunderstorm Winds	60 kts.	$0.00
South TF County	6/13/2006	3:00 PM	High Wind	54 kts	$.00
Hollister	8/6/2006	10:05 PM	Thunderstorm Winds	52 kts.	
Twin Falls	3/29/2009	UNK	High Wind	UNK	$35,034
Twin Falls	12/30/2011	7:50 PM	Thunderstorm Winds	59 kts	$0.00
Twin Falls	10/16.202	10:50 AM	Thunderstorm Winds	61 kts	$0.00

Table 2.1.6 Wind Events

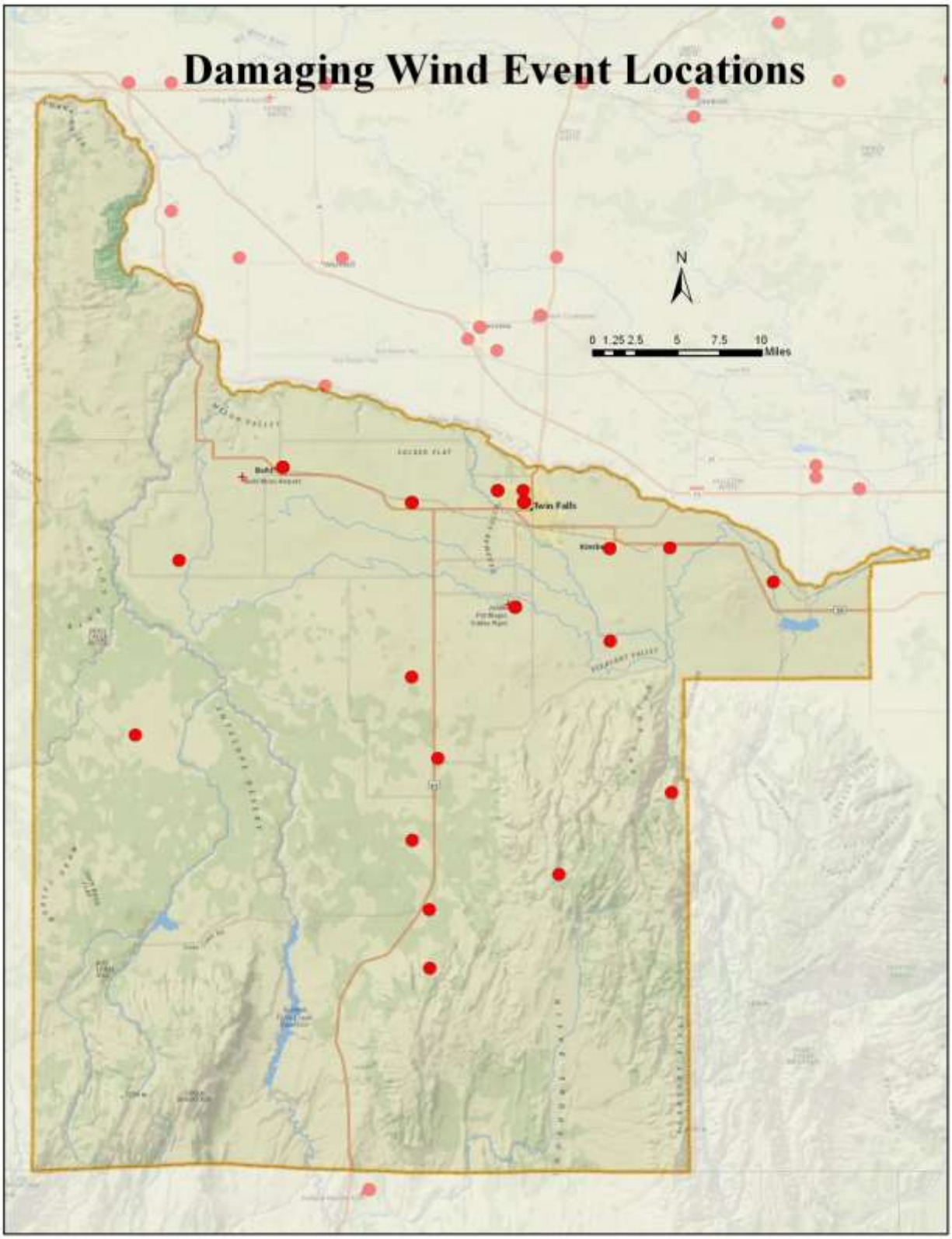


Figure 2.1.4: Twin Falls County Historic Damaging Wind Event Map

Relatively high velocity straight line winds occur frequently in Twin Falls County. A Pearson Log III analysis was run using the annual average daily wind speed, annual maximum 5 second wind speed, and the annual maximum 2 minute wind speed for the past 20 years. The results are in the following tables. They show the return intervals and probability of sustained wind events and wind gusts in Twin Falls County.

Twin Falls County can expect average daily wind speeds to exceed 30 miles per hour on a 5 year return interval. 100 year 5 second wind gusts are calculated to be 98 miles per hour, and there is 50% chance that 2 minute wind speeds will exceed 50 miles per hour on a yearly basis.

Return Period (Years)	Probability (Percent)	Annual Maximum Daily Average Wind Speed	Annual Maximum 2 Minute Wind Speed	Annual Maximum 5 Second Wind Speed
1.05	95.2	21	42	51
1.11	90.1	22	44	54
1.25	80	24	46	57
2	50	27	50	65
5	20	30	54	74
10	10	32	56	80
25	4	34	59	87
50	2	35	60	93
100	1	37	61	98
200	0.5	38	62	103

Table 2.1.7: Return Interval for High Wind Events

Impacts

The impacts of straight line winds are virtually the same as those from tornadoes with similar wind speeds. The damage is distinguishable from that of a tornado only in that the debris generally deposited in nearly parallel rows. Downbursts are particularly hazardous to aircraft in flight.

Loss Estimates

Historically, the majority of damage has been done to outlying buildings and to crops, with losses ranging from $15,000 to $500,000 (Table2.1.6). It should be noted that losses reported in the National Weather Service (NWS) database are most likely seriously underreported, primarily because property owners fail to report minor damages. Given the frequency of high straight line wind events, these minor damages undoubtedly add up to a large sum. Thus, the impact of severe wind events probably greatly exceeds the total reported Twin Falls County losses of $925,034.

Hazard Evaluation

Straight line wind events have occurred in nearly every part of the County but are most frequent in the Snake River Plain and along the U.S. Highway 93 corridor. Heavy damages have occurred in some instances and it is likely that smaller, unreported losses are often sustained.

Agricultural land maintenance practices make dust storms likely during the spring and fall. These are particularly hazardous to traffic on U.S. Highway 93.

The Hansen and Twin Falls bridges spanning the Snake River Canyon are routinely affected by high wind gusts resulting from the wind tunnel effect of the canyon. High profile vehicles such as tractor-trailers have been blown over on these bridges during intense wind storms in the past few years.

Repetitive Loss – There is repetitive loss annually due to straight line winds in Twin Falls County. The loss is primary to out buildings and fences. Siding is at times removed from homes and businesses. Top soil is lost in the spring especially during the planting season where the soil is loose and little moisture is present.

Straight Line Wind		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	3	Critical
Spatial Extent	3	Critical
Magnitude	3	Critical
Total	**16**	**Medium**

Severe Weather Hazard Evaluation

Repetitive Loss:

Severe Weather occurs frequently in Twin Falls County and it is assumed that there are repetitive losses especially caused by Straight Line Wind damage; however, this type of loss is not reported to a single point and thus is hard to track and quantify.

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Extreme Heat	2	3	1	4	2	**12**	**L**
Lightning	2	4	1	1	3	**11**	**L**
Hail	3	4	2	1	2	**12**	**L**
Tornado	2	4	1	1	4	**12**	**L**
Straight Line Wind	3	4	3	3	3	**16**	**H**
Composite Ranking							
Severe Weather	3	4	3	3	3	**16**	**H**

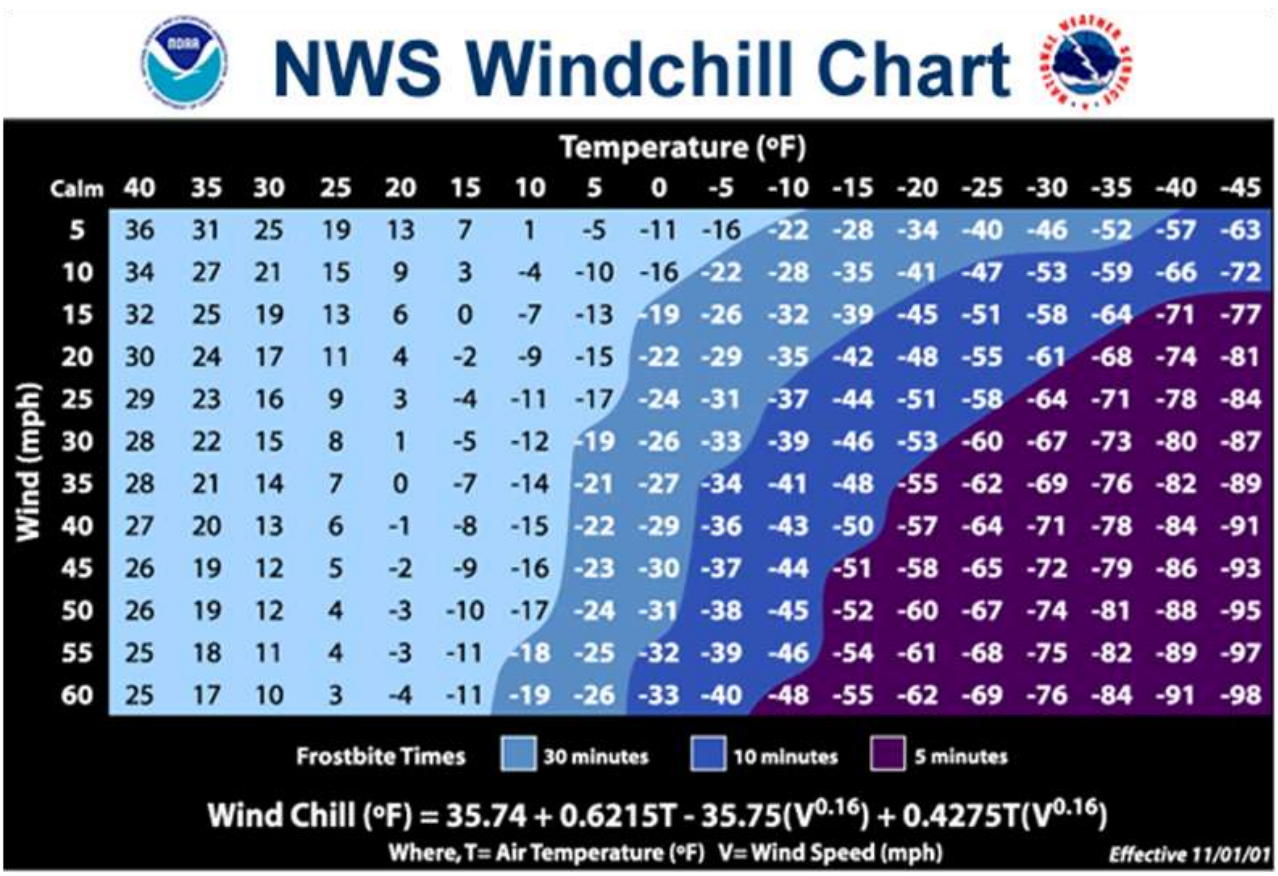
Severe Winter Storms

The Severe Winter Storms category includes extreme cold and winter storms. It should be noted that Straight Line Wind is also associated with Severe Winter Storms commonly referred to as Blizzard Conditions where snow is driven by wind causing drifting.

Extreme Cold

Description

"Extreme cold" is another of the terms describing hazards that must be defined relative to what is considered normal in a given locale. What might be considered extreme cold varies considerably in the State of Idaho where normal winter temperatures in the southwest are appreciably more moderate than those in the northwest and far north. Very cold temperatures become a particular hazard when accompanied by winds of 10 mph or greater. The NWS has developed a formula for



Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Figure 2.1.5
National Weather Service Windchill Chart
http://www.weather.gov/om/windchill/index.shtml

calculating "wind chill" based on temperature and wind speed (see Figure 2.1.5), and in this region issues wind chill advisories when the wind chill temperature are predicted to be -10°F or less with winds of 10 mph or higher for one hour or more. Wind chill warnings are issued when wind chill temperatures will be -20°F or less with winds of 10 mph or higher for one hour or

more. As with extreme heat, extreme cold is of greatest concern when the condition persists for an extended period of time.

Historical Frequencies

Data was analyzed from the Twin Falls Airport weather station for the years, 1998-2011, to identify the return frequency of extreme cold events. This weather station was chosen because it is the only current weather station in the County that contains wind speed data.

According to the data, the average annual minimum temperature (with wind chill incorporated) is -12 degrees F.

The following table details the annual minimum temperature with wind chill factored in for the past 13 years.

Year	Annual Minimum Temperature
1998	-22
1999	-5
2000	-3
2001	-8
2002	-10
2003	-6
2004	-17
2006	-11
2007	-13
2008	-16
2009	-21
2010	-18
2011	-12

Table 2.1.8: Annual Minimum Temperatures

Annual Probability (Percent)	Return Period (Years)	Annual Minimum Temperature
95.2	1.05	-4
90.1	1.11	-5
80	1.25	-7
50	2	-12
20	5	-18
10	10	-22
4	25	-25
2	50	-28
1	100	-30
0.5	200	-31

Table 2.1.9: Minimum Temperature Return Intervals

A Pearson Log II calculation was run on the data to determine the return interval of extreme cold events in Twin Falls County. The results of that analysis are found below.

Twin Falls County can expect to have temperatures below -4 degrees F on an annual basis. A 100 year event would be temperatures below -30 degrees F.

Impacts

Health effects of exposure to extreme cold include hypothermia and frostbite, both of which can be life-threatening. Infants and the elderly are most susceptible. In the United States, nearly 700 deaths are directly attributed to hypothermia annually.

Loss Estimates

Extreme cold may cause loss of wildlife and vegetation, and kill livestock and other domestic animals. Economic loss may result from flooding due to burst pipes, large demands on energy resources, and diminished business activity. River flooding may take place as a result of the formation of ice jams.

Hazard Evaluation

Extreme cold affects the individual, families, cities, and the County. Damage typically occurs to individual properties; however, city water systems are usually vulnerable to extreme cold. Repairs to water line freeze ups and breaks typically require the roadways to be excavated, necessitating additional maintenance and repairs during the warmer months. As demonstrated in the historical frequency section, areas of the County can expect as much as 20-25 degrees difference, depending on elevation.

Extreme Cold can cause death and injury especially to those working or stranded outside for prolonged periods. Economic loss is related to private individuals, businesses, and government agencies in heating of homes and facilities. Additional losses can be expected to the livestock industry. During extreme cold periods the schools are closed to protect children traveling to and from school.

During the spring, summer, and fall, temperatures can drop low enough to produce frost. While such temperatures are not low enough to damage infrastructure or require extra heating costs, it can be devastating to crops. Figure 2.1.7 and Figure 2.1.8 show extreme minimum temperatures recorded at Castleford and Buhl. Extreme minimum temperatures can fall below freezing much of the spring, summer, and fall.

Warning lead times in Twin Falls County usually are a day or two based on forecasts made by the National Weather Service in Boise.

Repetitive Loss - none

Extreme Cold		
Profile Category	**Rating**	**Description**
Historical Occurrence	1	Low
Probability	3	Medium
Vulnerability	2	Limited
Spatial Extent	4	Catastrophic
Magnitude	2	Limited
Total	**12**	**Low**

Winter Storm

Description

The NWS describes "Winter Storm" as weather conditions that produce heavy snow or significant ice accumulations. For purposes of this analysis Severe Winter Storm is defined as any winter condition where the potential exists for a blizzard (winds ≥ 35mph and falling/drifting snow frequently reduce visibility < ¼ mile, for 2 hrs or more) heavy snowfall (valleys 6 inches or more snowfall in 24 hrs mountains 9 inches or more snowfall in 24 hrs), ice storm, and/or strong winds.

Historical Frequencies

Place	Date	Magnitude/details
Twin Falls County	Jan 15, 1915	Heavy rain that turned to sleet/snow with winds > 50 mph. Power outages.
Twin Falls County	Mar 1, 1917	Winter storm that resulted in several bad snow slides. One of the snow slides inflicted severe injuries on a resident
Twin Falls County	Jan 20, 1930	Winter storm that lasted a few days. Roads closed because of drifting snow.
Murtaugh	Feb 8, 1949	Freezing temps, one fatality
Twin Falls County	Jan 8, 1969	Blizzard with winds over 50 mph. Power failures, highway and airport closures.
Twin Falls County	Jan 22, 1999	Winter storm with heavy snow throughout southeast Idaho, 3-5 inches fell in Southern Twin Falls County
Twin Falls County	Feb 9, 1999	Freezing rain, light snow and gusty winds produced hazardous driving conditions in Southern Twin Falls County. About 30 minor accidents and slide offs occurred and authorities had to close I-84 for a few hours.
Twin Falls County	Dec 1, 1999	Winter Storm moving from the North Pacific across Oregon brought 3-4 inches of snow to Southern Twin Falls County
Twin Falls County	Jan 20, 2002	Winter Storm with 3-6 inches of snow in Southern Twin Falls County
Twin Falls County	Dec 28-29, 2003	A major winter storm through southwest Idaho with 6-12 inches of new snow. Strong winds caused blowing and drifting.
Twin Falls County	Feb 26, 2004	Winter storm moving north from Nevada brought 7 inches of snow to Southern Twin Falls County.
Twin Falls County	Jan 8, 2005	11 inches of snow fell on Southern Twin Falls County. The trailing cold front caused strong winds along the Snake River.

Place	Date	Magnitude/details
Twin Falls County	April 20, 2005	8-12 inches of snow fell behind a cold front
Twin Falls County	Dec 20, 2005	Winter storm with heavy snow
Twin Falls County	Dec 21, 2006	Winter storm with heavy snow
Twin Falls County	Feb 27, 2007	Winter storm with 4-5 inches of snow in Southern Twin Falls County
Twin Falls County	Mar 27, 2007	Winter storm

Table 2.1.10: Twin Falls County Historical Winter Storm Events

Neither the NWS Severe Storm Event Database or SHELDUS have any recorded severe winter events since 2007. The following table details the average and maximum snowfall per month in Twin Falls County.

Month	Mean	High	High Year
January	6.6	26.2	1996
February	5.1	24.3	2004
March	2.8	13.2	1974
April	1.3	8.6	1975
May	0.5	12	1975
June	0	0.1	1997
July	0	0	NA
August	0	0	NA
September	0.1	3	1978
October	0.4	8	2008
November	3.2	22.6	1985
December	6.3	25.6	1983

Table 2.1.11: Mean and Maximum Snowfall Event

Severe winter weather in Twin Falls County is infrequent but weather conditions can be extremely hazardous in the outlying areas due to blowing and drifting snow. Records for snow fall shown in Table 2.1.11 are not indicative of the hazardous conditions that exist during a blizzard condition. While snow levels are usually not extreme, blizzard conditions – snow, high winds, and freezing temperatures – are not infrequent in Twin Falls County and can be extremely hazardous.

Impacts

The impacts of the very cold temperatures that may accompany a severe winter storm are discussed above. Other life threatening impacts are numerous. Motorists may be stranded by road closures or may be trapped in their automobiles in heavy snow and/or low visibility conditions. Bad road conditions cause automobiles to go out of control. People can be trapped in homes or buildings for long periods of time without food, heat, and utilities. Those who are ill may be deprived of medical care by being stranded or through loss of utilities and lack of personnel at care facilities. Use of heaters in automobiles and buildings by those who are

stranded may result in fires or carbon monoxide poisoning. Fires during winter storm conditions are a particular hazard because fire service response is hindered or prevented by road conditions and because water supplies may be frozen. Disaster Services may also not be available if telephone service is lost. People who attempt to walk to safety through winter storm conditions often become disoriented and lost. Downed power lines not only deprive the community of electricity for heat and light, but pose an electrocution hazard. Death and injury may also occur if heavy snow accumulation causes roofs to collapse.

Loss Estimates

Economic impacts arise from numerous sources including: hindered transportation of goods and services, flooding due to burst water pipes, forced closing of businesses, inability of employees to reach the workplace, damage to homes and structures, automobiles and other belongings by downed trees and branches, loss of livestock and vegetation and many others.

Hazard Evaluation

Repetitive Loss - none

Winter Storms		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	2	Limited
Spatial Extent	4	Catastrophic
Magnitude	2	Limited
Total	**15**	**Medium**

Severe Winter Storm Hazard Evaluation

Repetitive Loss:

Severe Winter Storms occurs almost annually in Twin Falls County and it is assumed that there is repetitive losses especially caused by Straight Line Wind damage; however, this type of loss is not reported to a single point and thus is hard to track and quantify.

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Extreme Cold	1	3	2	4	2	**12**	**L**
Winter Storm	3	4	3	3	3	**16**	**H**
Composite Ranking							
Severe Winter Storms	3	4	3	3	2	**15**	**H**

Drought

Description

Drought is an expected phase in the climactic cycle of almost any geographical region. Certainly that is the case in the State of Idaho. Objective, quantitative definitions for drought exist but most authorities agree that, because of the many factors contributing to it and because its onset and relief are slow and indistinct, none is entirely satisfactory. According to the National Drought Mitigation Center, drought "originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector." What is clear is that a condition perceived as "drought" in a given location is the result of a significant decrease in water supply relative to what is "normal" in that area.

It should be noted that water supply is not only controlled by precipitation (amount, frequency, and intensity), but also by other factors including evaporation (which is increased by higher than normal heat and winds), transpiration (evaporation from foliage), and human use. According to the NOAA National Climactic Data Center, much of the State of Idaho most recently experienced moderate to extreme drought conditions from the years 2000 through 2005. Drought Emergency Declarations were issued for various counties by the Idaho Department of Water Resources in the years 2002 through 2005. Idaho's only Federal Drought Emergency Declaration was issued in 1977.

Drought risk is based on a combination of the frequency, severity, and spatial extent of drought (the physical nature of drought) and the degree to which a population or activity is vulnerable to the effects of drought. The degree of a region's vulnerability depends on the environmental and social characteristics of the region and is measured by their ability to anticipate, cope with, resist, and recover from drought. Society's vulnerability to drought is determined by a wide range of factors, both physical and social, such as demographic trends and geographic characteristics.

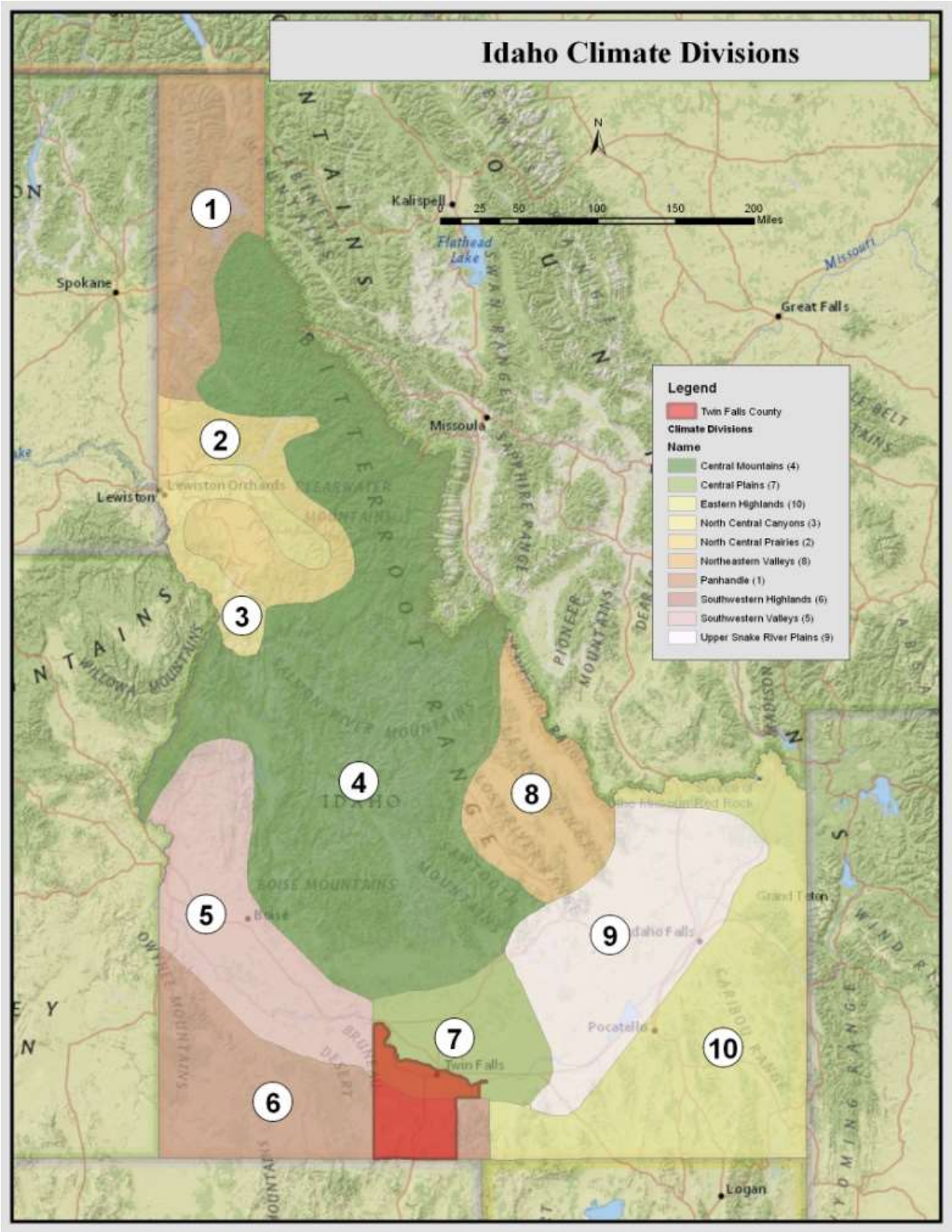


Figure 2.1.6: Idaho Climate Divisions

Figures 2.1.7-2.1.10 illustrates the precipitation conditions as compiled by the National Weather Service (NWS) for Twin Falls County during the years 1912 to 2011 using the Palmer Modified Drought Index. The Palmer Modified Drought Index (PMDI), first developed in 1965, is a means of quantifying drought in terms of moisture demands versus moisture supply. Moisture demands include plant requirements and water needed for recharge of soil moisture supplies. An allowance is also included for runoff amounts necessary for recharging both ground water and surface water supplies such as rivers, lakes, aquifers and reservoirs. The PMDI balances the moisture demands against the moisture supply available.

Approximate Cumulative Frequency %	**Range PSDI**	**Category**	**Range**
> 96	> 4.00	Extreme Wetness	> 3.50
90-95	3.00 – 3.99	Severe Wetness	2.50 – 3.49
73 – 89	1.50 – 2.99	Mild to Moderate Wetness	1.00 – 2.49
28 – 72	-1.49 – 1.49	Near Normal	-1.24 - .099
11 -27	-1.50 - -2.99	Mild to Moderate Drought	-1.25 - -1.99
5 – 10	-3.00 - -3.99	Severe Drought	-2.00 – 2.74
1 – < 4	< -4.00	Extreme Drought	< -2.75

Table 2.1.12: PMDI Classes for Wet and Dry Periods

The PMDI expresses this comparison of moisture demand to moisture supply on a numerical scale that usually ranges from positive six to negative six. Positive values reflect excess moisture supplies while negative values indicate moisture demands in excess of supplies. Twin Falls County lies in two climate zones, Zone 6 and Zone 7.

Historical Frequencies

The Idaho Department of Water Resources reports that meteorological drought conditions existed in the State approximately 30% of the time during the period 1931-1982. The most prolonged drought in Idaho was during the 1930s. For most of the State, that drought lasted for 11 years (1929-41) despite greater than average stream flows in 1932 and 1938. A mild drought during 1959-61 occurred in southern and central Idaho. During the early 1960's, several areas in the State also experienced water shortages.

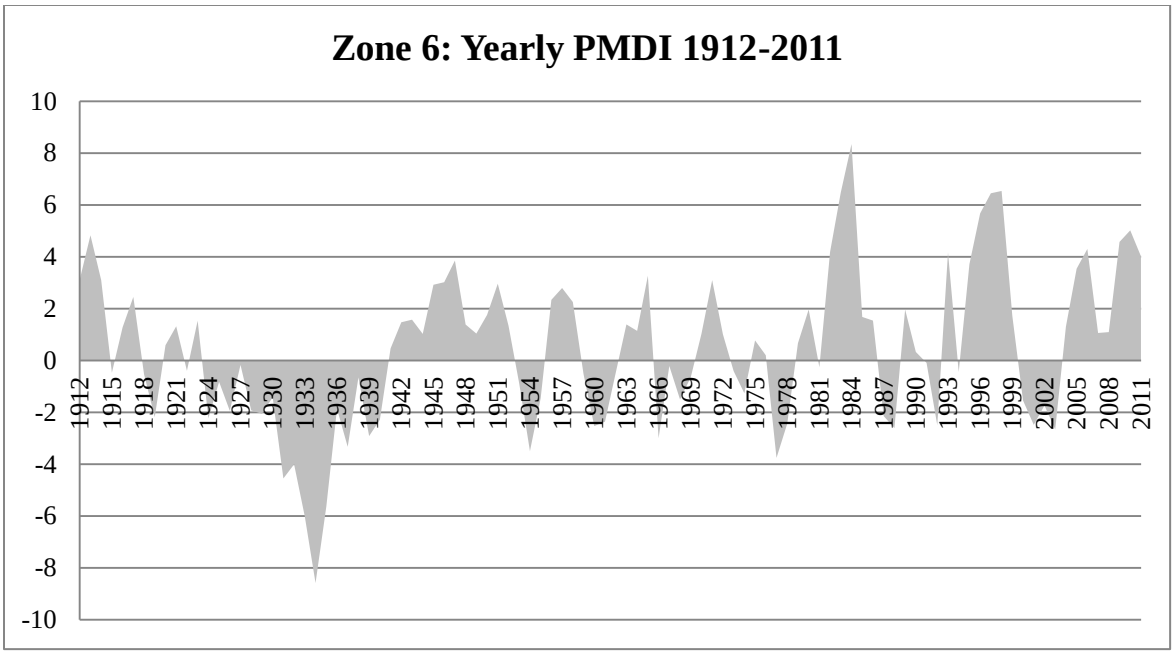


Figure 2.1.7: Division 6 Yearly PMDI

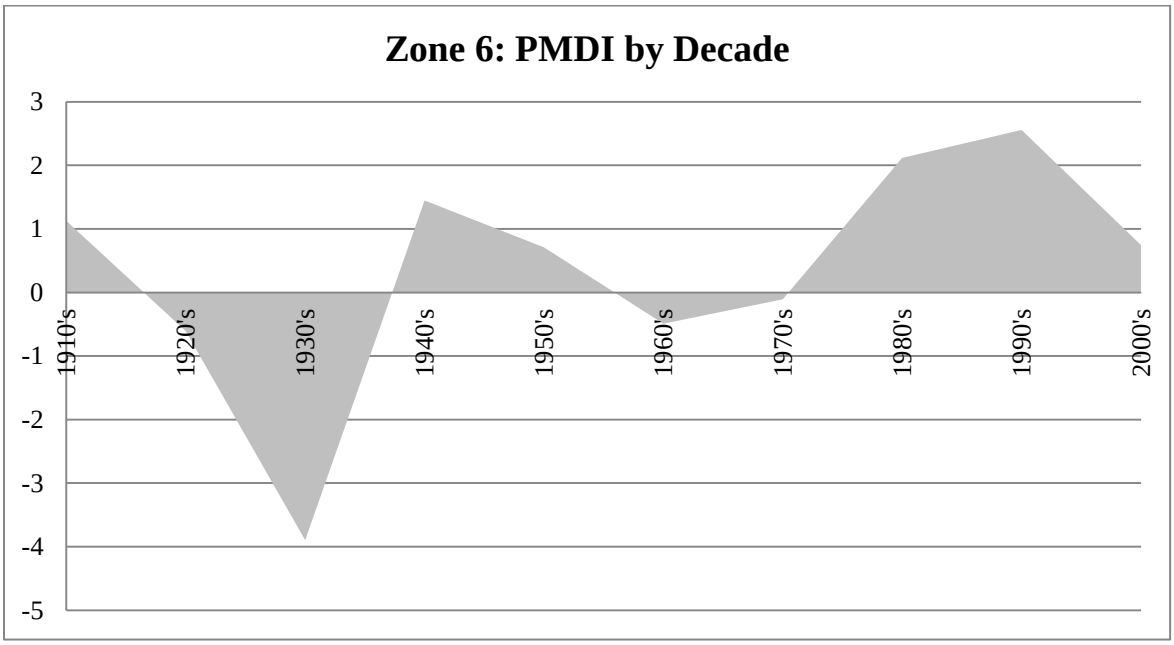


Figure 2.1.8: Division 6 PMDI by Decade

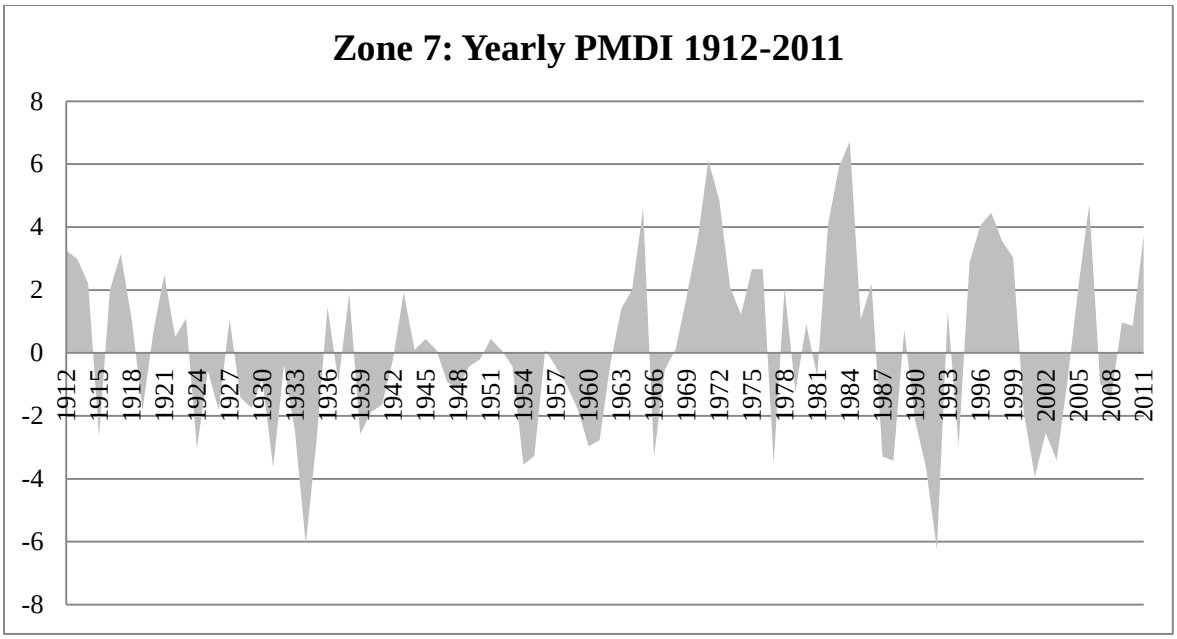


Figure 2.1.9: Division 7 Yearly PMDI

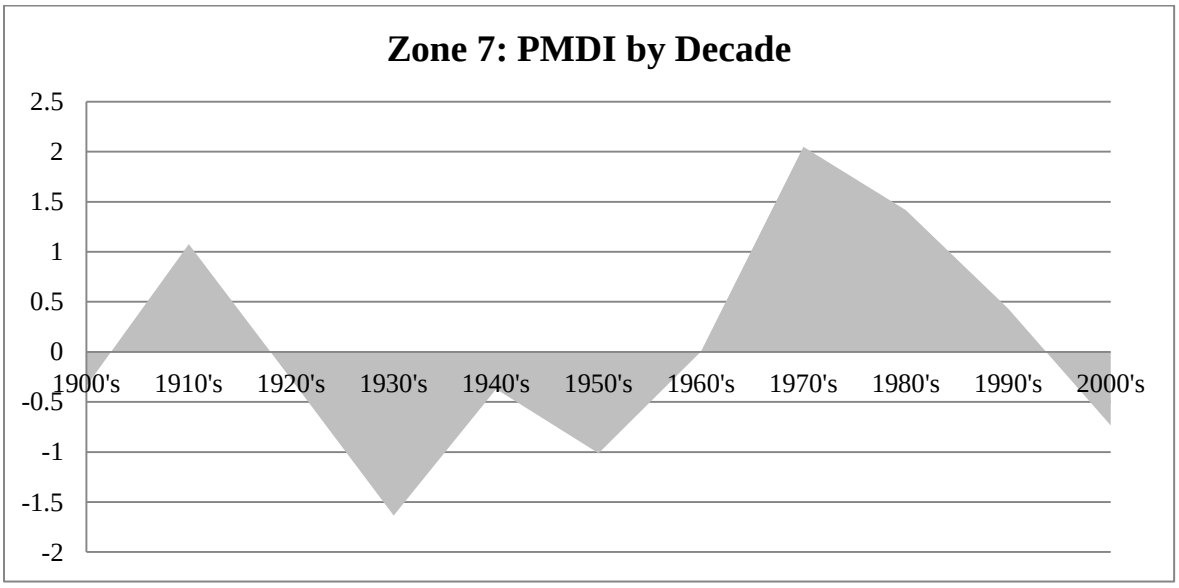


Figure 2.1.10: Division 7 PMDI by Decade

In 1977, the worst single year on record, a severe water shortage occurred throughout Idaho and the West. Area ski resorts were closed for much of the ski season. A lack of winter snowfall resulted in the lowest runoff of record at most gauges in the State. Irrigation ditches were closed well before the end of the growing season and crop yields were below normal. Domestic wells in the Big and Little Wood River basins became dry early in April 1977, and many shallow wells in six western Idaho counties became dry in June. Stream flows were below normal from 1979 to 1981. From 1987 through 1992, water supplies were much below normal throughout the State. In

southwestern and central Idaho, this six year drought was more severe than the 1930s drought. Low winter snowpack and prolonged periods of greater than average temperatures resulted in unseasonable early snow melt, high water demands, and the lowest stream flows since 1977. In 1987, the water supply ranged from 10 to 50 percent below normal over many areas of the State (Idaho State Hazard Mitigation Plan, 20010).

The historical analysis for Twin Falls County indicates that it is normal to expect periods of drought. Drought declarations were made in the following years[10]:

- 1979
- 1988
- 1991
- 1992
- 2001
- 2004
- 2005

Impacts

Drought is agriculture's most expensive, frequent, and widespread form of natural disaster. The current drought in the interior West is part of a multi-year drought that began in 1999, worsened in 2000, and has continued, with some interruptions thus far into 2012. As a result, the drought in the West was slow to develop, and likewise, will be slow to recede.

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services.

Impacts are commonly referred to as direct or indirect. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of direct impacts. The consequences of these impacts illustrate indirect impacts. For example, a reduction in crop, rangeland, and forest productivity may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced tax revenues because of reduced expenditures, increased crime, foreclosures on bank loans to farmers and businesses, migration, and disaster relief programs. Direct or primary impacts are usually biophysical. Conceptually speaking, the more removed the impact from the cause, the more complex the link to the cause. In fact, the web of impacts becomes so diffuse that it is very difficult to come up with financial estimates of damages. The impacts of drought can be categorized as economic, environmental, or social.

[10] State of Idaho Hazard Mitigation Plan, November 2010

Many economic impacts occur in agricultural and related sectors because of the reliance of these sectors on surface and subsurface water supplies. In addition to obvious losses in yields in crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and diseases to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk.

Loss Estimates

Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Reduced income for farmers has a ripple effect. Retailers and others who provide goods and services to farmers face reduced business. This leads to unemployment, increased credit risk for financial institutions, capital shortfalls, and loss of tax revenue for local, State, and Federal government. Less discretionary income affects the recreation and tourism industries. Prices for food, energy, and other products increase as supplies are reduced. In some cases, local shortages of certain goods result in the need to import these goods from outside the stricken region. Reduced water supply impairs the navigability of rivers. Hydropower production may also be curtailed significantly.

Environmental losses are the result of damages to plant and animal species, wildlife habitat, and air and water quality, forest and range fires, degradation of landscape quality, loss of biodiversity, and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example, may be degraded through the loss of wetlands, lakes, and vegetation. However, many species will eventually recover from this temporary aberration. The degradation of landscape quality, including increased soil erosion, may lead to a more permanent loss of biological productivity of the landscape. Although environmental losses are difficult to quantify, growing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on these effects.

Social impacts mainly involve public safety, health, conflicts between water users, reduced quality of life, and inequalities in the distribution of impacts and disaster relief. Many of the impacts specified as economic and environmental have social components as well.

Hazard Evaluation

Drought and the related impacts are of serious concern to Twin Falls County. Over 97% of the County land is used for agricultural uses including tillage and rangeland. The impacts due to drought in Twin Falls County are potentially significant, especially if the drought were to be protracted. While it is impossible to stop the occurrence of drought the impacts can be mitigated through proper planning and management of water resources.

Drought risk is based on a combination of the frequency, severity, and spatial extent of drought (the physical nature of drought) and the degree to which a population or activity is vulnerable to the effects of drought. The degree of a region's vulnerability depends on the environmental and social characteristics of the region and is measured by their ability to anticipate, cope with, resist, and recover from drought. Society's vulnerability to drought is determined by a wide range of factors, both physical and social, such as demographic trends and geographic characteristics.

Although the economy in Twin Falls County is diverse, it contains extensive agriculture ventures that can be adversely affected by drought conditions.

Repetitive Loss

Drought occurs in cycles on the high desert plains of Idaho. The losses are significant and repetitive.

DROUGHT		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	4	Catastrophic
Spatial Extent	4	Catastrophic
Magnitude	1	Negligible
Total	**16**	**High**

Section 2.2 Flooding

Flooding is defined by NWS as "the inundation of normally dry areas as a result of increased water levels in an established water course." River flooding, the condition where the river rises to overflow its natural banks, may occur due to a number of causes including prolonged, general rainfall, locally intense thunderstorms (see Flash Flood above), snowmelt, and ice jams. In addition to these natural events, there are a number of factors controlled by human activity that may cause or contribute to flooding. These include dam failure (discussed below), levee failure, and activities that increase the rate and amount of runoff such as paving, reducing ground cover, and clearing forested areas. Flooding is a periodic event along most rivers with the frequency depending on local conditions and controls such as dams and levees. The land along rivers that is identified as being susceptible to flooding is called the floodplain. The Federal standard for floodplain management under the National Flood Insurance Plan (NIFP) is the "100-year floodplain." This area is chosen using historical data such that in any given year there is a one percent chance of a "Base Flood" (also known as "100-year Flood" or "Regulatory Flood"). A Base Flood is one that covers or exceeds the 100-year floodplain. In Idaho, flooding most commonly occurs in the spring of the year and is caused by snowmelt. Floods occur in Idaho every one to two years and are considered the most serious and costly natural hazard affecting the State. In the twenty-five years from 1976 to 2000 there were five Federal and twenty-eight State disaster declarations due to flooding. The amount of damage caused by a flood is influenced by the speed and volume of the water flow, the length of time the impacted area is inundated, the amount of sediment and debris carried and deposited, and the amount of erosion that may take place.

Flooding is a dynamic natural process. Along rivers, streams and coastal bluffs a cycle of erosion and deposition is continuously rearranging and rejuvenating the aquatic and terrestrial systems. Although many plants, animals and insects have evolved to accommodate and take advantage of these ever-changing environments, property and infrastructure damage often occurs when people develop coastal areas and floodplains and natural processes are altered or ignored.

Flooding can also threaten life, safety, and health and often results in substantial damage to infrastructure, homes, and other property. The extent of damage caused by a flood depends on the topography, soils, and vegetation in an area, the depth and duration of flooding, velocity of flow, rate of rise, and the amount and type of development in the floodplain.

Flood Terminology

A number of flood-related terms are frequently used in this Plan and are defined below.

Flood Insurance Study (FIS): A *Flood Insurance Study* is the official report provided by the Federal Insurance Administration, which provides flood profiles, the flood boundary-floodway map, and the water surface elevation of the estimated 100-year base flood.

Flood Insurance Rate Map (FIRM): The Flood Insurance Rate Maps (FIRM) are the official maps on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

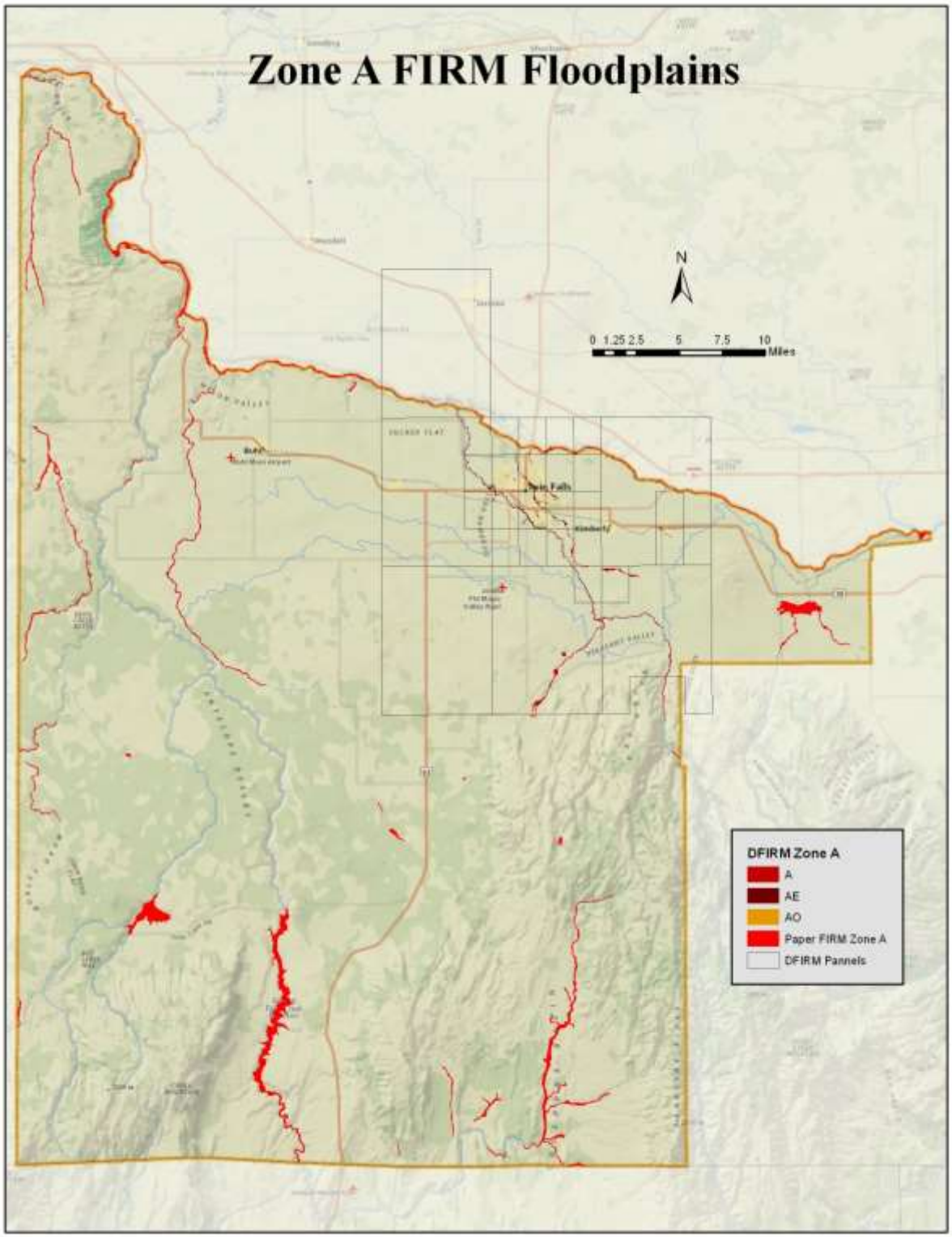


Figure 2.2.1 FIRM 100 Year Floodplain

100-year Base Flood: Base Flood means the flood having a 1% chance of being equaled or exceeded in any given year, also referred to as the "100-year flood".

Designation on the floodplain (FIRM) maps always includes the letters A or V.

Floodplain: A floodplain is land adjacent to a lake, river, stream, estuary or other water body that is subject to flooding. If left undisturbed, the floodplain serves to store and discharge excess floodwater. In riverine systems, the floodplain includes the floodway.

Floodway: "Floodway" means the channel of a river or other watercourse and the adjacent areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

Types of Flooding

Flooding can occur in a number of ways, and many times are not independent of each other and can occur simultaneously during a flood event: The Types of Flooding considered for this Plan include:

- heavy rainfall
- urban storm water overflow
- rapid snowmelt;
- rising ground-water (generally in conjunction with heavy prolonged rainfall and saturated conditions)
- river ice jams
- flash floods
- fluctuating lake levels
- alluvial fan flooding

River or Stream Flooding

Description

River flooding, the condition where the river rises to overflow its natural banks, may occur due to a number of causes including prolonged, general rainfall, locally intense thunderstorms, snowmelt, and ice jams.

Historical Frequencies

Place	Date	Time	Event	Magnitude/details
Twin Falls	2/10/1962		Flood	Prolonged rain and warm temperatures melted mountain snow and forced high amounts of run-off into the lowlands.

Table 2.2.1: Historical Flood Events

Even though damaging flood events aren't recorded with the NWS and other sources, doesn't mean that they don't occur. Twin Falls County and the Cities of Twin Falls and Hansen have mapped FIRM Floodplains as seen in Figure 2.2.1.

Impacts

Human death and injury sometimes occur as a result of river flooding, but are not common. Human hazards during flooding include drowning, electrocution due to downed power lines, leaking gas lines, fires and explosions, hazardous chemicals and displaced wildlife. Economic loss and disruption of social systems are often enormous. Floods may destroy or damage structures, furnishings, business assets including records, crops, livestock, roads and highways, and railways. They often deprive large areas of electric service, potable water supplies, wastewater treatment, communications, and many other community services including medical care, and may do so for long periods of time.

Loss Estimates:

Losses from stream flooding were calculated using HAZUS. HAZUS is a regional multi hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide a methodology and software application to develop multi hazard losses at a regional scale. These loss estimates would be used primarily by local, state, and regional officials to plan and stimulate efforts to reduce risks from multi hazards and to prepare for emergency response and recovery.

HAZUS estimates that about 16 buildings will be at least moderately damaged. This is over 14% of the total number of buildings in the scenario. There are an estimated 3 buildings that will be completely destroyed.

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 1,178 tons of debris will be generated. Of the total amount, Finishes comprises 58% of the total, Structure comprises 17% of the total, and Foundations 25% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 47 truckloads (@25 tons/truck) to remove the debris generated by the flood.

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 203 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 254 people will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 15.00 million dollars, which represents 2.70 % of the total replacement value of the scenario buildings.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses

associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building related losses were 14.88 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 32.87% of the total loss.

Hazard Evaluation

Repetitive Loss - none

Flood		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	3	Critical
Total	**11**	**Medium**

Flash Flood

Flash flood is defined by NWS as, "A rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters." Flash floods differ from floods (discussed below under River Flooding) in the rapidity with which they develop. Floods generally develop over a period of several days, providing more warning time and time for preparation and evacuation. Flash floods occur with little or no warning. They may occur during thunderstorms due to rapid runoff from steep terrain, from areas where the soil is already saturated, or in urban areas where vegetation has been removed and pavement has replaced exposed soil. Flash floods may also arise as the result of dam failure (discussed below) or the breakup of ice jams.

Historical Frequencies

Place	Date	Time	Event	Magnitude/details
Rock Creek	July 25, 1913	unk	Flash Flood	Water 2 feet above high water within a couple hours. Road washed out
Twin Falls	Sept 3, 1945	Unk	Flash Flood	Basements and gutters flooded
Three Creek	June 20, 1963	Unk	Flash Flood	Roads flooded on Roseworth tract
Filer/Twin Falls	June 7, 1996	Unk	Flash Flood	Flooding on highway
Twin Falls	Aug 7, 1997	Unk	Flash Flood	Minor street flooding in Twin Falls
Hollister	June 8, 2006	Unk	Flash Flood	Flooding on highway
Rogerson	July 25, 2006	Unk	Flash Flood	Flooding on road/ road closed
Twin Falls	July 5, 2009	3:55 PM	Flash Flood	Unk

Place	Date	Time	Event	Magnitude/details
Twin Falls	August 5, 2011	2:55 PM	Flash Flood	Unk

Table 2.2.2: Twin Falls County Historical Flash Flood Events

No events have been reported since 2011, but it is apparent that flash flooding does occur frequently in the County. The flash flood risk within the County will be assessed by determining the following factors:

- Probability – the likelihood that flash flooding will occur in a given area
- Severity – the potential for damage in an area where flash flooding is likely
- Asset Inventory – the assets (people, structures, property, etc.) in an affected area

Risk is expressed in terms of number of events per year times the magnitude of the event. The probability (likelihood) that flash flooding will occur in a given area in the County was assessed using the Relative Flash Flood Potential Index (RFFPI) developed by the NWS. The RFFPI estimates flash flooding potential on a scale of low to high using factors including: soil infiltration rates, slope, percent impervious surface, forest density, and land use. As shown in Figure 2.2.2, most of Twin Falls County falls into the medium to high range for flash flood potential. Areas of high potential are concentrated in the central to northwest portion of the County. This area extends west of Rock Creek to the County's western border and south of the Snake River to Hollister. The populated areas that have a high potential for flash floods include: Hollister, Castleford, Buhl, Filer, and Twin Falls City. Significant agricultural use lands are also in areas with high potential for flash flooding with the majority of potentially affected crops being corn and wheat.

Flash flood severity is primarily linked to water velocity which, in turn, is directly linked to the slope of the affected area. Because Twin Falls County has relatively large changes in elevation, with a minimum elevation of 2,657 feet and an a maximum of 7,828 feet above sea level, there are areas of high potential flash flooding severity within the County.

The area extending from ten to twelve miles south of the Snake River is a flat plain that forms part of the Magic Valley. This area is mostly agricultural and developed land with little change in elevation. It is, therefore, assigned a relatively low severity potential in spite of its relatively high likelihood of flash flooding. The south of the plain consists of rolling hills with minor changes in elevation. The land cover in this area consists of grass and shrub lands. The changes in topography in this region increase the possible severity of flash floods to a medium severity. The southern and western portions of the County are primarily owned by the National Forest Service and are mountainous with major changes in elevation. This, therefore, is the portion of the County that has the potential for the most severe flash flood consequences.

Impacts

Because flash floods develop so rapidly, people on foot or in automobiles may be stranded or may be swept away and injured or drowned. They are characterized by high velocity water flow and large amounts of debris, both of which cause damage to or destroy structures and other objects in their path. Other impacts are discussed below under River Flooding.

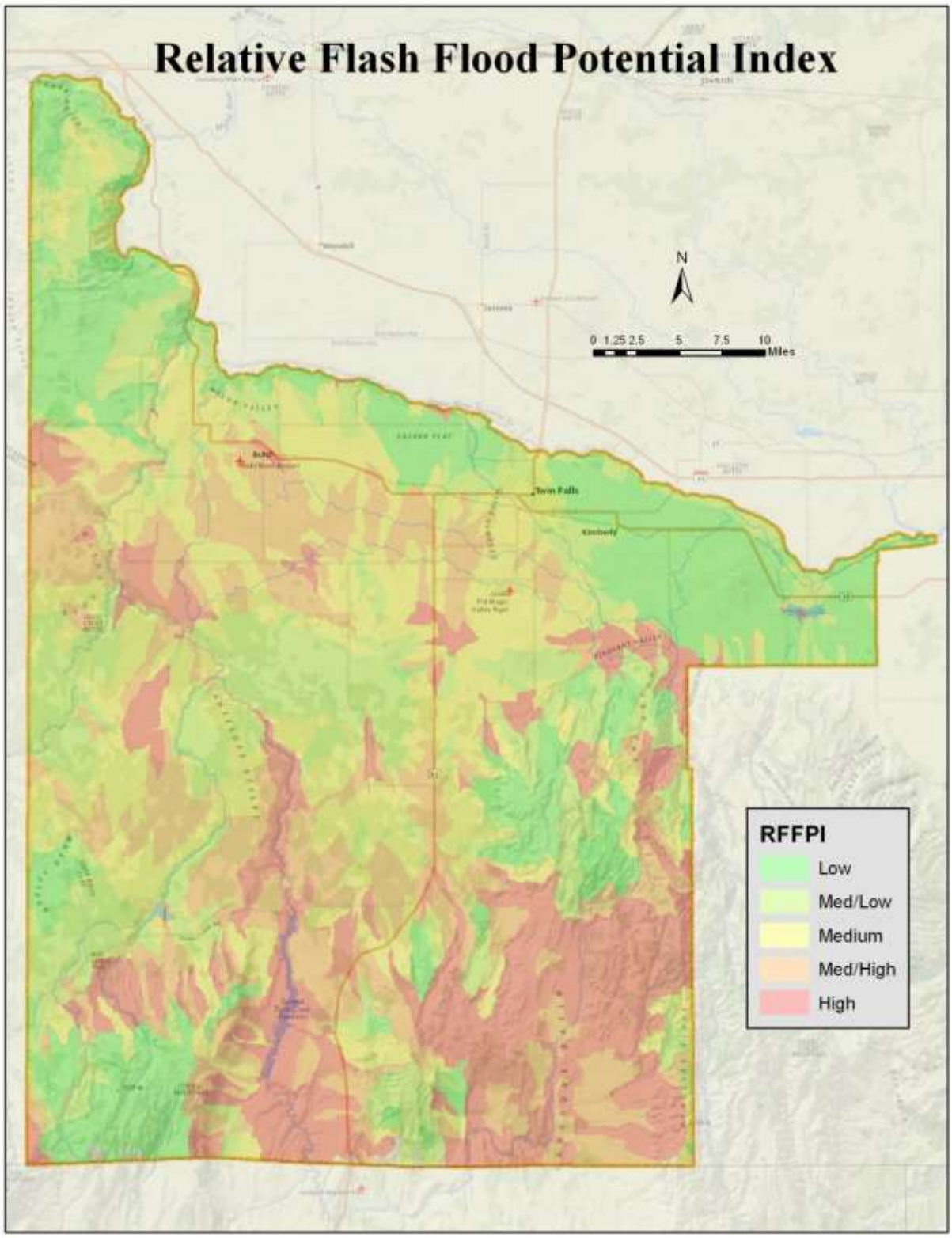


Figure 2.2.2: Twin Falls County Relative Flash Flood Potential Index Map

Loss Estimates

Lost estimates for a probable flash flood (all areas indicated as High on Figure 4.2.2) event in Twin Falls County are calculated based on the following assumptions[11]:

- Flood Depth – 1 foot average
- Total structures impacted – ~3,972
- Total number of residents impacted – ~ 9,275
- Maximum value of an individual structure in flash flood prone areas - $1,667,963
- Average structure value - $81,576
- Total valuation of all structures in flood plain - $324,018,262
- Total Potential Building Loss - $29,161,644
- Total Potential Contents Loss - $37,181,095

Hazard Summary

The potential for flash flooding is significant in the Buhl area. Buhl currently does not participate in the National Flood Insurance Program because they are out of the defined "flood plain." As the analysis has shown, however, flash flooding does occur and there is some historical information to demonstrate that losses can be expected.

Areas of the County where significant development has occurred have become more prone to flash flooding because of increased impervious surface area. As farm land is developed and housing is built in traditionally agricultural areas, additional impervious surface areas increase the need for proper storm water collection and drainage.

Repetitive Loss - none

Flash Flood		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	4	High
Vulnerability	2	Limited
Spatial Extent	1	Negligible
Magnitude	2	Limited
Total	**11**	**Low**

[11] FEMA State and Local Mitigation Program Planning How to Guide: Understanding your Risks

Dam Failure

Description

Dam failure is the unintended release of impounded waters. Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam
- Deliberate acts of sabotage
- Structural failure of materials used in dam construction
- Poor design and/or construction methods
- Movement and/or failure of the foundation supporting the dam
- Settlement and cracking of concrete or embankment dams
- Piping and internal erosion of soil in embankment dams
- Inadequate maintenance and upkeep

Failures may be categorized into two types; component failure of a structure that does not result in a significant reservoir release, and uncontrolled breach failure that lead to a significant release. With an uncontrolled breach failure of a manmade dam there is a sudden release of the impounded water, sometimes with little warning. The ensuing flood wave and flooding have enormous destructive power.

Historical Frequencies

There has been only one recorded dam failure event in Twin Falls County. It is summarized in Table 2.2.3 below.

Place	Date	Event	Estimated Damage
Deep Creek	3/10/1910	Dam Failure	UNK

Table 2.2.3: Dam Failure Events

Dam Classifications

Each dam inspected by Idaho Water Resources given both a size and risk classification.

Size Classification

Small – 3: Twenty (20) feet high or less and a storage capacity of less than one hundred (100) acre feet of water.

Intermediate – 2: More than twenty (20) but less than forty (40) feet high or with a storage capacity of one hundred (100) to four thousand (4,000) acre feet of water.

Large – 1: Forty (40) feet high or more or with a storage capacity of more than four thousand (4,000) acre feet of water.

Risk Classification

This classification is used by IDWR to classify potential losses and damages anticipated in down-stream areas that could be attributable to failure of a dam during typical flow conditions.

Low Risk – 3: No permanent structures for human habitation; Minor damage to land, crops, agricultural, commercial or industrial facilities, transportation, utilities or other public facilities or values.

Significant Risk – 2: No concentrated urban development, one (1) or more permanent structures for human habitation which are potentially inundated with flood water at a depth of two (2) ft. or less or at a velocity of two (2) ft. per second or less. Significant damage to land, crops, agricultural, commercial, or industrial facilities, loss of use and/or damage to transportation, utilities, or other public facilities or values.

High Risk – 1: Urban development, or any permanent structure for human habitation which are potentially inundated with flood water at a depth of more than two (2) ft. or at a velocity of more than two (2) ft. per second. Major damage to land, crops, agricultural, commercial, or industrial facilities, loss of use and/or damage to transportation, utilities, or other public facilities or values.

Purposes Categories:

N-Industrial, B-Mining, O-Other, C-Commercial, P-Power, D-Domestic, Q-Fire Protection, E-Erosion Control, F-Flood Control, S-Stockwater, G-Wildlife Protection, T-Mine Tailings, H-Fish Propagation, I-Irrigation, J-Stockwater and Irrigation, K-Domestic, Stock and Irrigation, L-Domestic and Irrigation, M-Municipal Supply

Dam Type

Earth- Earth Fill, Rock- Rock Filled, CNGRV- Concrete Gravity, CNAR-Concrete Arch, MCNAR-Multiple Concrete Arch, TMCRB-Timber Crib, SLBT-lab and Buttress, RKMAS-Rock Masonry, Metal-Metal Sheet Pile, AUXDAM-Auxillary Dam

Table 2.2.4 provides a listing and ranking of the dams within Twin Falls County that are part of the IDWR Dam Safety Program.

Name	Stream	Purpose	Risk Category	Size Category	Type	Storage Capacity	Height
Milner Dam	Snake River	OS	1	1	Earth	36.300	83
Murtaugh Lake	Snake River	OS	1	1	Earth	7720	39
Shoshone Falls	Snake River	P	2	2	Concrete gravity	750	22
Twin Falls	Snake River	P	2	2	Concrete gravity	1000	26
Salmon Falls Upper	Snake River	PL	3	3	Concrete gravity	3000	10
Salmon Falls Lower	Snake River	P	1	1	Concrete gravity	18500	63
Salmon Falls Regulatory	Salmon Falls Creek	L	1	1	Concrete arch	230650	217
Salmon Falls Creek	Salmon Falls Creek	O	3	3	Earth	15	13.1
Salmon Falls Creek	Salmon Falls Creek	I	3	3	Concrete gravity	60	8
Deep Creek No. 1	Deep Creek	J	3	2	Earth	135	13

Name	Stream	Purpose	Risk Category	Size Category	Type	Storage Capacity	Height
Deep Creek No. 2	Deep Creek	J	2	2	Earth	1500	39
Herziner	TR-Salmon Falls Creek	I	1	1	Earth	5	13
Cedar Creek	Cedar Creek	I	1	1	Earth	30000	84
Cedar Creek Holding	Cedar Creek OS	I	3	2	Earth	200	19.5
McMullen	Cottonwood Creek	I	2	2	Earth	350	22
Williams	North Cottonwood Creek	I	3	1	Earth	850	43
Ray	TR-Snake River	HR	3	3	Earth	20	19
Heil	Devil Creek OS	I	3	2	Earth	480	22
Munsee	Salmon Falls Creek OS	I	3	3	Earth	90	18
Leno	Mule Creek Springs	I	3	2	Earth	25	26.7
Silver Lake	Silver Creek	I	2	3	Earth	16	29
Heil No. 2	Devil Creek OS	J	3	3	Earth	22	18.6

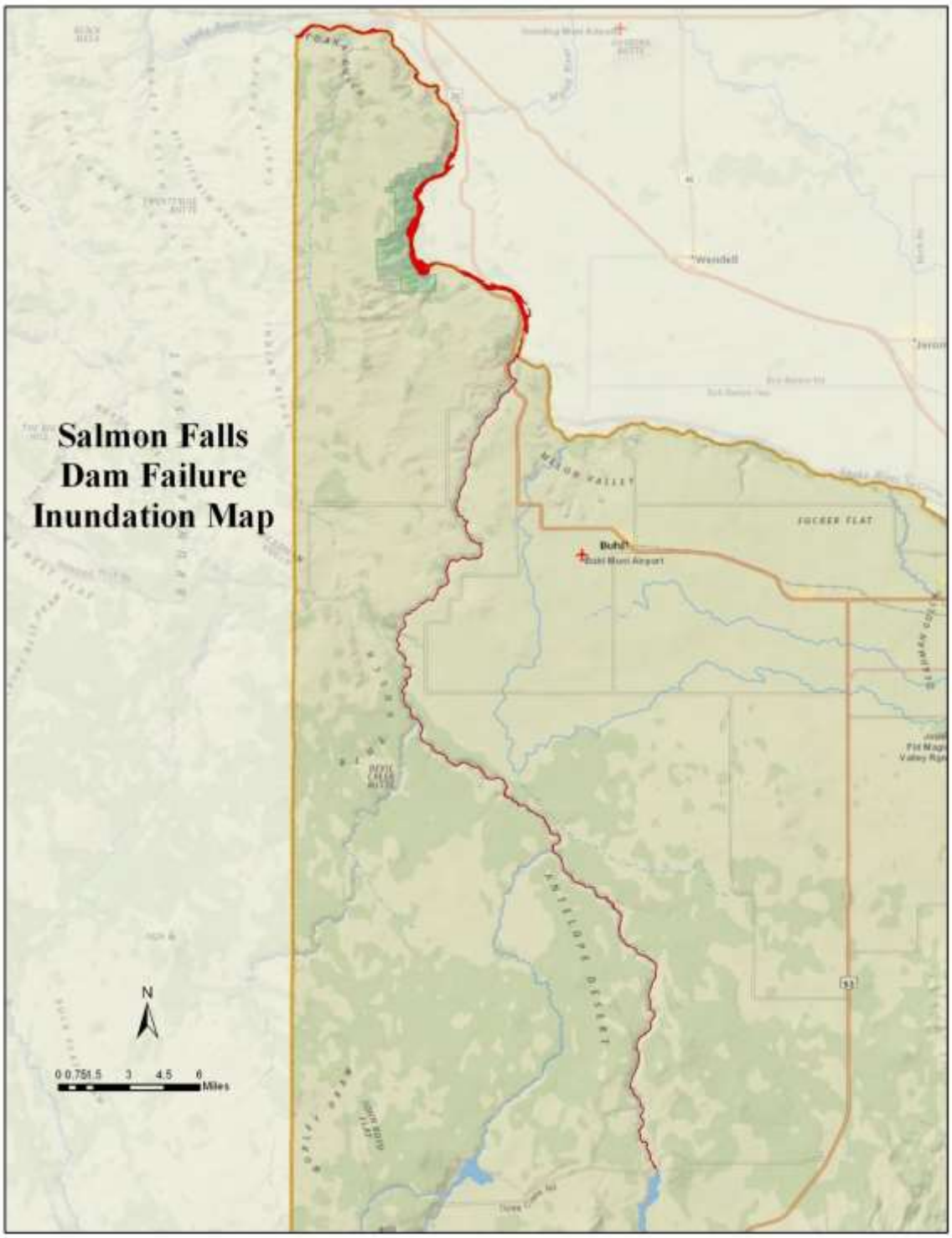
Table 2.2.4: Dams in Twin Falls County

Loss Estimates

The Salmon Falls Dam is the largest dam in the County. An estimate of the inundation zone using HAZUS provides the following loss estimate for a possible failure of the Salmon Falls Dam.

HAZUS estimates that about 7 buildings will be at least moderately damaged. There are an estimated 3 buildings that will be completely destroyed. All damaged buildings were residential structures.

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.


Salmon Falls
Dam Failure
Inundation Map
N
0 0.75 1.5 3 4.5 6
Miles
Wendell
Buhl
Buhl Municipal Airport
FUCKER FLAT
ANTELOPE DESERT

The model estimates that a total of 406 tons of debris will be generated. Of the total amount, Finishes comprises 32% of the total, Structure comprises 27% of the total, and Foundations comprise 41% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 16 truckloads (@25 tons/truck) to remove the debris generated by the flood.

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 10 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 2 people will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 1.21 million dollars. The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building related losses were 1.21 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 93.13% of the total loss.

Hazard Evaluation

In Twin Falls County there are

- Seven (7) small dams,
- Eight (8) intermediate sized dams,
- Six (6) large dams,
- Eleven (11) low risk dams,
- Five (5) significant risk dams, and
- Five (5) high risk dams.

Repetitive Loss - none

Dam Failure		
Profile Category	**Rating**	**Description**
Historical Occurrence	0	None
Probability	1	Rare
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	3	Critical
Total	**6**	**Low**

Canal Failure

2012 Revision Summary: This hazard was added in this update.

Description

According to the US Department of Agriculture "an irrigation canal or lateral is constructed to convey water from the source of supply to one or more farms.[12]" The objective of canals is to reduce erosion, prevent degradation of water quality, and to improve the efficient use of water my minimizing conveyance losses from seepage or structural failure.

There are several types of flood threats posed by canals. The first type is a canal break or breach. This occurs when the canal walls are breached because of erosion or deterioration caused by rodents and other small animals. This has the potential to cause significant flooding, especially if the canal is elevated. The second type of flood threat posed by canals is overtopping. This can be caused by an obstruction in the canal that causes the water to overtop the bank. This type of event usually causes erosion of the bank and causes a canal breach.

Historic Frequencies

Canal failure events occur in Twin Falls County. The following narratives were taken from newspaper accounts that describe canal failure events in dating back to 1910. This is by no means an exhaustive list of canal failure events in the County, but it does provide some insight into the historic impacts of canal failure.

Place	Date	Event	Estimated Damage
Shoshone Falls	3/24/1910	Canal Break	
Highline Canal	2/27/1917	Canal Break	Homes evacuated and damaged, several thousand dollars to repair canal
Highline Canal	7/26/1917	Canal Break	Washed out property two miles down the draw
Lowline Canal	5/9/1918	Canal Break	Cut off Twin Falls Reservoir. Flooded farms
Hansen	1/5/1979	Canal Break	20 foot break in main canal flooded farms and forced evacuation of families. Backed up sewer system in Twin Falls City

Table 2.2.5: Canal Failure Events

[12] http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_026512.pdf

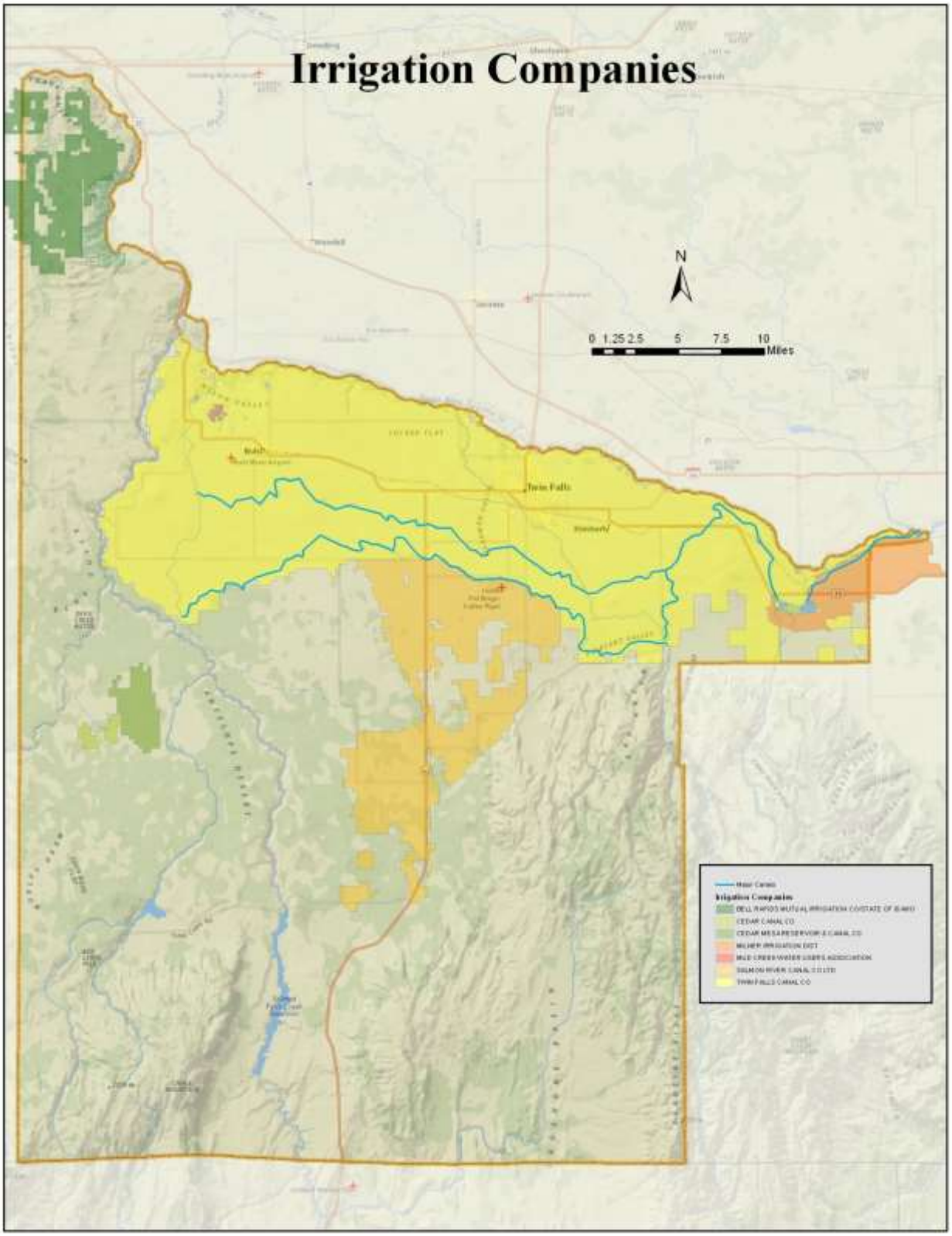


Figure 2.2.4: Irrigation Companies Map

Impacts

Impacts from canal failure are similar to those of flash and riverine flooding. With canal failure flooding there is usually large amounts of debris and erosion. Canal failure can happen without warning and residents may be stranded.

Loss Estimates

Losses from canal failure were estimated using a scenario for a break in the Low Line Canal near the intersection of E 3700 N and N 2500 E. The map in Figure 2.2.5 shows the location of the breach and estimated floodplain. Losses were calculated using HAZUS.

HAZUS estimates that about 2 buildings will be at least moderately damaged. This is over 40% of the total number of buildings in the scenario. There are an estimated 0 buildings that will be completely destroyed.

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 156 tons of debris will be generated. Of the total amount, Finishes comprises 52% of the total, Structure comprises 19% of the total, and Foundations comprise 29% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 6 truckloads (@25 tons/truck) to remove the debris generated by the flood.

HAZUS estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 20 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 12 people will seek temporary shelter in public shelters.

The total economic loss estimated for the flood is 1.04 million dollars, which represents 2.20 % of the total replacement value of the scenario buildings.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building related losses were 1.04 million dollars. 0% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 63.43% of the total loss.

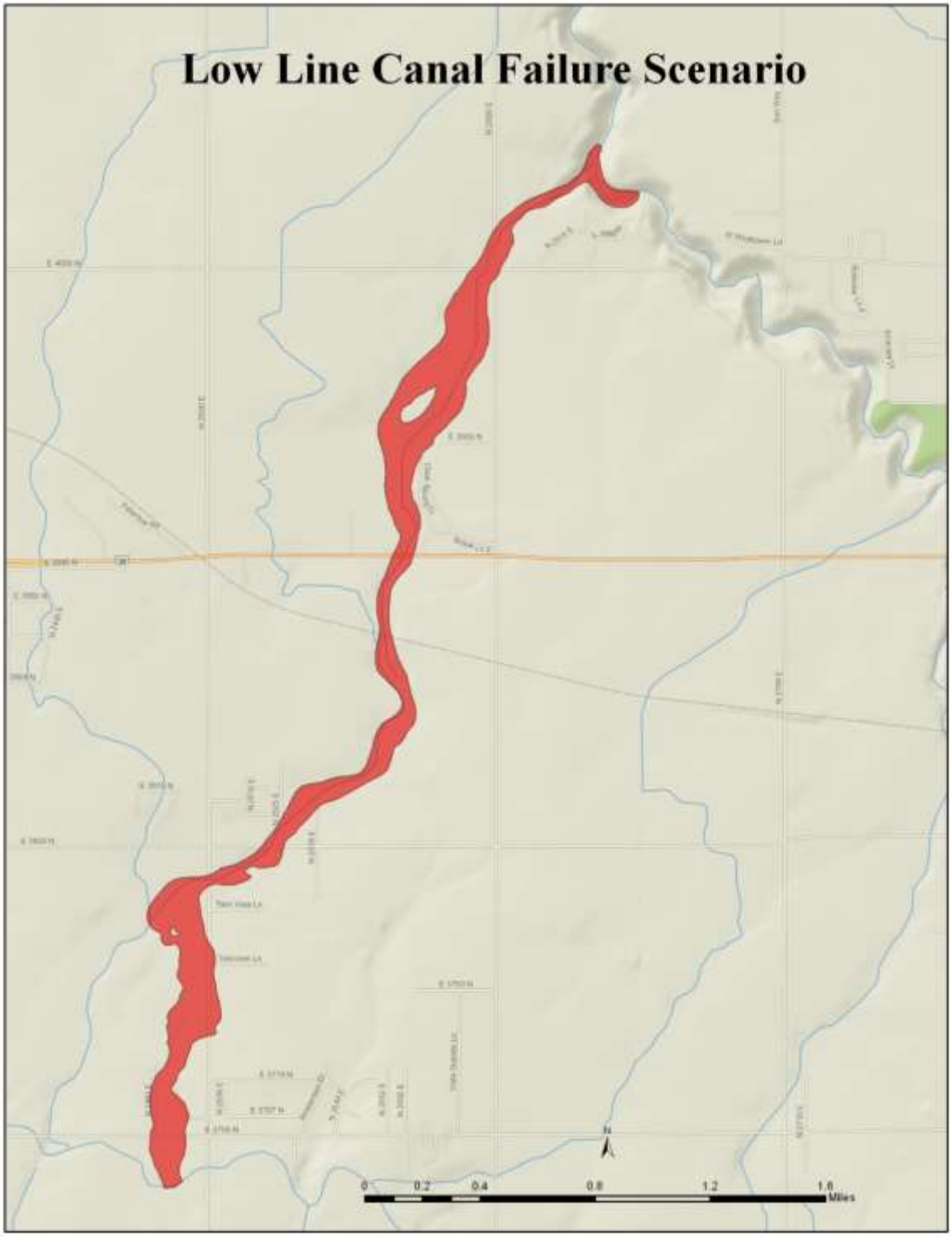


Figure 2.2.5: Canal Failure Inundation Map

Hazard Evaluation

Repetitive Loss *– Repetitive loss from Canal or Drainage failures do not typically happen in the same location in Twin Falls County; however, losses seem to happen repetitively from the canal or drainage failures throughout the County due to loss of containment of canals and ditches due to burrowing rodent damage to the infrastructures.*

Canal Failure		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	2	Limited
Total	**10**	**Medium**

Section 2.3 Geologic Hazards

Geologic hazards are adverse conditions capable of causing loss of life and damage to property that involve the movement of geologic features or elements of the surface of the earth. There are a wide variety of such hazards that may be categorized as either sudden or slow phenomena. Slowly developing geologic hazards include soil erosion, sinkholes and other ground subsidence, and migrating sand dunes. Only sudden geologic hazards will be considered in this planning and will be limited to: earthquake, volcanic eruption, landslide/mudslide, and snow avalanche.

Earthquake

Description

The U.S. Geological Survey (USGS) defines earthquake as: "Ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the Earth or by volcanic or magmatic activity, or other sudden stress changes in the Earth." The hazards associated with earthquake are essentially secondary to ground shaking (also called seismic waves) which may cause buildings to collapse, displacement or cracking of the earth's surface, flooding as a result of damage to dams or levees, and fires from ruptured gas lines, downed power lines, and other sources. Earthquakes are measured both in terms of their inherent "magnitude" and in terms of their local "intensity." The magnitude of an earthquake is essentially a relative estimate of the total amount of seismic energy released and may be expressed using the familiar "Richter Scale" or using the "moment magnitude scale" now favored by most technical authorities. On either scale, significant damage can be expected from earthquakes with a magnitude of about 5.0 or higher. What determines the amount of damage that might occur in any given location, however, is not the magnitude of the earthquake but the intensity at that particular place. Earthquake intensity decreases with distance from the earthquake's "epicenter" (its focal point) but also depends on local geologic features such as depth of sediment and bedrock layers. Intensity is most commonly expressed using the "Modified Mercalli Intensity Scale." More quantitatively, intensity may be measured in terms of "peak ground acceleration" (PGA) expressed relative to the acceleration of gravity (g) and determined by seismographic instruments. While Mercalli and PGA intensities are arrived at differently, they correlate reasonably well. The locations most susceptible to earthquakes are known but there is little ability to predict an earthquake in the short term.

While Mercalli and PGA intensities are arrived at differently, they correlate reasonably well. While the locations most susceptible to earthquakes are known, there is little ability to predict an earthquake in the short term.

I. Instrumental	Generally not felt by people unless in favorable conditions.
II. Weak	Felt only by a few people at best, especially on the upper floors of buildings. Delicately suspended objects may swing.
III. Slight	Felt quite noticeably by people indoors, especially on the upper floors of buildings. Many do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.
IV. Moderate	Felt indoors by many people, outdoors by few people during the day. At night, some awaken. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rock noticeably. Dishes and windows rattle alarmingly.
V. Rather Strong	Felt inside by most, may not be felt by some outside in non-favorable conditions. Dishes and windows may break and large bells will ring. Vibrations like large train passing close to house.
VI. Strong	Felt by all; many frightened and run outdoors, walk unsteadily. Windows, dishes, glassware broken; books fall off shelves; some heavy furniture moved or overturned; a few instances of fallen plaster. Damage slight.
VII. Very Strong	Difficult to stand; furniture broken; damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Noticed by people driving motor cars.
VIII. Destructive	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture moved.
IX. Violent	General panic; damage considerable in specially designed structures, well designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X. Intense	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundation. Rails bent.
XI. Extreme	Few, if any masonry structures remain standing. Bridges destroyed. Rails bent greatly.
XII. Cataclysmic	Total destruction – Everything is destroyed. Lines of sight and level distorted. Objects thrown into the air. The ground moves in waves or ripples. Large amounts of rock move position. Landscape altered, or leveled by several meters. In some cases, even the routes of rivers are changed.

Figure 2.3.1: Modified Mercalli Intensity Scale

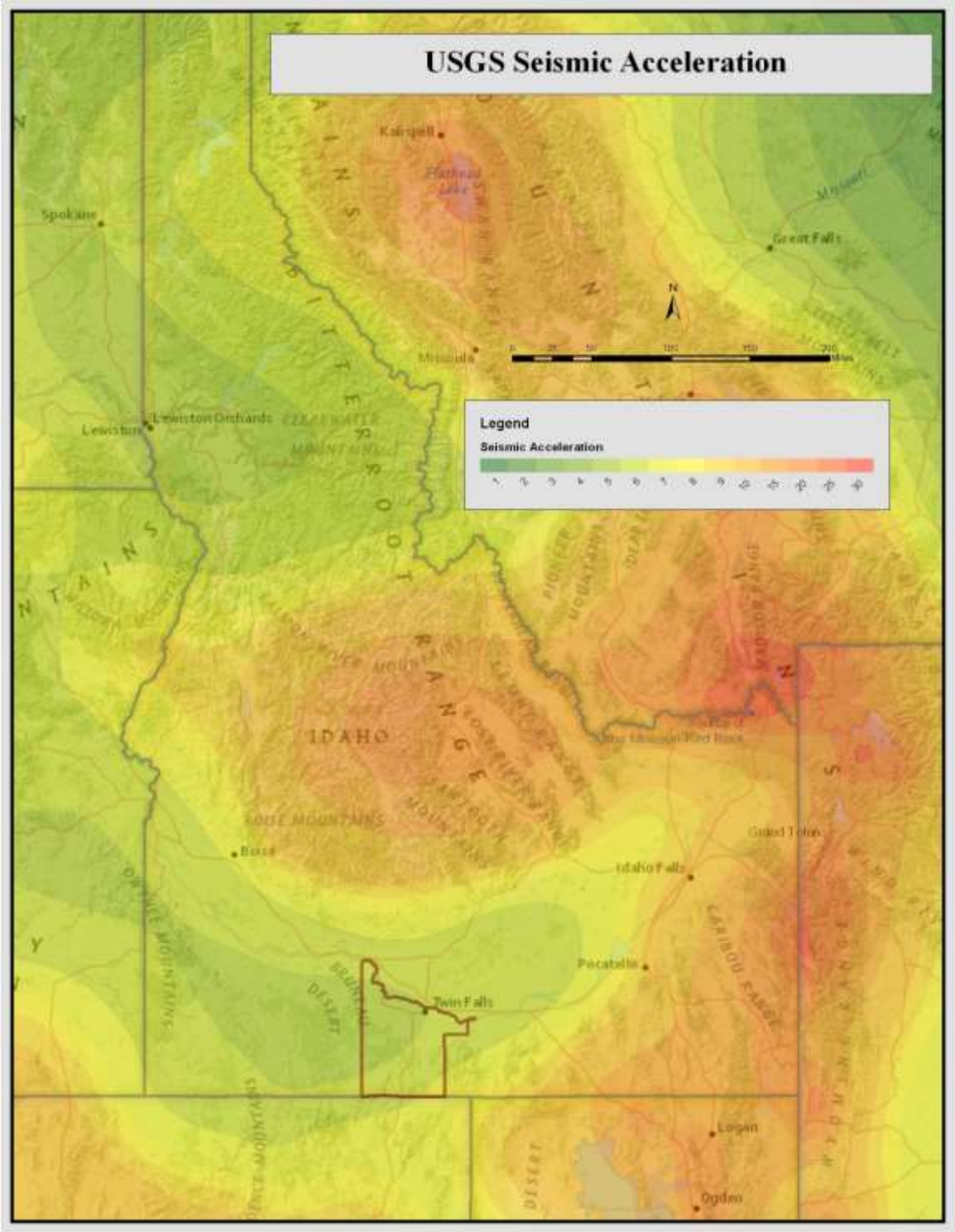


Figure 2.3.2: USGS Seismic Acceleration Map

Historical Frequencies

Historical data indicates that no earthquakes where the epicenter was within Twin Falls County have occurred in the past 100 years. There have, however, been reports of ground shaking in the County from earthquakes with their epicenters in surrounding areas.

June 27, 1925

Earthquake Location: ~8 miles north of Three Forks, MT

Earthquake Magnitude: 6.8

MMI Magnitude: Twin Falls - 2

General Summary: "Just north of Yellowstone Park, at Three Forks, Mont., three landslides were reported to have hemmed in as many passenger trains loaded with vacationers.

Pavements and buildings were cracked in many cities and a half dozen buildings are reported to have been demolished, an electric railroad line was temporarily crippled and there was a recurrence of the recent avalanche at Jackson, Wyo., but nowhere was any loss of life reported.

The quake was felt from Seattle east to the South Dakota line; from Spokane south to Thermopolis and Casper, Wyoming[13]."

December 21, 1932

Earthquake Location: Near Cedar Mountain, NV

Earthquake Magnitude: 7.2

MMI Magnitude: Rogerson – 3, Twin Falls – 3

General Summary: "This major earthquake originated in an uninhabited desert region of western Nevada, near Cedar Mountain, and therefore caused minimal property loss. Two cabins, one of stone and the other of adobe, were destroyed, and ore-treating plants and mines were damaged. The main shock was strong at Fallon, Mina, Luning, Tonopah, and at many other Nevada towns. Many chimneys were downed in Mineral County, at Luning and Mina. In addition, walls fell and cracks formed in the ground at Luning."

March 12, 1934

Earthquake Location: Near Kosomo, UT

Earthquake Magnitude: 6.6

MMI Magnitude: Castleford – 3, Milner – 5, Twin Falls – 5

General Summary: "This earthquake occurred in Hansel Valley, a sparsely populated area. Two people were killed. Property damage was limited mainly to downed chimneys and cracked walls in poorly constructed brick buildings. Chimneys were downed in several towns in the County, including Hooper, Kelton, Kosmo, Locomotive Springs, Monument, and Snowville. Large rockslides occurred at Aragonite, Lakeside, Monument Rock, and Snowville. An outstanding feature of this earthquake was the large quantity of water emitted from the craterlets and fissures that developed in the area[14]."

[13] http://www.seis.utah.edu/lqthreat/nehrp_htm/1925clar/n1925cl1.shtml#misbes
[14] http://earthquake.usgs.gov/earthquakes/states/events/1934_03_12.php

October 19, 1935

Earthquake Location: Near Helena, MT

Earthquake Magnitude: 6.3

MMI Magnitude: Twin Falls - UNK

General Summary: "Two people were killed by falling bricks, several were injured, and property damage was estimated at about $3 million. The earthquake damaged about 300 buildings, of which more than 200 lost their chimneys. Damage was most severe in 2 and 2 1/2-story brick houses on alluvial soil in northeast Helena, but severe damage also occurred in the southern business section of Helena. Downed chimneys and cracked plaster were common throughout the city, and in sections, almost all chimneys were destroyed. Gables commonly were damaged, regardless of the structural material used or the location of the building.

The ground cracks observed were shallow, narrow, surface cracks in alluvial material caused by shaking of the ground, and none represent slip along the fault plane. East of town, water flowed from the cracks that formed in the ground. The largest crack, a maximum of 13 centimeters wide and 91 meters long, was observed on the gravel road leading into the Stanchfield Gun Club.

Changes in the volume of flow of many wells and springs occurred. The most noted change was an increase in flow of springs or the formation of new springs. Seven Mile Creek, which was almost dry before the earthquake, was about 1.5 meters wide and 30 to 45 centimeters deep when it was observed on Oct. 31. Also felt in parts of Idaho, Washington, Wyoming, and in adjacent areas of Canada[15]."

October 31, 1935

Earthquake Location: Near Helena, MT

Earthquake Magnitude: 6.0

MMI Magnitude: Twin Falls – UNK

General Summary: "This aftershock was almost as severe as the main tremor on October 19. Two people were killed at Helena, and about $1 million in property damage occurred, bringing the death toll from this series to four and the damage total to $4 million. (Ref. 512 reports a total of 6 deaths and $5.5 million damage). It intensified the damage in all the towns and damaged structures weakened by previous shocks. Most residents described it as sharper and more pronounced than the main earthquake on October 19[16]."

July 12, 1944

Earthquake Location: ~20 miles west of Custer, ID

Earthquake Magnitude: 6.1

MMI Magnitude: Castleford – UNK, Twin Falls – UNK

General Summary: "An intensity VII earthquake occurred within the State on July 12, 1944. The Seafoam Ranger Station building shook so hard the occupants thought it was coming apart. Several people reported that the shaking was so violent they were unable to walk. Another

[15] http://earthquake.usgs.gov/earthquakes/states/events/1935_10_19.php
[16] http://earthquake.usgs.gov/earthquakes/states/events/1935_10_31.php

observer reported that rocks rose at least a foot in the air and looked like a series of explosions up the hill. Part of the canyon wall collapsed near Lime Creek. Cracks opened 100 yards long in Duffield Canyon and cracks one to three inches across and several hundred yards long opened on the road below Seafoam. Two chimneys fell at Cascade. This shock was felt over 70,000 square miles, including all of central Idaho, and parts of Washington, Oregon, and Montana[17]."

February, 14, 1945

Earthquake Location: ~25 miles WNW of Custer, ID

Earthquake Magnitude: 6.0

MMI Magnitude: Castleford – UNK, Twin Falls – UNK

General Summary: "Dishes rattled, window shades creaked and buildings swayed slightly in Boise and vicinity shortly after 9 p.m. on February 14 as earth tremors sent ground currents through the area disrupting momentarily the normal flow of life in downtown and residential sections[18]."

November 23, 1947

Earthquake Location: ~25 miles WNW of West Yellowstone, MT

Earthquake Magnitude: 6.25

MMI Magnitude: Felt with no recorded magnitude in Amsterdam, Castleford, Filer, Hansen, Hollister, Kimberly, Rogerson, and Twin Falls

General Summary: "Montana's strongest earthquake in more than a decade shook up a score of mining towns through the Rocky mountains early Saturday but only minor damage was inflicted.

Thousands of persons were awakened by the shock rumbling across western and central Montana at 2:36 a.m. (MST), and many fled their homes in panic, fearing a repetition of the disastrous 1935 temblor that caused widespread destruction throughout the state[19]."

[17] http://earthquake.usgs.gov/earthquakes/states/idaho/history.php
[18] http://www.seis.utah.edu/lqthreat/nehrp_htm/1945cent/n1945ce1.shtml#etrbav
[19] http://www.seis.utah.edu/lqthreat/nehrp_htm/1947virg/n1947vi1.shtml#mqss

August 24, 1954

Earthquake Location: Near Stillwater, NV

Earthquake Magnitude: 6.8

MMI Magnitude: Felt with no recorded magnitude in Castleford, Hollister, Murtaugh, and Twin Falls

General Summary: "Ground surface movement was increased several centimeters at the break of the main fault of July 6, 1954 (11 13 UTC), along the east edge of Rainbow Mountain. Displacement from this shock was much more continuous than that of July 6, probably as a result of the larger relative movement (76 cm compared to 30 cm on July 6). The ground breakage extended north for about 18 km to the region southeast of Carson Sink. Only vertical movement was observed, however. Except for the Lovelock area, where this earthquake considerably damaged the Rogers Dam, damage to buildings, roads, and irrigation facilities occurred in the same general areas as for the shock on July 6. Also felt in California, Idaho, Oregon, and Utah[20]."

December 16, 1954

Earthquake Location: Dixie Valley (Fairview Peak Area), NV

Earthquake Magnitude: 7.1

MMI Magnitude: Felt with no recorded magnitude in Buhl, Castleford, Hollister, Murtaugh, Rogerson, Twin Falls

General Summary: "The population was sparse in the epicentral region of this earthquake, and few man-made structures existed. Damage to structures, therefore, was minor despite the geologic and seismographic evidence of a major earthquake.

The earthquake was accompanied by offsets along many faults in the four main zones of a north-trending belt 96 kilometers long by 32 kilometers wide. Minor geologic effects included changes in the flow of springs and wells, formation of craters and water fountains, landslips and landslides, mudflows, and rockfalls.

Heavy furniture was displaced at Frenchman Station, about 11 kilometers west of major surface faulting, but damage to buildings was negligible. Differential settlement of about 10 centimeters that occurred under a wood-frame store resulted in minor cracking of the building. Damage at Fallon, about 48 kilometers west of the nearest major surface break, was limited to a few toppled chimneys. Hundreds of aftershocks occurred. The main earthquake also was felt in Arizona, California, Idaho, Oregon, and Utah[21]."

[20] http://earthquake.usgs.gov/earthquakes/states/events/1954_08_24.php
[21] http://earthquake.usgs.gov/earthquakes/states/events/1954_12_16.php

August 18, 1959

Earthquake Location: Near Hebgen Lake, MT

Earthquake Magnitude: 7.3

MMI Magnitude: Kimberly – 4, Twin Falls – 5, Felt with no recorded magnitude in Buhl, Filer, and Rogerson

General Summary: "This earthquake caused 28 fatalities and about $11 million in damage to highways and timber. It is characterized by extensive fault scarps, subsidence and uplift, a massive landslide, and a seiche in Hebgen Lake. A maximum MM intensity X was assigned to the fault scarps in the epicentral area. The instrumental epicenter lies within the region of surface faulting. Area of perceptibility, maximum intensity, and Richter magnitude all were larger for this earthquake than for any earlier earthquake on record in Montana (from May 1869)[22]."

August 30, 1962

Earthquake Location: Cache Valley, UT

Earthquake Magnitude: 5.7

MMI Magnitude: Felt with no recorded magnitude in Buhl, Castleford, Filer, Hansen, Kimberly, Murtaugh

General Summary: "An intensity VII earthquake occurred on August 30, 1962, in the Cache Valley area of Utah. Two large areas of land totaling four acres, five feet thick, slid 300 yards downhill at Fairview, Idaho, opening new springs. Plaster walls, and chimneys were cracked and a chimney fell at Franklin. Falling brick at the Franklin School cracked through the roof and plaster was cracked in every room. Additional damage occurred at Preston. This magnitude 5.7 earthquake was felt over an area of 65,000 square miles in five states and caused approximately $1 million in damage[23]."

March 28, 1975

Earthquake Location: Rigedale Area near Pocatello, ID

Earthquake Magnitude: 6.1

MMI Magnitude: Kimberly – 3, Murtaugh – 3, Twin Falls – 5

General Summary: "In the Ridgedale area of the sparsely populated Pocatello Valley, this earthquake shifted several ranch houses on their foundations and toppled many chimneys. At Malad City, 20 km northeast of the epicenter, about 40 percent of the chimneys on old buildings were damaged. Total property damage was estimated at $1 million.

Geologists observed one zone of ground fractures - about 0.6 km long and 5 cm wide - in the south-central section of the valley[24]."

[22] http://earthquake.usgs.gov/earthquakes/states/events/1959_08_18.php
[23] http://earthquake.usgs.gov/earthquakes/states/idaho/history.php
[24] http://www.idahogeology.org/services/GeologicHazards/Earthquakes/historiceqs.html

October 28, 1983

Earthquake Location: Near Borah Peak, ID

Earthquake Magnitude: 6.9

MMI Magnitude: Buhl – 5, Filer – 4, Hansen – 4, Kimberly – 4, Twin Falls - 6

General Summary: "The Borah Peak earthquake is the largest ever recorded in Idaho - both in terms of magnitude and in amount of property damage. It caused two deaths in Challis, about 200 kilometers northeast of Boise, and an estimated $12.5 million in damage in the Challis-Mackay area. A maximum MM intensity IX was assigned to this earthquake on the basis of surface faulting. Vibration damage to structure was assigned intensities in the VI to VII range.

Spectacular surface faulting was associated with this earthquake - a 34-kilometer-long northwest-trending zone of fresh scarps and ground breakage on the southwest slope of the Lost River Range. The most extensive breakage occurred along the 8-kilometer zone between West Spring and Cedar Creek. Here, the ground surface was shattered into randomly tilted blocks several meters in width. The ground breakage was as wide as 100 meters and commonly had four to eight echelon scarps as high as 1-2 meters. The throw on the faulting ranged from less than 50 centimeters on the southern-most section to 2.7 meters south of Rock Creek at the western base of Borah Peak[25]."

February 22, 2008

Earthquake Location: 5 miles ENE of Wells, NV

Earthquake Magnitude: 6.0

MMI Magnitude: Buhl – 3.4, Castleford – 3.1, Filer – 3.7, Hagerman – 3, Kimberly – 3.3, Murtaugh – 3.4, Twin Falls – 3.3

General Summary: "Three people injured, more than 20 buildings heavily damaged, almost 700 buildings slightly damaged, and a water main broken at Wells[26]."

One such earthquake was the Shoshone earthquake that occurred on November 11, 1905. The epicenter was located about 5 miles SW of Shoshone, ID, which is located about 30 miles north of the City of Twin Falls. The shaking was felt as far away as Salt Lake City, Utah and Boise, Idaho.[27]

The most recent earthquake that was felt in Twin Falls County was the Wells, Nevada earthquake at 6:16 a.m. (PST) on February 21, 2008. The earthquake had a moment magnitude 6.0 (a "strong" earthquake) and the epicenter was about 5.5 miles (9 km) to the northeast of Wells, Nevada. Rupture of the earthquake fault was partly towards Wells and likely came much closer to this community than this distance indicates. The shaking was very severe in town and was more of a rolling motion a few miles south of Interstate 80. There were no immediate foreshocks recorded before the event. A small earthquake swarm with magnitude 3.7 and 3.1 events had occurred on February 28, 2007 in the same area as the 2008 Wells Earthquake. The Wells Earthquake was a normal dip-slip event.

[25] http://earthquake.usgs.gov/earthquakes/states/events/1983_10_28.php
[26] http://earthquake.usgs.gov/earthquakes/eqinthenews/2008/us2008nsa9/#summary
[27] University of Utah Seismograph Stations. http://www.seis.utah.edu/lqthreat/nehrp_htm/1905shos/1905sh1.shtml

Shaking occurred from this event in Twin Falls County. According to USGS documents, shaking of an intensity of IV on the Mercalli scale was felt in Castleford, Filer, Hansen, and Twin Falls City. Shaking of intensity V was felt in Rogerson, and Shaking of intensity III was felt in Buhl[28].

By its nature, earthquake poses a county-wide hazard. USGS data identifies active faults in and around Twin Falls County. This complex of faults forms the northwest-trending border between the Tertiary volcanic rocks of the Owyhee Mountains and the Snake River Plain in southwestern Idaho. Most of the faults mapped in this zone offset volcanic rocks of probable late Tertiary age, but many of these rock units are poorly dated and thus may include some Quaternary units. A few faults along the Owyhee Mountains fault system offset Quaternary surficial deposits in the area between Shoofly Creek and Little Jacks Creek; these deposits are undated, but are probably late Quaternary in age. Scarp profiling, trenching, and detailed soils analysis of faults and deposits in the Shoofly/Little Jacks Creek area suggest latest Quaternary displacements on some of these faults. These and other data and conclusions are used to develop the recurrence interval and loss estimates given below.

Potential earthquake severity is evaluated using seismic hazard acceleration values on a scale of one (1) to one hundred (100), with 100 being the most severe. Data from the USGS "National Atlas - Seismic Hazard Acceleration Values" map, in Figure 4.3.2 shows that the County is in Acceleration Zones 5-7 indicating relatively low earthquake severity potential. Further, USGS studies estimate a relatively long recurrence interval for one representative fault affecting Twin Falls County of between 3,000 and 9,000 years with an average recurrence interval for the last five events of 5,200 years.

National Earthquake Hazards Reduction Program and Liquefaction Analysis

To further analyze the risk to Twin Falls County from earthquake activity, mapping and analysis was conducted to determine a National Earthquake Hazards Reduction Program Site Class Map, which assigns site classes to building locations based on the geotechnical properties of earth materials within 100 feet of the ground surface. These site class designations provide some measure of the potential for strong ground shaking in a particular area during an earthquake.

Additionally a Liquefaction Susceptibility Map for Twin Falls County, which mapped soils susceptible to liquefaction from potential groundshaking from an earthquake, was created.

These reports, which are found in Attachment 3, were not based on earthquake potential, or in any way attempted to predict when earthquakes might occur. They indicate the potential for hazards (damage) to occur to infrastructure based on the geotechnical properties of the subsurface. There are very few soils with liquefaction potential within Twin Falls County, and where they are mapped, there is very little (if any) infrastructure located there. Thus the overall hazard vulnerability ranking for earthquakes was lower from the previous Plan. This work, as stated, does not state that an earthquake would not occur in Twin Falls County, but rather that the damage would be minimal.

[28] USGS. http://earthquake.usgs.gov/eqcenter/eqinthenews/2008/us2008nsa9/#summary

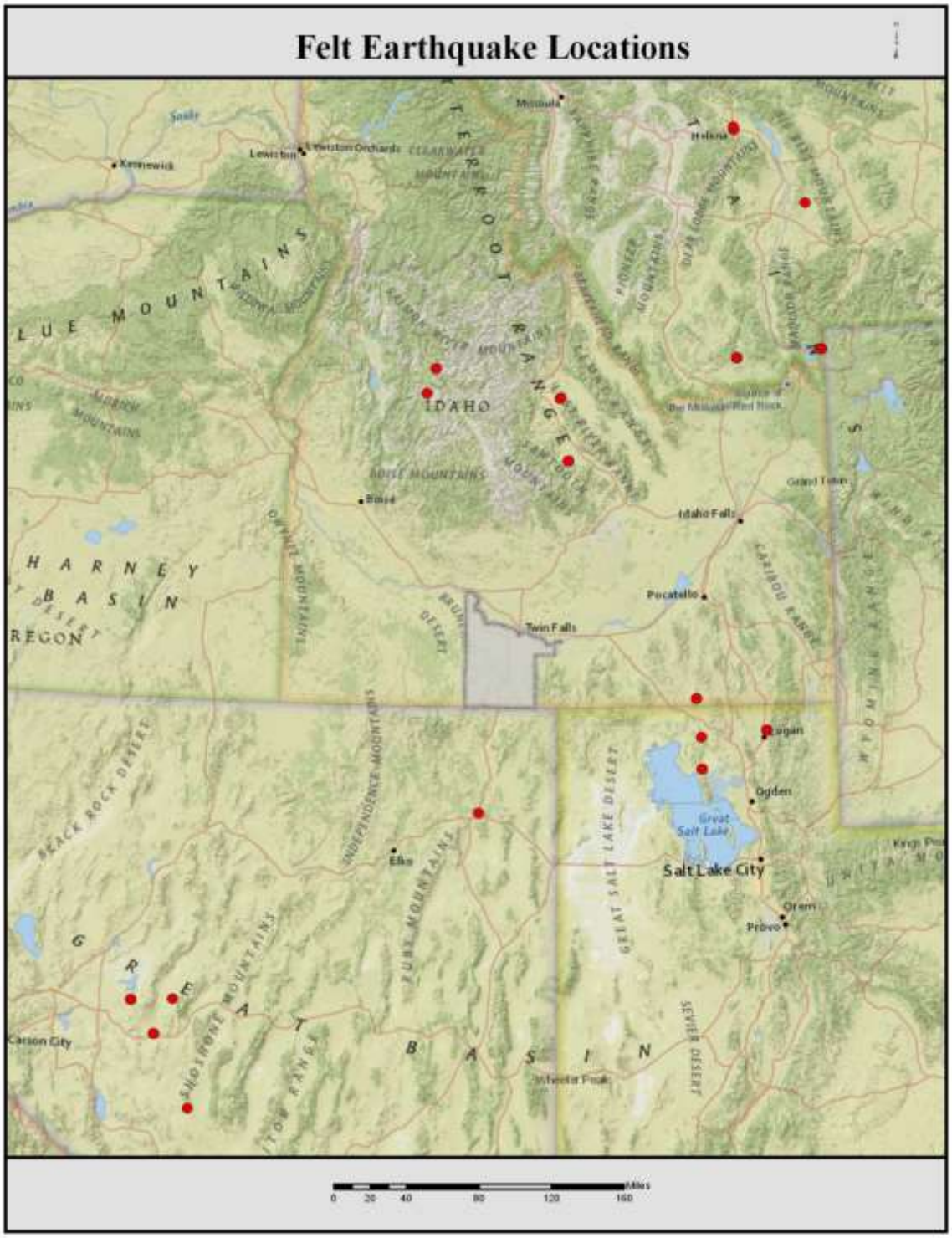


Figure 2.3.3: Felt Earthquake Epicenter Map

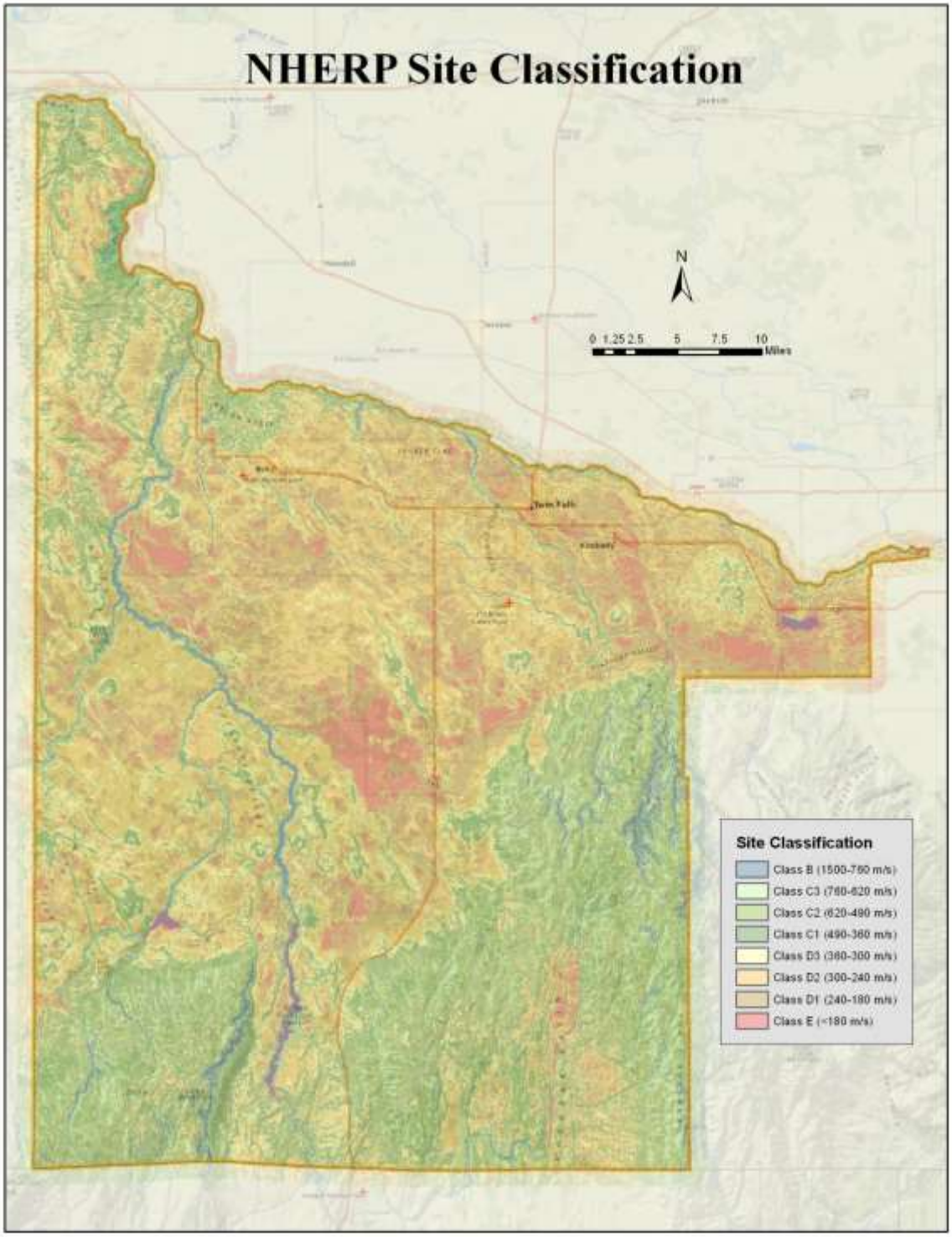


Figure 2.3.4 Twin Falls County NHERP Site Classification Map

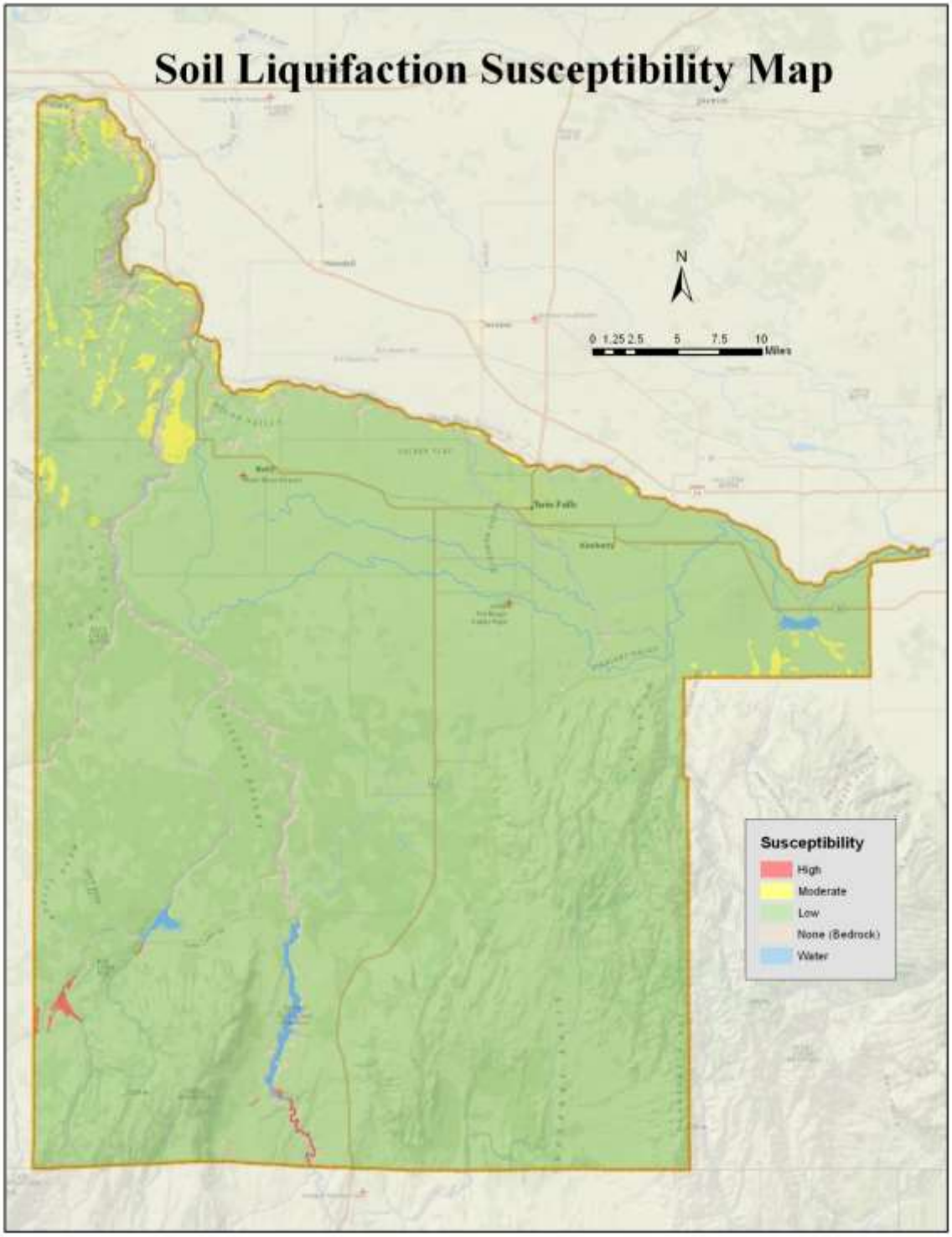


Figure 2.3.5: Twin Falls County Soil Liquefaction Map

Impacts

Earthquakes are capable of catastrophic consequences, especially in urban areas. Worldwide, earthquakes have been known to cost thousands of lives and enormous economic and social losses. In minor earthquakes, damage may be done only to household goods, merchandise, and other building contents and people are occasionally injured or killed by falling objects. More violent earthquakes may cause the full or partial collapse of buildings, bridges and overpasses, and other structures. Fires due to broken gas lines, downed power lines, and other sources are common following an earthquake and often account for much of the damage. Economic losses arise from destruction of structures and infrastructure, interruption of business activity, and innumerable other sources. Utilities may be lost for long periods of time and all modes of transportation may be disrupted. Disaster Services, including medical, may be both disabled and overwhelmed. In addition to broken gas lines, other hazardous materials may be released.

Loss Estimates

Losses for earthquake events were calculated using HAZUS, FEMA's loss estimation software. The analysis was done using local data and updated NEHRP and Soil Liquefaction maps.

The scenario used was a probabilistic magnitude 7 100 year event.

HAZUS estimates that about 61 buildings will be at least moderately damaged. This is over 0.00 % of the buildings in the region. There are an estimated 0 buildings that will be damaged beyond repair.

HAZUS estimates the following loss to utility systems:

- Potable Water: 8 Leaks & 2 Breaks
- Waste Water: 4 Leaks & 1 Break
- Natural Gas: 1 Leak & 0 Breaks

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 1,000 tons of debris will be generated. Of the total amount, Brick/Wood comprises 56.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 40 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 0 households to be displaced due to the earthquake. Of these, 0 people will seek temporary shelter in public shelters.

HAZUS estimates that there will be 1 injury requiring medical attention, but not hospitalization.

The total economic loss estimated for the earthquake is 2.63 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the

damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building related losses were 2.48 (millions of dollars); 26 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 55 % of the total loss.

Hazard Evaluation

While the possibility of an earthquake in Twin Falls County exists, HAZUS loss estimates indicate that the risk is low. Moderate damage to only 179 buildings is projected with little or no debris and no fires. This represents less than 1% of the total number of buildings in the County and less than 0.3% of their replacement value for the worst-case scenario (magnitude 7.0, 100 year earthquake). Casualties would also be very limited with no deaths and only three minor injuries in the worst-case scenario. It should be understood that a magnitude 7.0 earthquake would be expected to have extensive impacts. The relatively low HAZUS loss estimates for magnitude 7.0 arise because of the low probability that such an earthquake will occur.

Repetitive Loss - none

Earthquake		
Profile Category	**Rating**	**Description**
Historical Occurrence	0	None
Probability	2	Low
Vulnerability	1	Negligible
Spatial Extent	2	Limited
Magnitude	2	Critical
Total	**7**	**Low**

Landslide/Mudslide

Description

The term “landslide” encompasses several types of occurrence (including mudslides) in which slope-forming materials such as rock and soil move downward under the influence of gravity. Such downward movement may occur as the result of an increase in the weight of slope-forming materials, an increase in the gradient (angle) of the slope, a decrease in the forces resisting downward motion (friction or material strength), or a combination of these factors. Factors that may trigger a landslide include: weather related events such as heavy rainfall (one of the most common contributors), erosion, freeze-thaw weakening of geologic structures, human causes such as excavation and mining, deforestation, vibration from explosions or other sources, and such geologic causes as earthquake, volcanic activity, and shearing or fissuring. The speed of descent ranges from sudden and rapid to an almost imperceptibly slow creep where effects are only observable over a period of months or years.

Historical Frequencies

June 27, 1913 – Landslide at Shoshone Falls caused by unusual flow of irrigation water over the rimrock above. The slide swept away trees and vegetation on the narrow draw leading to the riverbed. All access to canyon was cut off.

The Bluegill landslide is a large, naturally-occurring landslide located in south-central Idaho, approximately 22 miles west of Twin Falls and 6 miles west of Buhl. The landslide is predominantly on public land administered by the BLM, although portions of the landslide are on state and private property.

Figure 2.3.6: Bluegill Landslide

Bluegill is part of a larger landslide complex that forms an area in the Salmon Falls Creek drainage named Sinking Canyon. The last major landslide movements in Sinking Canyon occurred in the summer of 1937 when several acres of farmland were lost over a period of several days into the existing canyon. The 1937 event was likely a continuation of landslides that have occurred in this area since the inception of the canyon.

The most recent movement of the Bluegill landslide occurred in late 1998 or early 1999. Movement of the landslide was brought to the attention of BLM in 1999 when recreational rock climbers noted the formation and widening of fractures in the basalt cliffs that form the canyon rim.

Initial monitoring determined that about 11 acres of the canyon rim had moved over a period of several months to a year. These movements created a dam that forms a lake that is approximately 1 mile long and averages about 130 feet wide. The primary hazard currently associated with the landslide is a possible breach of the dam that could cause flooding downstream.

As part of ongoing efforts to address possible public safety concerns, the BLM, in coordination with the US Geological Survey (USGS), has conducted an assessment of the landslide, examined mitigation options, and identified alternatives for further study and monitoring of the landslide.

To date, movement of the landslide is minimal and remains under observation by BLM and the USGS.

In August 1987 a land slide occurred in the Hagerman fossil beds. The slides destroyed a pump station and crippled the water delivery system for 80 shareholders of the Bell Rapids Mutual Irrigation Co. The total loss was estimated at $1.5M.

Figure 2.3.8 is a map produced by the Idaho Geologic Survey which shows where landslides have generated distinctive deposits and landforms in the Hagerman Quadrangle, which includes the northwestern corner of Twin Falls County. Landslide deposits are prominent along the Snake River Canyon Rim. Additionally Figure 2.3.7 indicates landslides have occurred in areas west of Twin Falls City.

Impacts

Some of the many direct and indirect impacts of landslides are:

- Human and animal deaths and injuries and resulting productivity losses
- Damage or destruction of structures
- Destruction or blockage of roadways and resulting transportation interruption
- Loss of, or reduced land usage
- Loss of industrial, agricultural and forest productivity
- Reduced property values in areas threatened by landslide
- Loss of tourist revenues and recreational opportunities
- Damage or destroyed infrastructure and utilities
- Damming or alteration of the course of streams and resulting flooding
- Reduced water quality

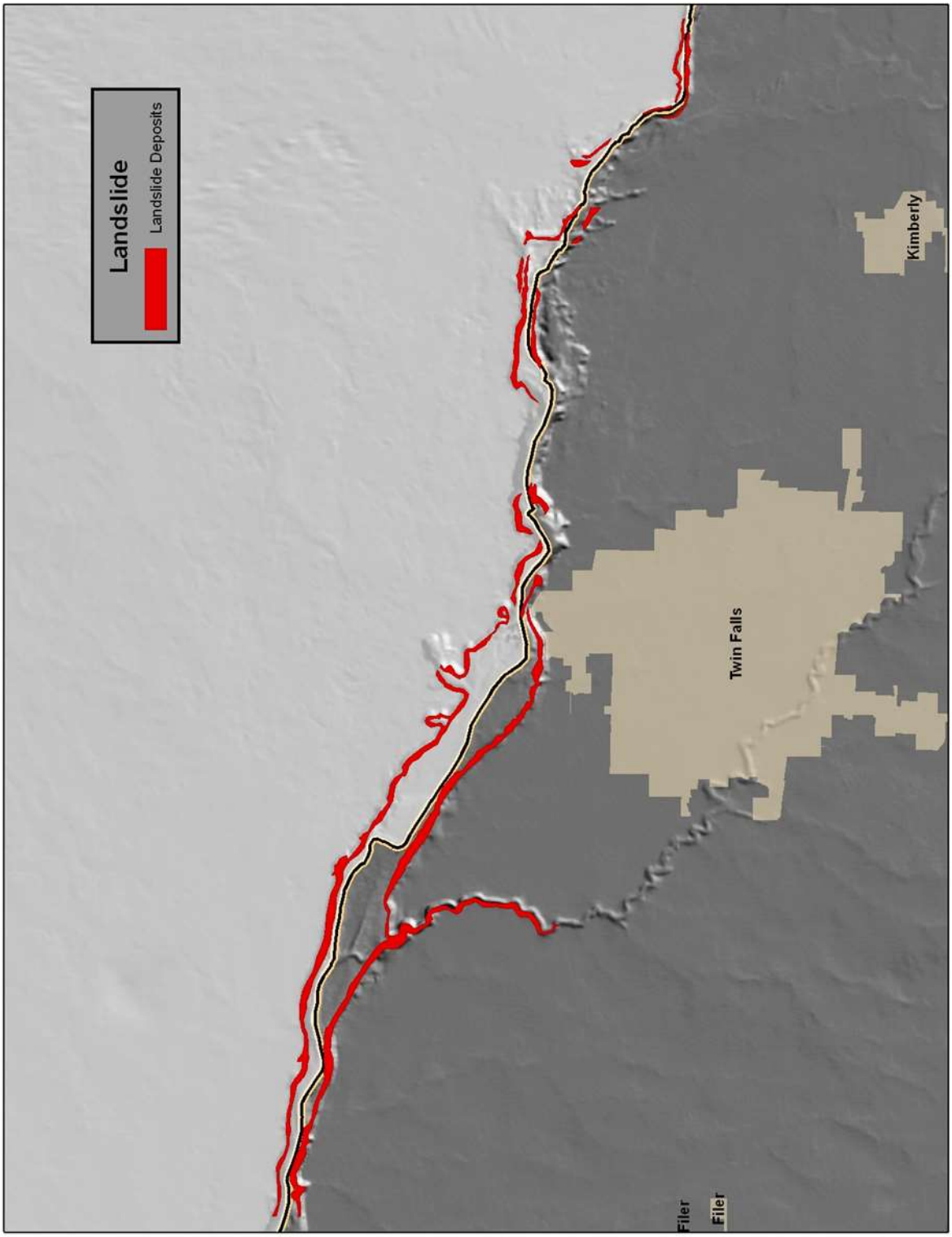


Figure 2.3.7: Landslide deposits near Twin Falls City

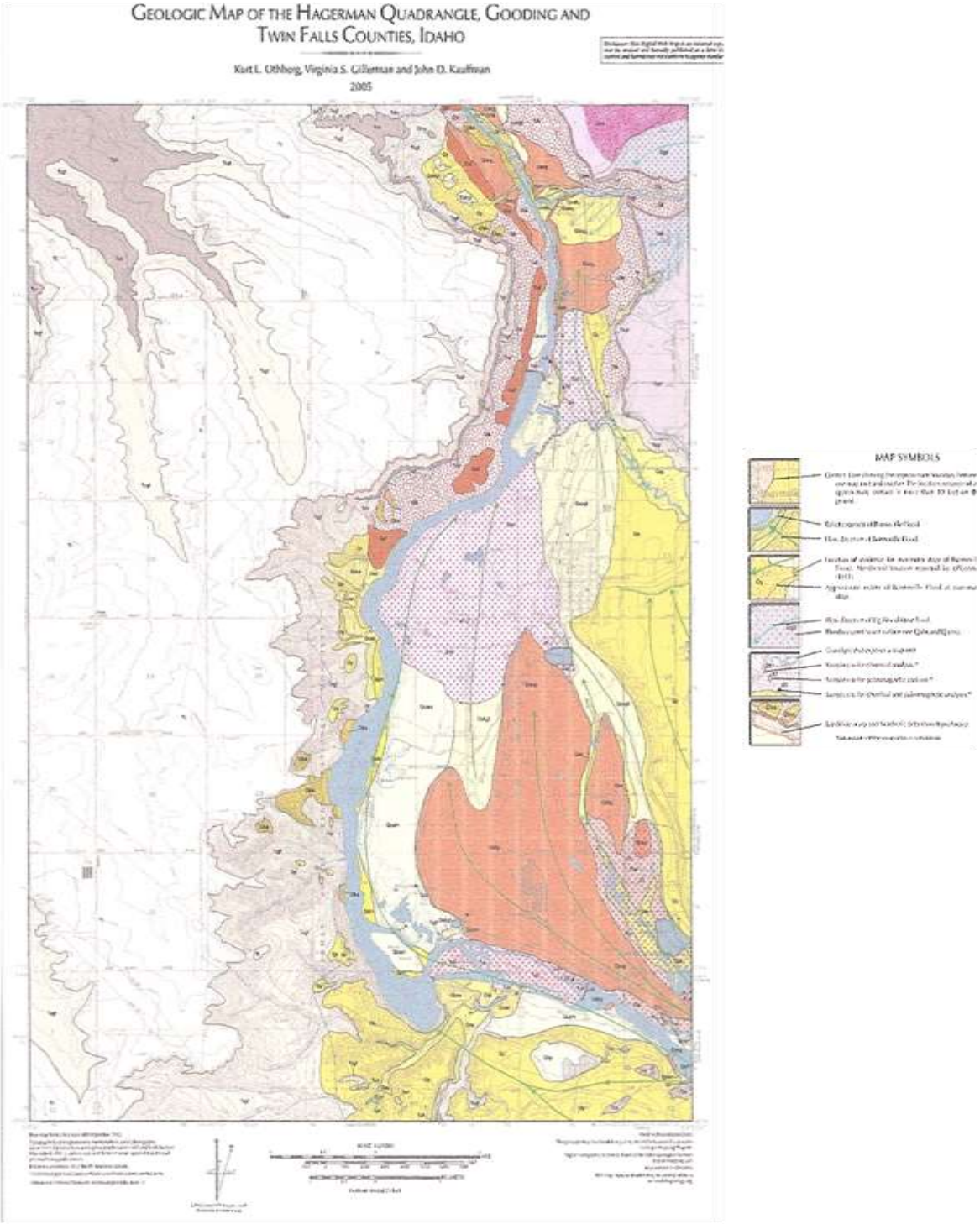


Figure 2.3.8: USGS Hagerman Quadrangle Map

Loss Estimates

Potential losses due to landslides in Twin Falls County are difficult to calculate because the most landslide prone areas in Twin Falls County are in areas where there is little loss exposure. One critical area in the Snake River Canyon is a wall rockslide adjacent to the City of Twin Falls' domestic water well and the City's sewage treatment facilities. Protection of those facilities from potential losses is critical.

Figure 2.3.9: Twin Fall County exposed water line

Hazard Evaluation

Landslide and Rockslide risks are significant along the Snake River Canyon rim. Historical evidence indicates that rocks have fractured along the canyon walls and slid into the canyon. Infrastructure has been built on top of and below some of these historic slide areas. Engineering studies indicate that rock fractures occur when water runs behind the rocks and freezes, expanding fractures and increasing the potential for slides.

Repetitive Loss – Even though rock slides are frequent along the Snake River Canyon rim there is no repetitive damage or loss as the slides are spread out over several miles.

Landslides		
Profile Category	**Rating**	**Description**
Historical Occurrence	1	Low
Probability	2	Low
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	1	Negligible
Total	**6**	**Low**

Section 2.4 Other Natural Hazards

Wildfire

Description

Wildfire is defined by the USDA Forest Service as, "A fire naturally caused or caused by humans, that is not meeting land management objectives."[29] It is generally thought of as an uncontrolled fire involving vegetative fuels occurring in wildland areas. Such fires are classified for hazard analysis purposes as either "Wildland" or "Wildland Urban Interface" (WUI) fires. Wildland fires occur in areas that are undeveloped except for the presence of roads, railroads and power lines while WUI fires occur where structures or other human development meets or is intermingled with the wildland or vegetative fuels. Wildland fire is currently considered a natural and necessary component of wildland ecology and, as such, is most often allowed to progress to the extent that it does not threaten inhabited areas or human interests and well-being. At the wildland urban interface, vigorous attempts are made to control fires, but this becomes an increasingly difficult challenge as more and more development for recreational and living purposes takes place in wildland areas. Some wildland fires are ignited naturally (almost exclusively by lightning), but most ignitions are a result of human activities, either careless or intentional. The rapidity with which a wildland fire spreads and the intensity with which it burns is controlled by a number of factors including:

- Weather – wind speed and direction, temperature, precipitation
- Terrain – fires burn most rapidly upslope
- Type of vegetation
- Condition of vegetation - dryness
- Fuel load – the amount and density of vegetation
- Human attempts to suppress

Historical Fire Events

Although their remote location has hindered accurate documentation, a one hundred year analysis of historical reports indicates the occurrence of several large wildland fires in Twin Falls County during that time frame[30]. The Sawtooth National Forest Service and the Bureau of Land Management have collected data on wildfires occurring in the area since 1950. This data indicates that in this period within Twin Falls County approximately 663,000 acres have burned during large fire events.[31]

A listing of reported wildfires from 1956 – 2011 was analyzed to determine the wildfire return interval. Wildfires that burned at least 1 acre within the County were used in the analysis, therefore the magnitude and return interval for wildfires is associated with fires burning at least partly in the County. The largest wildfire on record is the Elk Mountain Fire that burned 373,001 acres in 2007. It burned 61,392 acres in Twin Falls County.

[29] http://www.fs.fed.us/fire/fireuse/education/terms/fire_terms_pg5.html
[30] Twin Falls County WUI Fire Mitigation Plan, p 45
[31] Twin Falls County WUI Fire Mitigation Plan, p 40

The 10 wildfires that have burnt the most area in Twin Falls County are shown in Table 2.4.1 below.

Fire Year	Fire Name	Acres Burnt	Date Started	Acres Burnt in Twin Falls County
1963	Unk	9,667	1/1/1963	9,667
1995	Blue Gulch	15,751	7/30/1995	11,557
2000	West Basin	55,131	8/17/2000	12,247
2010	Mule Creek	13,732	8/20/2010	13,732
1990	Indian Springs	15,559	8/7/1990	15,559
2005	Clover	192,792	7/15/2005	19,056
1985	House Creek	19,252	1/1/1985	19,252
2007	Elk Mountain	37,3000	7/16/2007	61,391
2010	Long Butte	305,994	8/21/2010	67,349
1966	Unk	70,000	9/9/1966	70,000

Table 2.4.1: Large Wildfires

A Pearson Log III Analysis was run to determine the return interval for wildfires in Twin Falls by magnitude. The results of that analysis are shown below in Table 2.4.2.

Return Period	Probability	Acres Burnt
1.05 Years	95.2%	20
1.11 Years	90.1%	71
1.25 Years	80%	293
2 Years	50%	3,311
5 Years	20%	26,473
10 Years	10%	68,754
25 Years	4%	173,185
50 Years	2%	299,252
100 Years	1%	473,747
200 Years	0.5%	703,226

Table 2.4.2: Wildfire Return Interval

Wildfires occur yearly in Twin Falls County. A 100 year wildfire event affecting the County would burn an approximated 473,000 acres. An event that burns approximately 26,500 acres can be expected to occur on a 5 year interval.

The Relative Fire Risk map shows the areas of the County that are at a higher risk to wildland fire. The risk is calculated using fire ignition data, fire weather data, and potential rate of spread fuel model.

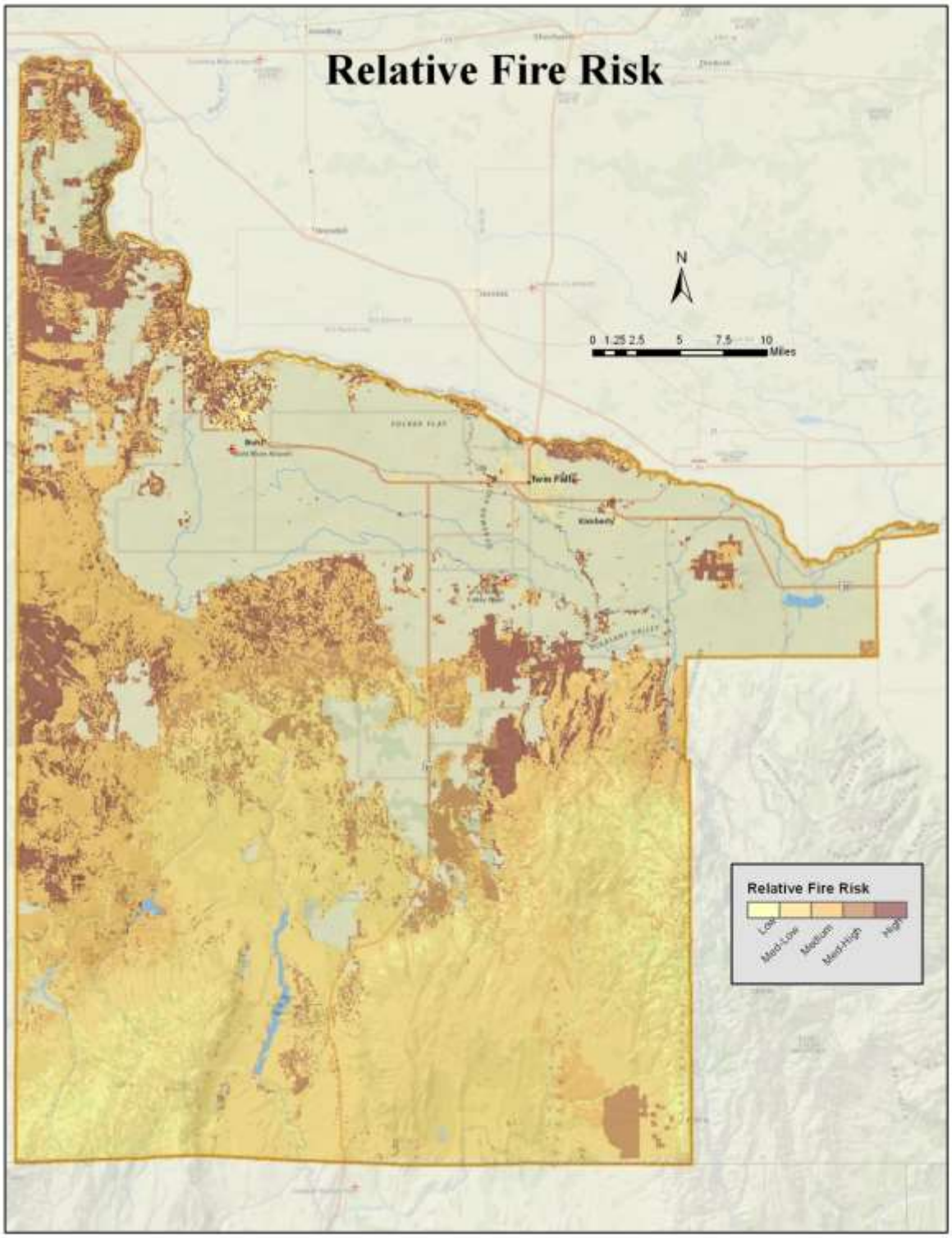


Figure 2.4.1: Relative Wildfire Risk Map

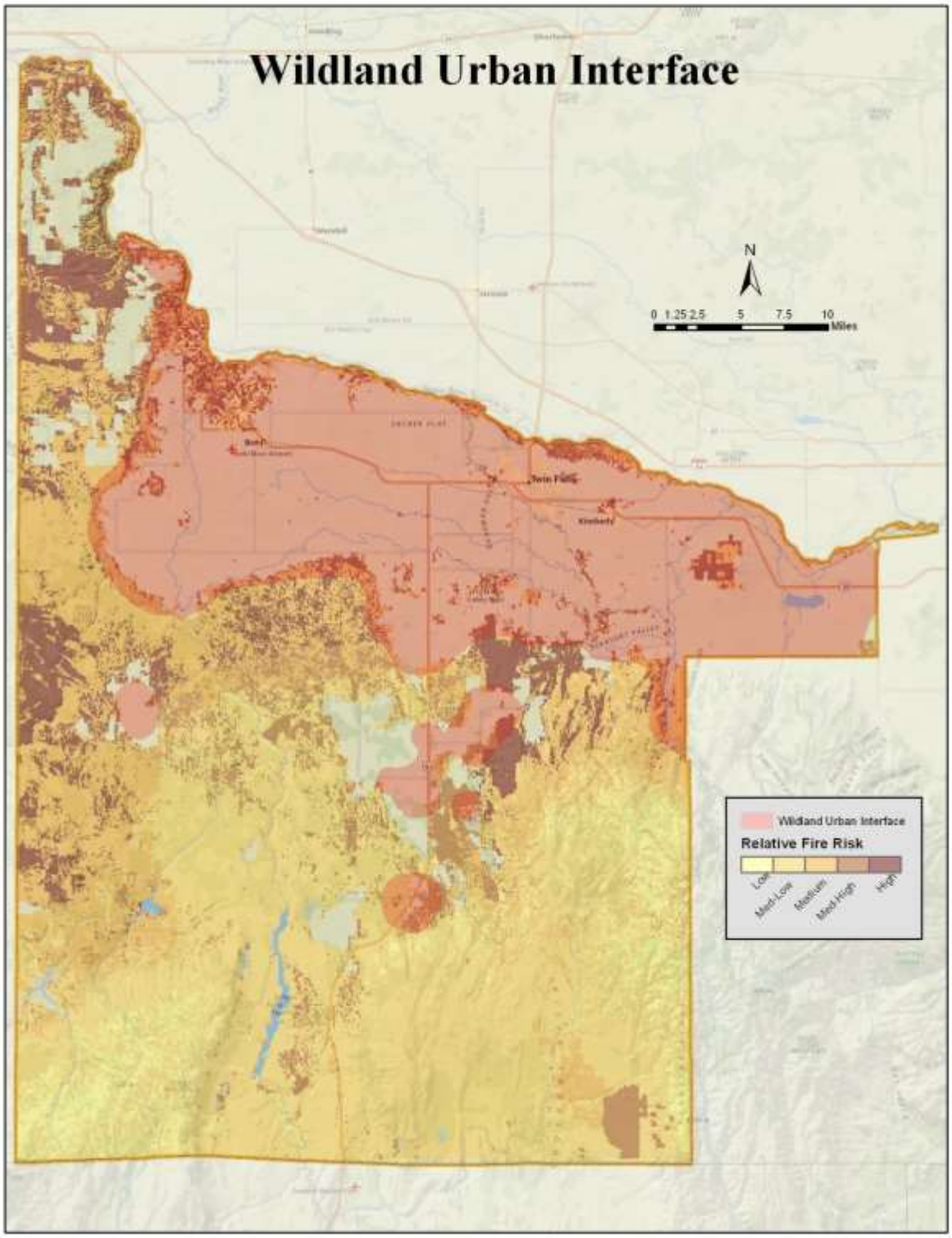


Figure 2.4.2: Twin Falls County Wildland Urban Interface Map

In the Twin Falls County Wildland Urban Interface Plan, areas of highest hazard were compared with the location of exposed residences and other facilities. This comparison indicates that areas of highest risk are:

- Mellon Valley – Carter Pack Road Area
- Banbury Hidden Landing Area
- Southwest Corner of the Filer Fire District
- Snake River Canyon Rim
- West of Twin Falls including
  - Rock Creek Estates
  - Rock Creek Point
  - Village at Canyon Gate
  - Canyon Trails
- East of Twin Falls including
  - East Poleline Road, Canyon Ridge and Meadow Ridge
  - Dierkes Lake and Hidden Lake
  - Rock Creek Park and Rock Creek Parkway
  - Centennial Park and Snake River Canyon Trail
- The Community of Rock Creek
- China Ridge-Hidden Lakes
- Pleasant Valley
- Cottonwood Heights and Parrot Crossing
- The Community of Hollister
- The Community of Rogerson
- Hannahs Fork of Big Creek
- Communities outside Rural Fire Protection Districts.

Note: *The 2004 updated 2011 Twin Falls County Wildland Urban Interface Fire Mitigation Plan is hereby incorporated in part by reference and through inclusion of the summary information provided within this hazard profile.*

Roseworth, Bell Rapids, Three Creek, and Magic Water areas are populated areas that are not currently served by rural fire protection. All of these areas are quite rural with homes and outbuildings generally associated with the large farms in the area. The lack of structural fire protection in these areas increases risk associated with both structural and wildland fire. The Lower Snake River District of the BLM does provide wildland fire protection but does not provide protection for fires originating on private lands that may threaten homes and property.[32]

As demonstrated in figure 2.4.2 the following cities are located within the Wildland Urban Interface:

[32] Twin Falls County WUI Fire Mitigation Plan, p 94

- Buhl
- Castleford
- Filer
- Hansen
- Hollister
- Kimberly
- Murtaugh
- Twin Falls City

Impact

Wildland fires threaten the lives of anyone in their path including hikers, campers, and other recreational users and, where suppression efforts are made, firefighters. Enormous volumes of smoke and airborne particulate materials are produced that can affect the health of persons for many miles downwind. Nearer to the fire, smoke reduces visibility, disrupting traffic and increasing the likelihood of highway accidents. As a result of wildland fire, there may be changes in water quality in the area and erosion rates may increase, along with increased rainfall runoff and flash flood threat, and decreased rainfall interception and infiltration. Indirect impacts include losses to tourism, recreational and timber interests, and loss of wildlife habitat. Wildland Urban Interface fires have most or all of the above impacts as well as those of structural fires, including injury and loss of life, and loss of structures and contents. Agricultural losses may also be sustained including livestock, crops, fencing, and equipment.

Loss Estimates

Economic loss results for areas of high wildfire hazard are summarized in Table 2.4.3

Hazard Area	Potential Property Losses
Melon Valley – Carter Pack Road Area	$8,498,201
Banbury Hidden Landing Area	$1,933,188
Southwest Corner of the Filer Fire District	$4,166,048
Snake River Canyon Rim	$61,808,685
- and Hidden Lake	$14,662,549
- Rock Creek Park and Rock Creek Parkway	$43,214,718
The Community of Rock Creek	$2,077,010
Pleasant Valley	$11,364,185
The City of Hollister	$2,487,783
The Community of Rogerson	$714,675
Hannahs Fork of Big Creek	$488,223
Communities outside Rural Fire Protection Districts	$94,157,288

Table 2.4.3: Loss Estimates for Wildfire in High Hazard Areas

The potential total loss of Twin Falls County from a catastrophic wildfire defined as a wildfire that consumes all property within the defined Wildland Urban Interface Area yields the following:

Residential parcels impacted – 24,576

Total parcels impacted – 37,721

Maximum value of a single impacted parcel - $4,103,670

Total Value of Property in the WUI Area - $1,219,382,497

Hazard Evaluation

Repetitive Loss - none

There is an average of about five wildfires per year in Twin Falls County and historical evidence shows that the potential for very large wildfires exists. The fuel types and loads present in the County make possible, given adverse weather conditions, wildfire events that would overwhelm any suppression efforts using current resources. In such an event, it is probable that large economic losses would be suffered; injury and loss of life is also possible.

Wildfire		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	2	Limited
Spatial Extent	3	Critical
Magnitude	4	Catastrophic
Total	**16**	**High**

Burrowing Rodents - Pocket Gophers

2012 Revision Summary: This hazard was added in this update.

Description

Pocket Gophers are burrowing rodents of the Geomyidae family. They are "true" gophers, though several ground squirrels of the Sciuridae family are often called gophers as well. The name "pocket Gopher" on its own may be used to refer to any number of subspecies of the family.

Figure 2.4.3: Pocket Gopher

Pocket Gophers are heavily built and most are 4.5 to 12 inches long and weighing nearly 1 pound. Within the species, males are larger than females and can be nearly double their weight. Their most characteristic features are their large cheek pouches, from which the word "pocket" in their name derives. These pouches are fur-lined and can be turned inside out. They extend from the side of the mouth well back onto the shoulders. They have small eyes and a short, hairy tail, which they use to feel around tunnels when they walk backwards.

All pocket gophers are burrowers. They are larder hoarders, and their cheek pouches are used for transporting food back to their burrows. Their presence is unambiguously announced by the appearance of mounds of fresh dirt about 8 inches in diameter. They like moist soil.

Pocket gophers are considered an agricultural pest. They have been known to destroy crops as well as cause the collapse of irrigation canal banks.

Historic Frequencies

Historically, in Twin Falls County, Pocket Gophers have destroyed canal banks and caused major flooding.

Impacts

Impacts from pocket gophers include:

- Lawn & Garden Damage
- Chewed & Damaged Underground Wiring
- Chewed & Damaged Irrigation Lines
- Landscape Erosion
- Ditch Banks & Earthen Dams Compromised and Leaking
- Potential Injury to Livestock
- Crop Damage

Loss Estimates

Losses associated with Pocket Gophers are tied to canal failure and agricultural crop losses.

Hazard Evaluation

Repetitive Loss *– None*

Burrowing Rodents		
Profile Category	**Rating**	**Description**
Historical Occurrence	1	Low
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	2	Limited
Total	**9**	**Low**

Vector Borne Diseases

"Vector-borne disease" is the term commonly used to describe an illness caused by an infectious microbe that is transmitted to people by blood-sucking arthropods. The arthropods (insects or arachnids) that most commonly serve as vectors include: 1.) blood sucking insects such as mosquitoes, fleas, lice, biting flies and bugs, and 2.) blood sucking arachnids such as mites and ticks. The term “vector” refers to any arthropod that transmits a disease through feeding activity.

Vectors typically become infected by a disease agent while feeding on infected vertebrates (e.g., birds, rodents, other larger animals, or humans), and then pass on the microbe to a susceptible person or other animal. In almost all cases, an infectious microbe must infect and multiply inside the arthropod before the arthropod is able to transmit the disease through its salivary glands. The most common vector-borne diseases in Idaho are carried by mosquitoes and ticks.

West Nile and other mosquito-borne viruses:

Description

West Nile virus (WNV) is transmitted to people, birds, and other animals by the bite of an infected mosquito. This virus can cause serious illness in people of any age, but especially in people over the age of fifty or those with other underlying medical conditions. The best form of protection is by avoiding mosquito bites.

West Nile virus infections occur in the summer and fall in Idaho when mosquitoes are active. WNV does not occur in northern states when it is too cool for mosquitoes to survive. In southern states with warmer climates and mosquitoes present year-round, the risk of infection may still be present in the winter months.

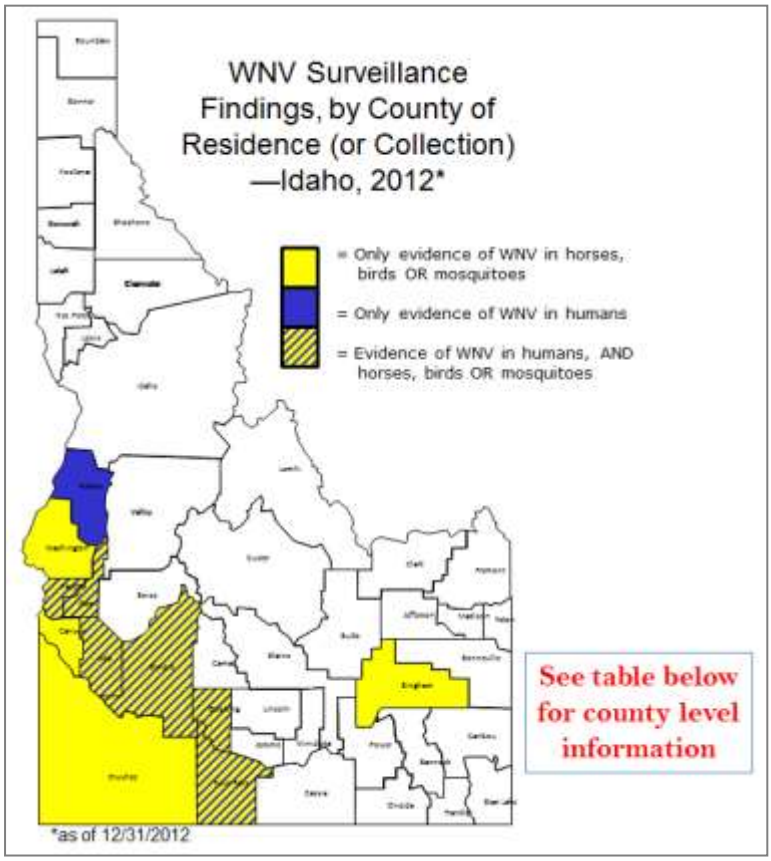


Figure 2.4.4 2012 West Nile Virus Map

Historical Frequencies

Locally-acquired mosquito-borne human infections were first recorded in Idaho in 2004. In 2006, Idaho led the nation in reports of human illness associated with WNV with 996 cases being reported to the State Health Department. In addition to people, WNV was also detected in 338 horses, 127 birds, and numerous mosquitoes.

Date	Human	Horse	Bird	Mosquitoes
2004	0	1	0	
2005	1	1	0	
2006	39	22	11	Not Tested
2007	3	0	0	Positive
2008	2	0	0	
2009	3	1	0	Positive
2010	0	2	0	
2011	0	0	0	
2012	2	0	0	Positive

Table 2.4.4
Reported Cases of WNV in Twin Falls County[33]

Impacts

Symptoms of West Nile virus may include a fever, headache, body aches, a rash, and swollen glands and may last for days, or linger for weeks to months. Serious illness infecting the brain or spinal cord can occur in some individuals. Although anyone can experience the more severe form of the disease, it tends to occur in people over the age of 50 or those with other underlying medical conditions or weakened immune systems. The severe symptoms may include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness, and paralysis. These symptoms may last several weeks or more, and neurological effects may be permanent. Usually, symptoms occur from five to fifteen days after the bite of an infected mosquito. There is no specific treatment for infection, but hospitalization and treatment of symptoms may improve the chances of recovery for severe infections. There is no vaccine available for humans.

The Twin Falls County Pest Abatement District has an active surveillance program for West Nile Virus. The District treats areas annually that are prone to the Virus.

[33] *http://healthandwelfare.idaho.gov/Portals/0/Health/Epi/WNV/2012_WNV%20casecounts.pdf*

Loss Estimates

Losses in the event of a West Nile virus outbreak would primarily be loss of income for those affected by the virus as well as a loss of productivity by businesses. Both human and animal deaths have occurred in Idaho due to West Nile virus.

Hazard Evaluation

Repetitive Loss - none

West Nile Virus		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	3	Critical
Total	**12**	**Medium**

Lyme and other Tick-borne Disease

Tick-borne diseases, including Lyme disease and Rocky Mountain spotted fever are serious public health problems, infecting tens of thousands in the U.S. each year. The CDC is working closely with local communities, developing innovative control approaches and researching improved diagnostics.[34]

Historical Frequencies

Lyme disease information for Arizona, Idaho, Montana, Nevada, and Utah is very limited. The disease has been reported in all of these states, but the numbers of cases have been few, either because the disease is indeed rare, or reporting procedures are flawed.

Figure 2.4.5
Common bullseye rash pattern
associated with Lyme disease

[34] http://www.cdc.gov/ncezid/dvbd/

Reporting requires meeting CDC testing criteria which are based on East Coast Lyme cases. The differing strains of Lyme disease found on the West Coast may make this reporting procedure of questionable value, and misleading to both patients and physicians. For this reason, the relatively few CDC cases that have been reported for surveillance purposes are omitted.

Information provided by Idaho health care authorities is virtually nonexistent. Lyme disease and other tick borne infections are reportable in Idaho. It is presumed that Lyme cases must meet CDC testing criteria which results in very low numbers of reported cases.[35]

Impacts

Lyme disease is the most common tick-borne disease in the Northern Hemisphere. *Borrelia* is transmitted to humans by the bite of infected ticks belonging to a few species of the genus *Ixodes* ("hard ticks"). Early symptoms may include fever, headache, fatigue, depression, and a characteristic circular skin rash called erythema migrans (EM). Left untreated, later symptoms may involve the joints, heart, and central nervous system. In most cases, the infection and its symptoms are eliminated by antibiotics, especially if the illness is treated early. Delayed or inadequate treatment can lead to the more serious symptoms, which can be disabling and difficult to treat.

Loss Estimates

Lyme disease occurs very infrequently; however, for those individuals who contract the disease the losses of wages and the cost of requisite medical care can be significant.

Hazard Evaluation

Repetitive Loss – none

Lyme Disease		
Profile Category	**Rating**	**Description**
Historical Occurrence	1	Low
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	3	Critical
Total	**10**	**Low**

[35] http://lyme.kaiserpapers.org/lyme-disease-in-interior-western-states.html

Vesicular Stomatitis

Vesicular Stomatitis Virus (VSV) is a viral disease that primarily affects cattle, horses, and swine and occasionally sheep, goats, llamas, and alpacas. Humans can also become infected with the disease when handling affected animals, but this is a rare event.[36]

Although VSV has been extensively studied at the molecular level, many unknowns remain regarding its epidemiology. VSV is known to be transmitted directly via the transcutaneous or transmucosal route. Certain VS viruses have been isolated from sand flies, black flies, mosquitoes, and other insects suggesting that it could be insect-borne. Seasonal variation (disappearance at end of rainy season in tropical areas and at first frost in temperate zones) also supports vector-borne transmission hypotheses that the VS virus is a plant virus present in pastures. In endemic areas, VSV maintains long-term, stable cycles between sand flies and subclinical susceptible hosts; evidence of neutralizing antibodies in domestic and wild animals in these areas exists. Morbidity rates vary, up to 90% in a herd, but there is a low mortality rate.

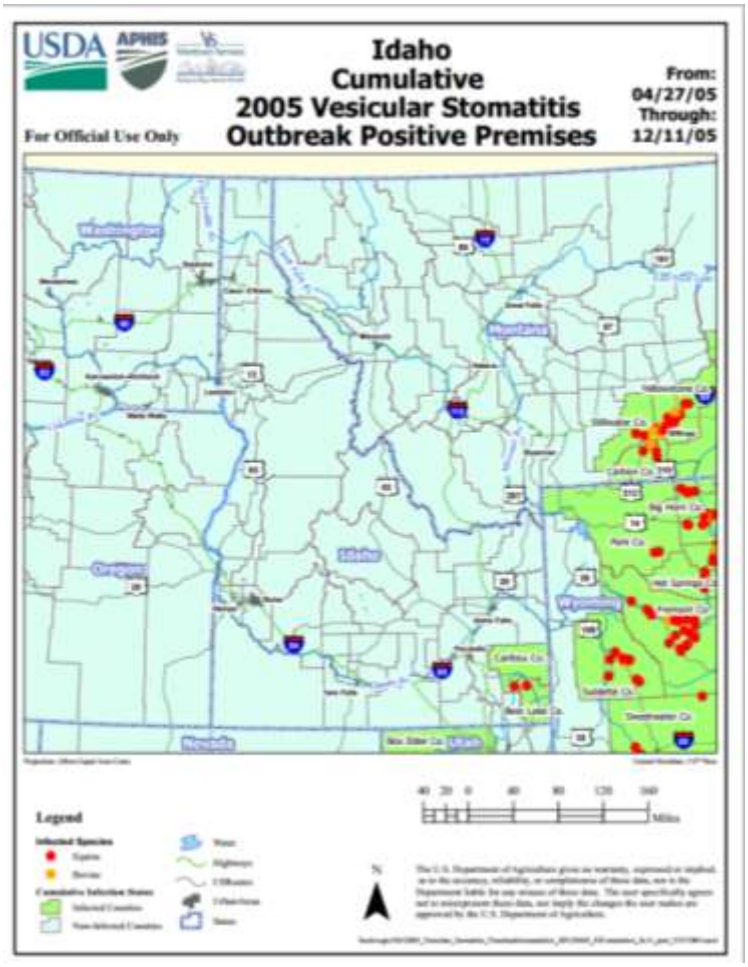


Figure 2.4.6 2005 Vesicular Stomatitis

[36] http://www.aphis.usda.gov/publications/animal_health/content/printable_version/fs_vesicular_stomatitis_07.pdf

Historical Frequencies

Typically the disease is limited to the Americas; however, it has been described in France (1915 and 1917) and in South Africa (1886 and 1897). Strains of the serotype NJ and subtype IND-1 are endemic in livestock in areas of southern Mexico, Central America, Venezuela, Colombia, Ecuador, and Peru. Sporadic activity of NJ and IND-1 VSV has been reported in northern Mexico and western United States. IND-2 has only been isolated from mammals sporadically in Argentina and Brazil. The IND-3 subtype (Alagoas) has been isolated only in Brazil. While VS is not diagnosed in livestock every year in the USA, it is considered to be endemic in feral pigs on Ossabaw Island, Georgia.[37]

There was an outbreak in Idaho as recent as 2005. The USDA reports that positive premises were found in Caribou and Bear Lake Counties as well as Box Elder County in Utah.[38] (Shown in Figure 2.4.6)

Since there could be a Vesicular Stomatitis outbreak in any given year, it is essential that veterinarians and livestock owners be on the alert for animals displaying clinical signs of the disease.[39]

Impacts

While Vesicular Stomatitis does not generally cause animals to die, it can still cause economic losses to livestock producers. The disease is particularly significant because its outward signs are similar to (although generally less severe than) those of foot-and-mouth disease, a foreign animal disease of cloven-hoofed animals that was eradicated from the United States in 1929. The clinical signs of Vesicular Stomatitis are also similar to those of swine vesicular disease, another foreign animal disease. The only way to tell these diseases apart is through laboratory tests.

Figure 2.4.7 Example Vesicular Stomatitis in Horses

[37] http://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/VESICULAR_STOMATITIS_FINAL.pdf
[38] http://www.aphis.usda.gov/vs/nahss/equine/vsv/vsvmaps/ID_2005_Cumulative_Final_121105.pdf
[39] http://www.aphis.usda.gov/publications/animal_health/content/printable_version/fs_vesicular_stomatitis_2012.pdf

Figure 2.4.8 Example Vesicular Stomatitis in Cattle

Vesicular Stomatitis is recognized internationally as a reportable disease. This means that there are serious economic and regulatory repercussions associated with the diagnosis. When the disease is detected in the United States, some countries may take action to block international trade of U.S. animals and animal products. Interstate movement of animals is also impacted. Premises containing affected animals are quarantined until 21 days after the lesions in the last affected animals have healed. As a result, quarantine periods can be lengthy.

In affected livestock, the incubation period for Vesicular Stomatitis ranges from 2 to 8 days. Often, excessive salivation is the first sign of the disease. Close examination of the mouth initially reveals blanched and raised vesicles or blister-like lesions on the inner surfaces of the lips, gums, tongue, and/or dental pad. In addition, these blister-like lesions can form on the lips, nostrils, coronary band, prepuce, vulva, and teats. The blisters swell and break, which causes oral pain and discomfort and reluctance to eat or drink. Lameness and severe weight loss may follow. Body temperature may rise immediately before or at the same time lesions first appear.

Dairy cattle often suffer from teat lesions and subsequent mastitis; a severe drop in milk production commonly occurs. Some affected dairy cattle can appear to be normal with no clearly visible signs of illness but may only eat about half of their normal feed intake. If there are no complications such as secondary infection, affected animals typically recover in about 2 weeks.

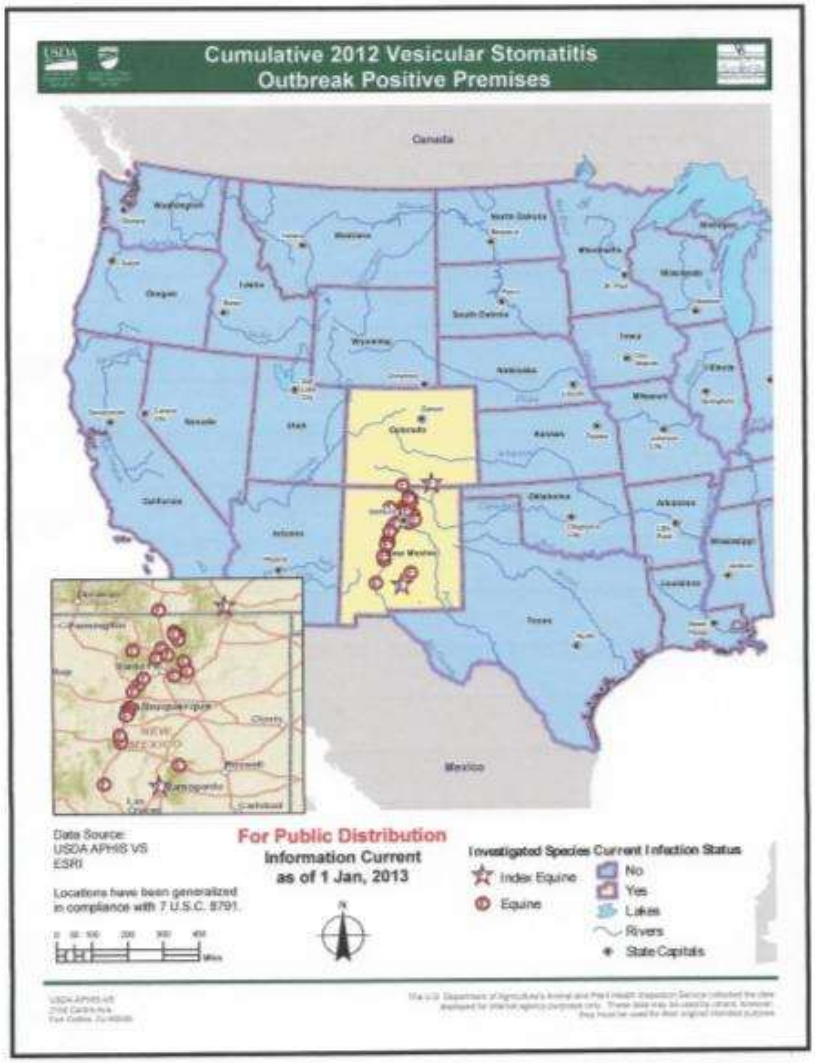


Figure 2.4.9 U. S. Vesicular Stomatitis Cases

Loss Estimates

There have been no cases of Vesicular Stomatitis reported in Twin Falls County or the State of Idaho since 2005. Recent losses have been reported in New Mexico and Colorado. The Twin Falls County Pest Abatement District regularly conducts surveillance on Black Flies and Mosquitoes to test for the VS virus. Should the virus become present in Twin Falls County there would be significant impact to the livestock industry as entire portions of the County could be placed under a quarantine.

2012 Vesicular Stomatitis Outbreak in United States

There have been no new VSV-infected premises identified since December 18, 2012. The last affected New Mexico premise was released from quarantine on December 24. Premises are eligible for quarantine release 21 days after lesions have healed in all affected animals. A total of 34 premises in New Mexico and 2 premises in Colorado have been released from quarantine

since the start of the outbreak. All affected premises in both Colorado and New Mexico have been released from quarantine. A total of 2 equine premises in 2 Colorado counties and 34 equine premises in 10 New Mexico counties were VSV-positive in 2012. All 2012 VSV cases were New Jersey serotype.

Hazard Evaluation

Repetitive Loss – none

Vesicular Stomatitis		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	3	Critical
Total	**11**	**Medium**

H5N1 "Bird Flu"

The possibility that bird flu virus may mutate into a new form of human flu that would be easily spread person to person is of greatest concern. Some migratory waterfowl carry the H5N1 virus with no apparent harm, but transmit the virus to susceptible domestic poultry. The highly lethal H5N1 outbreak among domestic poultry is widespread and uncontrolled and has directly infected a small number of humans. People who have close contact with infected birds or surfaces that have been contaminated with droppings from infected birds are at risk of becoming infected themselves.

Historical studies indicate that poultry consumption in infected areas is not a risk factor, provided the food was thoroughly cooked and the person was not involved in food preparation. Simply traveling to a country with ongoing outbreaks in poultry or sporadic human cases does not place a traveler at increased risk of infection, provided the person does not visit live poultry markets, farms, or other environments where exposure to diseased birds may occur. More than 200 million birds in affected countries have either died from the disease or were killed in order to try to control the outbreak.

Many Asian countries are currently dealing with bird flu outbreaks including Cambodia, China, Indonesia, Japan, Laos, South Korea, Thailand, and Vietnam. Bird flu continues to spread geographically from its original focus in Asia. Further spread of the virus along migratory routes of wild water fowl is anticipated. So far, there has been no sustained person-to-person spread of the disease. However, a few isolated cases of possible human-to-human spread between family members are currently under investigation.

Figure 2.4.10 H5N1 Cases World Wide 2012

The reported symptoms of bird flu in humans range from typical influenza-like symptoms (e.g., fever, cough, sore throat, and muscle aches), to eye infections (conjunctivitis), pneumonia, acute respiratory distress, viral pneumonia, and other severe and life threatening complications. Diarrhea, vomiting, abdominal pain, chest pain, and bleeding from the nose and gums have also been reported as early symptoms in some cases. In many cases, health deteriorates rapidly leading to a high percentage of death in those infected.

Hazard Evaluation

Repetitive Loss – none

H5Ni Bird Flu		
Profile Category	**Rating**	**Description**
Historical Occurrence	0	None
Probability	1	Rare
Vulnerability	4	Catastrophic
Spatial Extent	4	Catastrophic
Magnitude	4	Catastrophic
Total	**14**	**High**

Communicable (Human Borne) Disease (Epidemic/Pandemic)

Description

Epidemic is defined as a disease that appears as new cases in the human population at a rate, during a given time period and location, that substantially exceeds the number expected. It is, thus, a relative term and there is no quantitative criterion for designating a health crisis as an epidemic. In addition to its application to infectious diseases, the term is sometimes used to describe outbreaks of other adverse health effects, including those stemming from chemical exposure, sociological problems, and psychological disorders. A "pandemic" is a worldwide epidemic while the term "outbreak" may be applied to more geographically limited medical problem as, for instance, in a single community rather than statewide or nationwide. The term "cluster" is often used with reference to non-communicable diseases.

Three factors combine to produce an epidemic: an "agent" that causes the disease, a "host" that is susceptible to the disease, and an "environment" that permits the host to be exposed to the agent. The spread of an infectious disease depends on the chain of transmission: a source of the agent, a route of exit from the host, a mode of transmission between the susceptible host and the source, and a route of entry into another susceptible host. Modes of spread may involve direct physical contact between the infected host and the new host, or airborne spread, such as coughing or sneezing. Indirect transmission takes place through vehicles such as contaminated water, food, or intravenous fluids, or through inanimate objects such as bedding, clothes, or surgical instruments, or through a biological vector such as a mosquito or flea.

Health agencies closely monitor for diseases with the potential to cause an epidemic and seek to develop immunizations and eliminate vectors. While this effort has been remarkably successful, there are many diseases of concern, and the HIV/AIDS pandemic is still not controlled despite more than 25 years of effort since recognition of the disease in 1981.

Pandemic influenza versus regular influenza season

A flu pandemic has little or nothing in common with the annual flu season. A pandemic flu would be a new strain and a much more serious and contagious flu virus. Humans would have no natural resistance to a new strain of influenza. Also, there is a vaccine for seasonal flu, but there is no vaccine available at this time for a pandemic flu. If a new, highly contagious strain of influenza begins to infect humans, it would likely cause widespread illness and death within a matter of months, and could last up to two years. The Centers for Disease Control and Prevention (CDC) predict that as much as 25% to 30% of the U.S. population could be sick, hospitalized, and many may die as a result of severe illness.

South Central Public Health District (SCPHD) is currently working on a plan to limit the spread of a pandemic influenza and to maintain essential health care and community services if an outbreak should occur. In fact, governments all around the world are preparing for the possibility of a pandemic outbreak. Even so, it may not be possible to prevent or stop a pandemic once it begins to spread easily from person-to-person. A person infected with influenza can be contagious for 24 hours before symptoms may appear and for seven days thereafter, making it extremely easy for the virus to infect large numbers of people.

Although the Federal government is stockpiling large quantities of medical supplies and antiviral drugs, no country in the world has enough anti-virals to protect their citizens. Anti-virals would be used to treat severe cases as long as there was a reasonable chance that the

drugs might help save lives. Anti-virals might also be reserved for people who work in areas that place them at high risk for exposure in an outbreak, such as health care workers.

Other strategies for slowing the spread of a potentially deadly pandemic influenza virus could include temporarily closing schools, sports arenas, churches, theaters, restaurants, taverns, and other public gathering places and facilities.

There currently is no vaccine to protect humans against a pandemic influenza virus but vaccine development efforts are under way to protect humans against the current H5N1 bird flu virus.

Pandemic Flu

Severe Acute Respiratory Syndrome (SARS)

Severe Acute Respiratory Syndrome (SARS) is a viral respiratory illness caused by a coronavirus called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained.

According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died. In the United States, only eight people had laboratory evidence of SARS-CoV infection. All of these people had traveled to other parts of the world with SARS. SARS did not spread more widely in the community in the United States.

In general, SARS begins with a high fever (temperature greater than 100.4°F [>38.0°C]). Other symptoms may include headache, an overall feeling of discomfort, and body aches. Some people also have mild respiratory symptoms at the outset. About 10 percent to 20 percent of patients have diarrhea. After 2 to 7 days, SARS patients may develop a dry cough. Most patients develop pneumonia.

The main way that SARS seems to spread is by close person-to-person contact. The virus that causes SARS is thought to be transmitted most readily by respiratory droplets (droplet spread) produced when an infected person coughs or sneezes. Droplet spread can happen when droplets from the cough or sneeze of an infected person are propelled a short distance (generally up to 3 feet) through the air and deposited on the mucous membranes of the mouth, nose, or eyes of persons who are nearby. The virus also can spread when a person touches a surface or object contaminated with infectious droplets and then touches his or her mouth, nose, or eye(s). In addition, it is possible that the SARS virus might spread more broadly through the air (airborne spread) or by other ways that are not now known.

Historic Frequencies

The 1918 -1920 Spanish Flu:

The first cases of Spanish Flu were reported in Canyon County (northwest of Boise) on September 30, 1918. Within three weeks, the disease was raging all across the State. The numbers of deaths in the State and in Bannock County are unknown but it is estimated that 675,000 Americans died during the epidemic and that 20 to 40 million died worldwide.

Asian Flu 1957 -1958:

First identified in China, this virus caused roughly 70,000 deaths in the United States during the 1957-58 seasons. Because this strain has not circulated in humans since 1968, no one under 30 years old has immunity to this strain.

Hong Kong Flu 1968-1969:

This flu first detected in Hong Kong in early 1968, spread to the United States later that year. The Hong Kong Flu killed about 34,000 people in the United States and one million people worldwide.

Swine Flu – 2009

Novel influenza A (H1N1) is a new flu virus of swine origin that was first detected in April, 2009. The virus is infecting people and is spreading from person-to-person, sparking a growing outbreak of illness in the United States. An increasing number of cases are being reported internationally as well.

It's thought that Novel Influenza A (H1N1) flu spreads in the same way that regular seasonal influenza viruses spread; mainly through the coughs and sneezes of people who are sick with the virus.

It's uncertain at this time how severe this Novel H1N1 outbreak will be in terms of illness and death compared with other influenza viruses. Because this is a new virus, most people will not have immunity to it, and illness may be more severe and widespread as a result. In addition, currently there is no vaccine to protect against this Novel H1N1 Virus. The 2009 totals for cases and deaths in Idaho are as follows:

- Official Cases: 166
- Unofficial Cases: 1165
- Deaths: 22

The death rate per infection of confirmed cases for the United States was 9.39%. The death rate of confirmed cases in Idaho was 7.5%.

Impacts

Characteristics and impacts of a pandemic:

- Rapid Worldwide Spread
- Health Care Systems Overloaded
- Medical Supplies Inadequate
- Economic and Social Disruption

Loss Estimates

Historically, epidemics have claimed far more lives than any other type of disaster. While modern epidemiology and medical advances make the decimation of populations much less likely, new forms of disease continue to appear. The potential, therefore, exists for epidemic to cause widespread loss of life and disability, overwhelm medical resources; and have tremendous economic impacts.

Hazard Evaluation

Repetitive Loss - none

Communicable Disease		
Profile Category	**Rating**	**Description**
Historical Occurrence	2	Medium
Probability	3	Medium
Vulnerability	3	Critical
Spatial Extent	3	Critical
Magnitude	3	Critical
Total	**14**	**High**

Section 2.5 Technological (Manmade) Hazards

Structural Fire

Description

Structures in which fires may occur include the following occupancies: Residential, Non-residential, Educational, Health care, High-rise, and Public assembly. Major causes of structural fires differ in frequency depending on occupancy type but generally include:

- Incendiary/suspicious (arson)
- Heating (including alternative heat sources)
- Cooking
- Open flame (including welding)
- Electrical distribution
- Appliances
- Children playing
- Exposure to other fires

Structural fires produce high heat, toxic gases, and particulate material as smoke and soot. The heat produced or burning debris can, in turn, cause additional fires. Toxic gases and smoke are extreme hazards in the interior of burning structures and may also be a threat downwind of the structure. Where the building contents include toxic materials, the downwind threat can extend a mile or more. Burning structures may collapse, injuring persons inside or nearby, and floors or roofs may give way beneath those walking on them. Burning structures present electrical, explosion, and flashover hazards, and partially burned structures may themselves be physical hazards, even after the fire is extinguished.

Historical Frequencies

Structure fires are extremely common in Twin Falls County, as they are across the nation. Figures 2.5.1 and 2.5.2 summarize structure fires in Twin Falls County from 2003 - 2011. Note that not all departments in the County reported.

Structural Fires are a continuing hazard in Twin Falls County. Structural Fire may also be associated with other hazards, particularly earthquake. Wildland Fires contribute to the ongoing risk to structures in those areas identified within the Wildland Urban Interface area.[40]

[40] Twin Falls County WUI Plan, pg 104

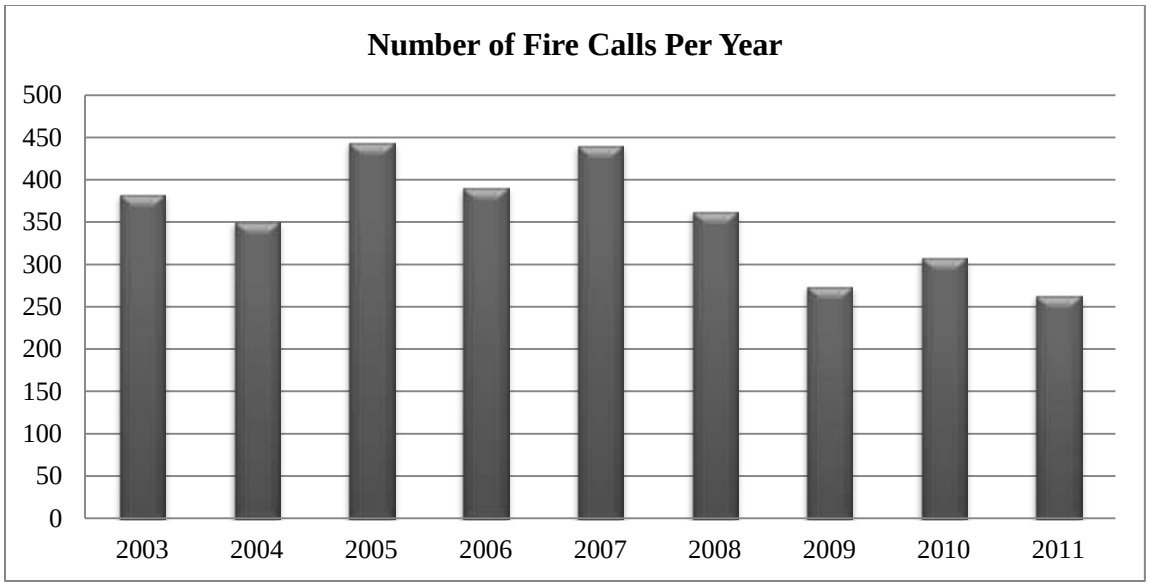


Figure 2.5.1: Fire Calls per Year

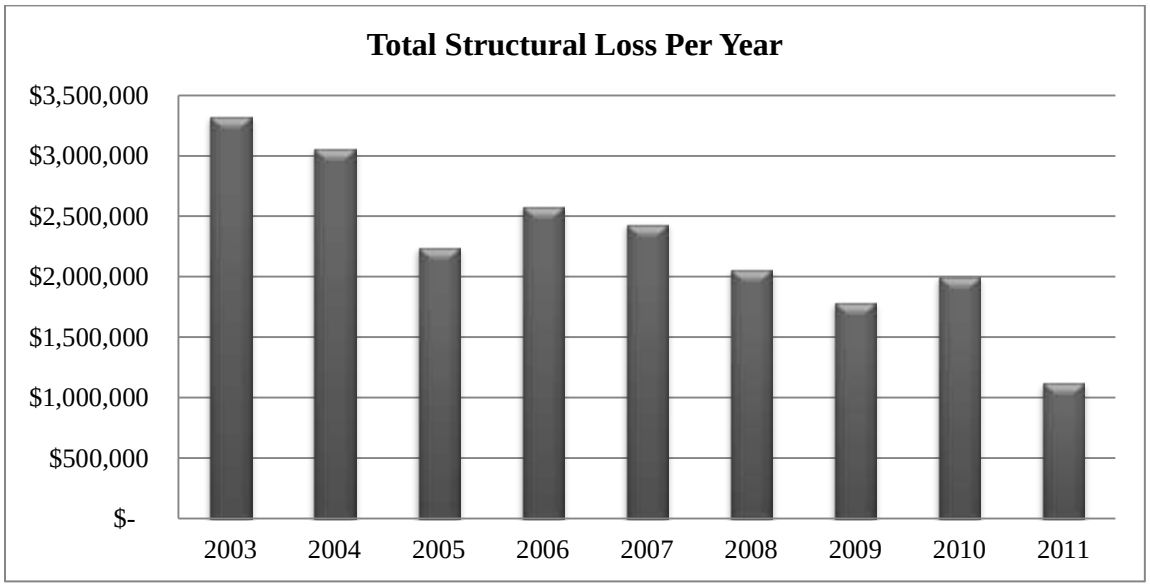


Figure 2.5.2: Structural Fire Loss per Year

Impacts

Indirect dollar losses, as is often the case, may be much larger than direct losses. Costs also include those for development and enforcement of fire codes and maintaining fire response capabilities. Firefighters are, additionally, at risk from such hazards as physical exhaustion and cardiac stresses, heat exhaustion or heat stroke, acute and chronic health effects from toxic exposures, hearing damage, and injuries from many sources.

Loss Estimates

The average annual reported loss from structural fires is $2.3 million, though there is a downward trend over the past decade.

Hazard Evaluation

Repetitive Loss - none

Structure Fire		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	4	Catastrophic
Total	**13**	**Medium**

Nuclear

Description

A "nuclear event" is defined as an incident involving a nuclear reaction; nuclear fission or nuclear fusion. Examples of nuclear events include nuclear weapons detonations, nuclear reactor incidents, and nuclear (fissile) material production, and handling or transportation incidents. Such reactions release heat, radiation, and radioactive contamination in extremely large quantities relative to the amount of material reacting. A nuclear detonation as a part of an attack scenario is, perhaps, the ultimate technological disaster. The hazards of nuclear detonation are well-known and vividly described in FEMA publications[41]. They include shock wave, enormous heat, and the spread of fallout (radioactive contamination). Other nuclear events would not involve a nuclear blast, but still have the potential to produce widespread and long-term consequences as exemplified by the 1986 Chernobyl accident[42]. Of primary concern is the release of radioactive contamination in the form of airborne gases and particulate material. This radioactive material has the potential to travel great distances, and particulate material eventually is deposited in the environment and incorporated into the food chain. Such contamination may remain hazardous for many years. Direct radiation exposure is also a hazard in relatively close proximity to a nuclear event, as is exposure to high thermal energy. Nuclear events are virtually always caused by intentional or unintentional human actions.

Historical Frequencies

There are no recorded nuclear events for Twin Falls County.

Impacts

Radiation exposure may occur due to the spread of radioactive contamination. Radioactive contamination is material containing radioisotopes. When such material becomes airborne, it can reach human victims over long distances. When it does so, it may be deposited on clothing and skin, and may be internalized by inhalation, ingestion, skin absorption, or through skin breaks. Particularly when contamination is internal, the victim receives radiation exposure. Radiation exposure, whatever the source and depending on its type, intensity and duration, can cause acute and/or chronic health effects. Acute health effects are those that appear within a relative short time period – a few hours to a few days – and may include:

- Hair loss
- Skin burns
- Gastrointestinal damage leading to nausea, vomiting, diarrhea, dehydration and loss of appetite
- Decreased red and white blood cell and platelet production leading to infection, weakness and fatigue, and uncontrolled bleeding

Because radioactive contamination presents such hazards, it also can render an area and anything within it uninhabitable until it is removed or has lost its radioactivity through decay. Clean-up of

[41] e.g. http://www.fema.gov/areyouready/nuclear_blast.shtm
[42] http://www.iaea.org/NewsCenter/Focus/Chernobyl/index.html

contaminated areas, where it is possible at all, is difficult, costly, and may be hazardous to those carrying it out.

Loss Estimates

Indirect costs in such a situation would almost certainly exceed those of clean-up. In addition, because the stigma carried by radiation and radioactive with the general public, affected areas and persons may be shunned out of proportion with the actual hazard. In fact, the social and political impacts of a nuclear event may well greatly exceed any justifiable limits.

Hazard Evaluation

Twin Falls County does not have a current Nuclear Threat. Analysis of the Idaho National Laboratory's credible accidents does not include a scenario which poses a hazard to Twin Falls County. Twin Falls County does not have nuclear waste transportation routes within its borders.

Repetitive Loss – none

Nuclear Event		
Profile Category	**Rating**	**Description**
Historical Occurrence	0	None
Probability	1	Rare
Vulnerability	3	Critical
Spatial Extent	3	Critical
Magnitude	3	Critical
Total	**10**	**Medium**

Hazardous Materials

Description

Substances, that because of their chemical or physical characteristics, are hazardous to humans and living organisms, property, and the environment, are regulated by the U.S. Environmental Protection Agency (EPA) and, when transported in commerce, by the U.S. Department of Transportation (DOT).

EPA chooses to specifically list hazardous substances and extremely hazardous substances rather than providing objective definitions. Hazardous substances, as listed, are generally materials, that if released into the environment, tend to persist for long periods and pose long-term health hazards for living organisms. Extremely hazardous substances, on the other hand, while also generally toxic materials, are acute health hazards, that when released, are immediately dangerous to the life of humans and animals as well as causing serious damage to the environment. When facilities have these materials in quantities at or above the TPQ (Threshold Planning Quantity), they must submit "Tier II" information to appropriate state and/or local agencies to facilitate emergency planning.

DOT regulations provide the following definition for the term "hazardous material":

> *Hazardous material* means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal

> hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of the referenced chapter.

When a substance meets the DOT definition of a hazardous material, it must be transported under safety regulations providing for appropriate packaging, communication of hazards, and proper shipping controls.

In addition to EPA and DOT regulations, the National Fire Protection Association (NFPA) develops codes and standards for the safe storage and use of hazardous materials. These codes and standards are generally adopted locally and include the use of the NFPA 704 standard for communication of chemical hazards in terms of health, fire, instability (previously called "reactivity"), and other special hazards (such as water reactivity and oxidizer characteristics). Diamond-shaped NFPA 704 signs ranking the health, fire ,and instability hazards on a numerical scale from zero (least) to four (greatest) along with any special hazards, are usually required to be posted on chemical storage buildings, tanks, and other facilities. Similar NFPA 704 labels may also be required on individual containers stored and/or used inside facilities.

While somewhat differently defined by the above organizations, the term "hazardous material" may be generally understood to encompass substances that have the capability to harm humans and other living organisms, property, and/or the environment. There is also no universally accepted, objective definition of the term "hazardous material event." A useful working definition, however, might be framed as: Any actual or threatened uncontrolled release of a hazardous material, its hazardous reaction products, or the energy released by its reactions that poses a significant risk to human life and health, property, and/or the environment.

More than fifty facilities in Twin Falls County submitted Tier II information reporting the presence of significant inventories of hazardous materials on site. The location of sites in populated areas, along with recommended protective action distances (PADs) are shown in Figure 2.5.3.

A very large portion of the area within the County's cities and towns is encompassed by one or more facility PAD. In addition, hazardous materials of all kinds are routinely transported on all primary and many secondary transportation arteries. Hazardous materials are also very commonly stocked and used by businesses in smaller quantities than those required to submit Tier II reports, as well as by private individuals. Thus, it is reasonably safe to consider the entire County and its inhabitants to be exposed to risk from hazardous materials. In spite of their widespread use, however, hazardous materials hazard events are relatively rare and even more rarely cause death, injury, or large-scale property damage. To some extent this is due to the fact that such hazards are very effectively addressed by inspections, regulations, codes and safety procedures, as well as by specialized emergency response training. The focus of this profile is, therefore, on those situations where there is the risk of a large scale incident that would threaten many lives. Such incidents are generally limited to those involving a large amount of material capable either of exploding or producing a toxic cloud and call for, in the worst-case scenario, for a PAD of one mile or more.

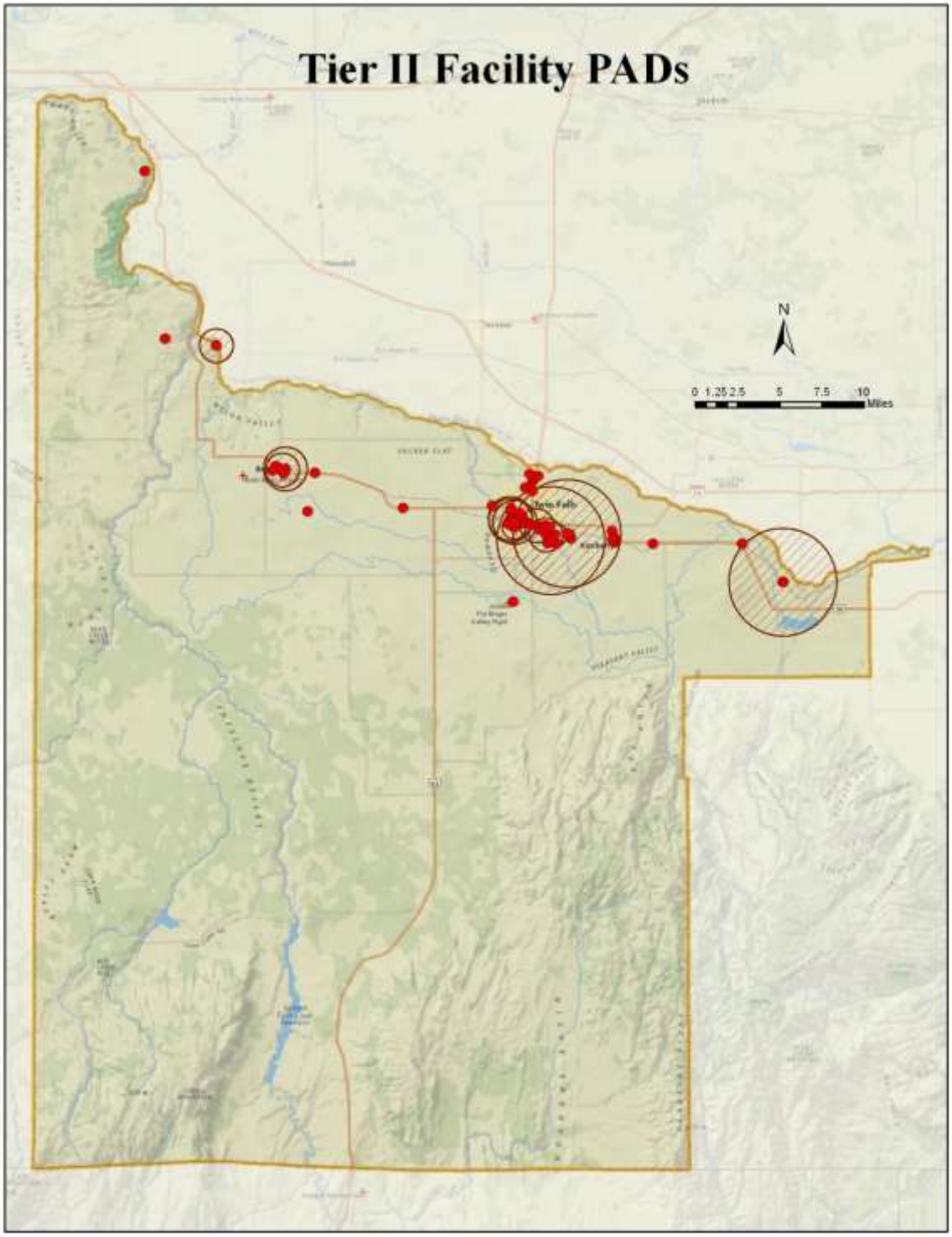


Figure 2.5.3: Twin Falls County Hazardous Materials Tier II
Locations & PAD's

Within Twin Falls County there are thirteen (13) facilities with worst-case PADs of one mile or more (See Table 2.5.2).

Facility	Address	City/Zip	Product	PAD
Seneca Foods Corporation	430 7 Ave. S	Buhl, ID 83316	AMMONIA (ANHYDROUS)	7392
Simplot Grower Solutions	4105 N. 1700 E.	Buhl, ID 83316	Ammonia (Anhydrous)	7392
Valley Co-ops Inc. dba Valley Country Store, Buhl Facility	708 US Hwy 30 E.	Buhl, ID 83316	Propane	5280
Western Farm Service, Inc. - Kimberly	473 Hankins Rd. South	Kimberly, ID 83341	ALUMINUM PHOSPHIDE PESTICIDE	8967
ConAgra Foods - Packaged Foods Co., Inc. (Formerly Lamb-Weston)	856 Russet Street	Twin Falls, ID 83301	Ammonia (Anhydrous)	7392
Longview Fibre Paper and Packaging, Inc.	348 S. Park Ave. W	Twin Falls, ID 83301	Propane	5280
Simplot Grower Solutions	797 Eastland Dr. S.	Twin Falls, ID 83301	Ammonia (Anhydrous)	7392
Suburban Propane	139 Locust St. South	Twin Falls, ID 83301	PROPANE	5280
V-1 Propane	South Blake Street	Twin Falls, ID 83301	Propane	5280
Western States Equipment Twin Falls	3085 E. Kimberly Rd	Twin Falls, ID 83301	Propane	5280

Table 2.5.2
Twin Falls County Priority Tier II Facilities

Historical Frequencies

The following table lists Hazardous Material spills responded to by the South Central Idaho Regional Hazardous Materials Emergency Response Team for the years 2007-2012.

Date	County	Substance/Product Identification	Level
04/14/2006	Twin Falls	Anhydrous Ammonia	Regulatory
05/11/2006	Twin Falls	Untreated Waste Water- Domestic Sewage	Level I- No Conference Call
05/13/2006	Twin Falls	Hydraulic oil	Level I- No Conference Call
06/14/2006	Twin Falls	Oil,Mineral/Non-PCB	Level I- No Conference Call

Date	County	Substance/Product Identification	Level
06/27/2006	Twin Falls	Gasoline	Level II
06/28/2006	Twin Falls	Anthrax	Drill
08/09/2006	Twin Falls	Diesel	Level I- No Conference Call
08/23/2006	Twin Falls	Chlorine	Level I
08/25/2006	Twin Falls	ammonia	Level I
08/28/2006	Twin Falls	non pcb oil	Level I
09/16/2006	Twin Falls	Anhydrous Ammonia	Level I- No Conference Call
10/02/2006	Twin Falls	Oil,Mineral/Non-PCB	Level I- No Conference Call
11/22/2006	Twin Falls	ammonia	Level I
11/29/2006	Twin Falls	Hydrochloric Acid	Level I- No Conference Call
12/01/2006	Twin Falls	Unlead gas	Level I- No Conference Call
12/13/2006	Twin Falls	Fertilizer	Level I
01/05/2007	Twin Falls	Milk Whey / Diesel	Level I- No Conference Call
01/05/2007	Twin Falls	Oil	Level I- No Conference Call
03/16/2007	Twin Falls	Non-PCB Mineral Oil	Level I- No Conference Call
03/28/2007	Twin Falls	Explosive Material	Level II
04/11/2007	Twin Falls	Diesel	Level I
04/19/2007	Twin Falls	Oil	Level I- No Conference Call
04/25/2007	Twin Falls	Diesel	Level II
08/05/2007	Twin Falls	Hydraulic Oil	Regulatory
08/26/2007	Twin Falls	Anhydrous Ammonia	Regulatory
09/18/2007	Twin Falls	Gasoline	Level I- No Conference Call
09/27/2007	Twin Falls	Non-hazmat	Unclassified
12/28/2007	Twin Falls	Meth Lab Assist	Did not classify
01/15/2008	Twin Falls	Meth Lab	Meth Lab Assist
02/28/2008	Twin Falls	Drug Lab Assist	Meth Lab Assist
02/29/2008	Twin Falls	Gasoline	Level I
04/13/2008	Twin Falls	Diesel	Level I
04/14/2008	Twin Falls	Threat Letter - WMD	Level II
04/27/2008	Twin Falls	Anhydrous Ammonia	Regulatory
05/10/2008	Twin Falls	Explosive Material	Level II
06/20/2008	Twin Falls	Anhydrous Ammonia	Regulatory

Date	County	Substance/Product Identification	Level
06/21/2008	Twin Falls	Unknown	Level I
07/08/2008	Twin Falls	Potassium Acetate	Level I
08/13/2008	Twin Falls	Diesel	Level I
09/11/2008	Twin Falls	Gasoline	Level I
11/24/2008	Twin Falls	Mercury	Level I
01/25/2009	Twin Falls	Oil,Mineral/Non-PCB	Regulatory
03/26/2009	Twin Falls	Powder	Unclassified
03/31/2009	Twin Falls	Various Chemicals	Unclassified
04/01/2009	Twin Falls	Non-hazmat - urine	Unclassified
06/15/2009	Twin Falls	Fertilizer	Regulatory
07/08/2009	Twin Falls	Diesel	Regulatory
07/17/2009	Twin Falls	Oil,Mineral/Non-PCB	Regulatory
08/26/2009	Twin Falls	Oil	Level I
09/15/2009	Twin Falls	Mercury	Level III
09/21/2009	Twin Falls	1/2 % Iodine Solution	Regulatory
10/26/2009	Twin Falls	Anti-freeze	Level II
12/23/2009	Twin Falls	Gasoline	Regulatory
01/01/2010	Twin Falls	Diesel	Level II
01/20/2010	Twin Falls	Anhydrous Ammonia	Regulatory
02/08/2010	Twin Falls	Jet Fuel	Regulatory
02/19/2010	Twin Falls	Drug Lab Assist	Level II
03/19/2010	Twin Falls	Petroleum/Diesel	Level I
04/26/2010	Twin Falls	Diesel	Regulatory
06/28/2010	Twin Falls	Explosive Material	Level II
07/14/2010	Twin Falls	Diesel	Level II
08/09/2010	Twin Falls	Drug Lab Assist	Level II
09/14/2010	Twin Falls	Diesel	Regulatory
09/24/2010	Twin Falls	Oil,Mineral/Non-PCB	Regulatory
10/07/2010	Twin Falls	Diesel	Level I
01/03/2011	Twin Falls	Gasoline	Level II
01/04/2011	Twin Falls	Domestic Sewage	Regulatory
01/05/2011	Twin Falls	Anhydrous Ammonia	Regulatory

Date	County	Substance/Product Identification	Level
01/13/2011	Twin Falls	Muriatic Acid	Level II
03/22/2011	Twin Falls	Diesel	Regulatory
03/30/2011	Twin Falls	Gasoline	Regulatory
04/05/2011	Twin Falls	Diesel	Regulatory
05/25/2011	Twin Falls	Anhydrous Ammonia	Regulatory
05/28/2011	Twin Falls	Non-hazmat - crop growth enhancer	Regulatory
06/09/2011	Twin Falls	Chlorinated oil	Level I
07/29/2011	Twin Falls	Anhydrous Ammonia	Regulatory
10/10/2011	Twin Falls	Muriatic Acid & Hydrochloric Acid	Level I
12/27/2011	Twin Falls	Amonia	Regulatory
12/31/2011	Twin Falls	Transformer oil	Level I- No Conference Call
03/12/2012	Twin Falls	Diesel & Gas	Level I
04/27/2012	Twin Falls	Diesel	Level I
05/14/2012	Twin Falls	Engine Oil	Regulatory
05/31/2012	Twin Falls	Drug Lab Assist	Level II
06/18/2012	Twin Falls	Anhydrous Ammonia	Drill
07/31/2012	Twin Falls	Hydraulic Fluid	Regulatory
08/06/2012	Twin Falls	Oil,Mineral/Non-PCB	Regulatory
08/27/2012	Twin Falls	Unknown	Level II
09/14/2012	Twin Falls	Milk By-product	Regulatory

Table 2.5.3: HAZMAT Incidents

According to the Idaho Hazardous Materials/Weapons of Mass Destruction Incident Command and Response Support Plan, there are four levels of Classification in reference to a hazardous materials and/or weapons of mass destruction incident. They are as follows:

Regulatory – A release of a Reportable Quantity or less of regulated hazardous materials that does not require any emergency response on the part of public or private sector responders, which would include a weapons of mass destruction threat or suspicion that is clearly a hoax without requiring additional analysis.

Level I – An incident involving any response, public or private, to an incident involving hazardous materials that can be contained, extinguished, and/or abated using resources immediately available to the responders having jurisdiction. A weapons of mass destruction threat or suspicion that requires local response to determine whether or not it is life threatening. A level I incident presents little risk to the environment and/or public health with containment and clean up.

Level II – An incident involving hazardous materials that is beyond the capabilities of the first responders on the scene, and may be beyond the capabilities of the public sector response agency having jurisdiction. Level II incidents may require the services of a State of Idaho Regional Response Team, or other state/federal assistance. This would include a weapons of mass destruction threat or incident that involves explosives, release of toxic material, release of radioactive material, or release of organisms that can be analyzed and stabilized using resources that exist within the State of Idaho. This level may pose immediate and/or long term risk to the environment and/or public health and could result in a local declaration of disaster.

Level III – An incident involving weapons of mass destruction/hazardous materials that will require multiple State of Idaho Regional Response Teams or other resources that do not exist within the State of Idaho. These incidents may require resources from state and federal agencies and/or private industry. Level III incidents generally pose extreme, immediate and/or long-term risk to the environment or public health.

Impacts

Because hazardous materials are so widely used, stored, and transported, a hazardous material event could take place almost anywhere. Further, many hazardous materials are used, stored, and transported in very large quantities so the impacts of an event may be widespread and powerful. Regulations and safety practices make such large scale events unlikely, but smaller scale incidents may have severe impacts including:

- Human deaths, injuries, and permanent disabilities
- Livestock/animal deaths
- Destruction of vegetation and crops
- Property damage and destruction
- Pollution of groundwater, drinking water supplies, and the environment
- Contamination of foodstuffs, property, land and structures
- Temporary or long-term closure of transportation routes and/or facilities
- Loss of business and industrial productivity
- Utility outages
- Clean-up and restoration costs
- Losses and inconvenience due to evacuation
- Loss of valuable chemical product

Loss Estimates

Hazardous Material losses occur primarily due to the displacement of populations and the interruption of business. Twin Falls County has a significant number of facilities that use hazardous materials especially in the southern end of Twin Falls City.

Hazard Evaluation

Repetitive Loss – none

Hazardous Materials		
Profile Category	**Rating**	**Description**
Historical Occurrence	3	High
Probability	4	High
Vulnerability	1	Negligible
Spatial Extent	1	Negligible
Magnitude	2	Limited
Total	**11**	**Medium**

Riot/Demonstration/Civil Disorder

Description

State of Idaho statutes define "riot" as follows (Idaho Statute 18-6401 – RIOT DEFINED):

> Any action, use of force or violence, or threat thereof, that disturbs the public peace, or any threat to use such force or violence, if accompanied by immediate power of execution, by two (2) or more persons acting together, and without authority of law, which results in:
>
> (a) physical injury to any person; or
> (b) damage or destruction to public or private property; or
> (c) a disturbance of the public peace;
>
> is a riot.

Also defined in the statutes (Idaho Statute 18-8102 – DEFINITIONS) is "civil disorder":

> "Civil disorder" means any public disturbance involving acts of violence by an assemblage of two (2) or more persons which acts cause an immediate danger of or result in damage or injury to the property or person of any other individual.

The term "demonstration" is not defined in this context in the Idaho statutes but the following is given for "unlawful assembly" (Idaho Statute 18-6404 - UNLAWFUL ASSEMBLY DEFINED):

> Whenever two or more persons assemble together to do an unlawful act, and separate without doing or advancing toward it, or do a lawful act in a violent, boisterous, or tumultuous manner, such assembly is an unlawful assembly.

Riots are generally thought of as being spontaneous, violent events whereas demonstrations are usually planned events and are usually intended to be non-violent. Riots seem often to be motivated by frustration and anger, usually over some real or perceived unfair treatment of some group. Historically, riots in this and other countries have been initiated, or appear to have been initiated over such issues as:

- Poor living or working conditions
- Political oppression
- Political conflicts

- Military draft
- Police actions
- Taxation
- Racial conflicts
- Religious conflicts
- Sporting events
- Prison conditions and treatment of prisoners (within prisons)

There are instances, however, where riots have begun during celebrations and other events where the only initiating factor seems to have been the gathering of a crowd of people. The potential for rioting, then, exists any time people gather but a number of factors are associated with the increased probability one will occur including:

- Drug and alcohol use
- Youth of crowd members
- Low socio-economic status of members
- High level of emotions
- A history of rioting on the same or similar previous occasions
- Initiating event, person, or persons

Once violent or illegal activity is initiated, it escalates, possibly at least partly because of the perception that, because all are acting together, there is little probability that any given individual will be arrested or otherwise suffer consequences. Riots may range in scope from a very few people in a small area to thousands over an entire city. Once initiated, large riots are very difficult to suppress, particularly in the United States where law enforcement is constrained by constitutional guarantees as well as personnel limits. Early and decisive action by law enforcement may be effective in suppressing a riot, but police actions may also lead to further escalation.

Historical Frequencies

There are no recorded riot events for Twin Falls County.

Impacts

Riots may result in loss of life, injury and permanent disability (participants, bystanders, and law enforcement personnel) as well as looting, vandalism, setting of fires, and other property destruction. Law enforcement, emergency medical services and medical facilities and personnel, firefighting, and other community resources may be overwhelmed and unavailable to the community at large. Transportation routes may be closed, infrastructure and utilities damaged or destroyed, and public buildings attacked, damaged or destroyed. Social and psychological effects may also cause great impacts. Lingering fear and resentment can be long-lasting and can greatly impair the ability of a community to function politically, socially, and economically.

Loss Estimates

Loss estimates are difficult to make due to a lack of historical events in Twin Falls County.

Hazard Evaluation

Civil Disobedience within Twin Falls County is unlikely, but not ruled out as a possibility. Civil Disobedience within Twin Falls County is a possibility due to the growing number of gangs that have organized in the area as the population diversifies. Loosely organized gangs usually are involved in local acts of violence and drug activity.

Repetitive Loss – none

Riot/Demonstration/Civil Disorder		
Profile Category	**Rating**	**Description**
Historical Occurrence	0	None
Probability	1	Rare
Vulnerability	2	Limited
Spatial Extent	1	Negligible
Magnitude	2	Limited
Total	**6**	**Low**

Terrorism

Description

Terrorism is an unlawful act under both Federal and State of Idaho statutes. Definitions are as follows:

U.S. Code: Title 18: Section 2331. Definitions

(5) The term "domestic terrorism" means activities that -

(A) Involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State;

(B) Appear to be intended -

(i) To intimidate or coerce a civilian population;

(ii) To influence the policy of a government by intimidation or coercion; or

(iii) To affect the conduct of a government by mass destruction, assassination, or kidnapping; and

(C) Occur primarily within the territorial jurisdiction of the United States.

Idaho Statute 18-8102 – DEFINITIONS

(5) "Terrorism" means activities that:

(a) Are a violation of Idaho criminal law; and
(b) Involve acts dangerous to human life that are intended to:

(i) Intimidate or coerce a civilian population;
(ii) Influence the policy of a government by intimidation or coercion; or
(iii) Affect the conduct of a government by the use of weapons of mass destruction, as defined in section 18-3322, Idaho Code.

The Federal Emergency Management Agency gives the following as general information on terrorism (http://www.fema.gov/hazard/terrorism/info.shtm):

> "Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom. Terrorists often use threats to:
>
> - Create fear among the public
> - Try to convince citizens that their government is powerless to prevent terrorism
> - Get immediate publicity for their causes
>
> Acts of terrorism include threats of terrorism, assassinations, kidnappings, hijackings, bomb scares and bombings, cyber attacks (computer-based), and the use of chemical, biological, nuclear, and radiological weapons.
>
> High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail."

Acts of terrorism, then, are essentially the intentional initiation of the sorts of hazard events that have been discussed in previous sections.

Historical Frequencies

There are no recorded terrorism events for Twin Falls County.

Hazard Evaluation

Twin Falls County may well be one of the most vulnerable areas in the State of Idaho to Agroterrorism. Agriculture is the life blood of Twin Falls County. Acts of Agroterrorism upon the croplands or the Confined Animal Feeding Operations (CAFOs) or Dairies in the area would be devastating to the economy of Twin Falls County. While there is a potential for other terrorism targets within the County the agricultural community poses the most significant target.

Repetitive Loss - none

Terrorism		
Profile Category	**Rating**	**Description**
Historical Occurrence	0	Low
Probability	1	Rare
Vulnerability	4	Catastrophic
Spatial Extent	3	Critical
Magnitude	4	Catastrophic
Total	**12**	**Medium**

Section 2.6 Community Assessments

Twin Falls County is the most populous County in central Idaho. It is home to the College of Southern Idaho and the famous Shoshone Falls, sometimes called the Niagara of the West, with an impressive 212 foot drop. The County is not only a retail hub for most of central Idaho, but is also a recreational hot spot for travelers. The County has eight incorporated communities, including Buhl, Castleford, Filer, Hansen, Hollister, Kimberly, Murtaugh, and Twin Falls City. Unincorporated communities include, Roseworth, Berger, Rogerson, and Rock Creek. The majority of these communities are located along the northern edge of the County near the Snake River.

Location

Twin Falls County is located in south central Idaho on the north edge of the Great Basin in an area known as the Magic Valley. It comprises 1,957 square miles and is bordered on the north by the Snake River and Gooding and Jerome Counties, on the west by Owyhee County, on the east by Cassia County, and on the south by the Nevada border.

Topography and Geography

This area and a large portion of southern Idaho are described as a semiarid steppe environment receiving approximately 8-10 inches of precipitation annually. Native vegetation in this climate type primarily consists of 10-15 species of sagebrush and bunchgrasses. The map in figure 2.6.2 shows that the vast majority of the County is relatively flat making it ideal for extensive agricultural development. The southwest corner, however, consists mostly of gently rolling hills that extend into Nevada. These slopes are fairly mild, but unsuitable for farming and are primarily managed by the Bureau of Land Management (BLM) or privately owned ranches. The USDA Forest Service (USFS) owns the steeper slopes rising in the southeast corner of the County where elevation reaches a height of approximately 7,200 feet with stunted subalpine vegetation communities on the upper slopes[43].

Lakes and Rivers

The only major body of water in the County is the Snake River, which forms the northern border of the County and runs through the spectacular Snake River Gorge. During the Great Migration over the Oregon Trail, and still today, the Snake River was a large financial entity in Twin Falls County, providing many recreational and economic resources. Other important bodies of water in the County are Murtaugh Lake, Salmon Falls Creek Reservoir, Salmon Falls Creek, Cedar Creek Reservoir, and a multitude of small streams, springs and irrigation canals. Water area makes up less than 1% of the total area in the County.

[43] Schlosser, William E., 2004, Twin Falls County WUI Wildfire Mitigation Plan. Page 27

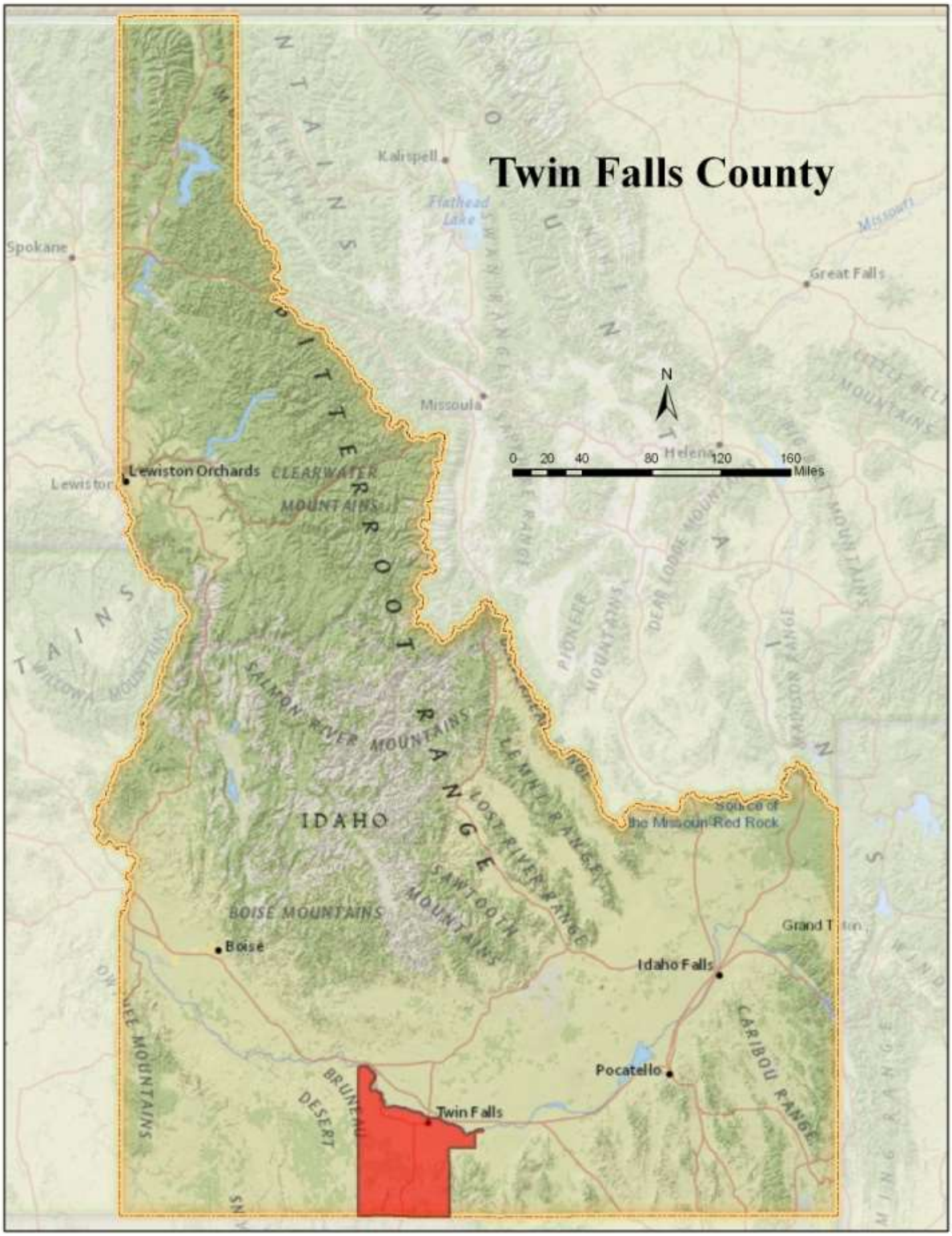


Figure 2.6.1: Twin Falls County Location Map

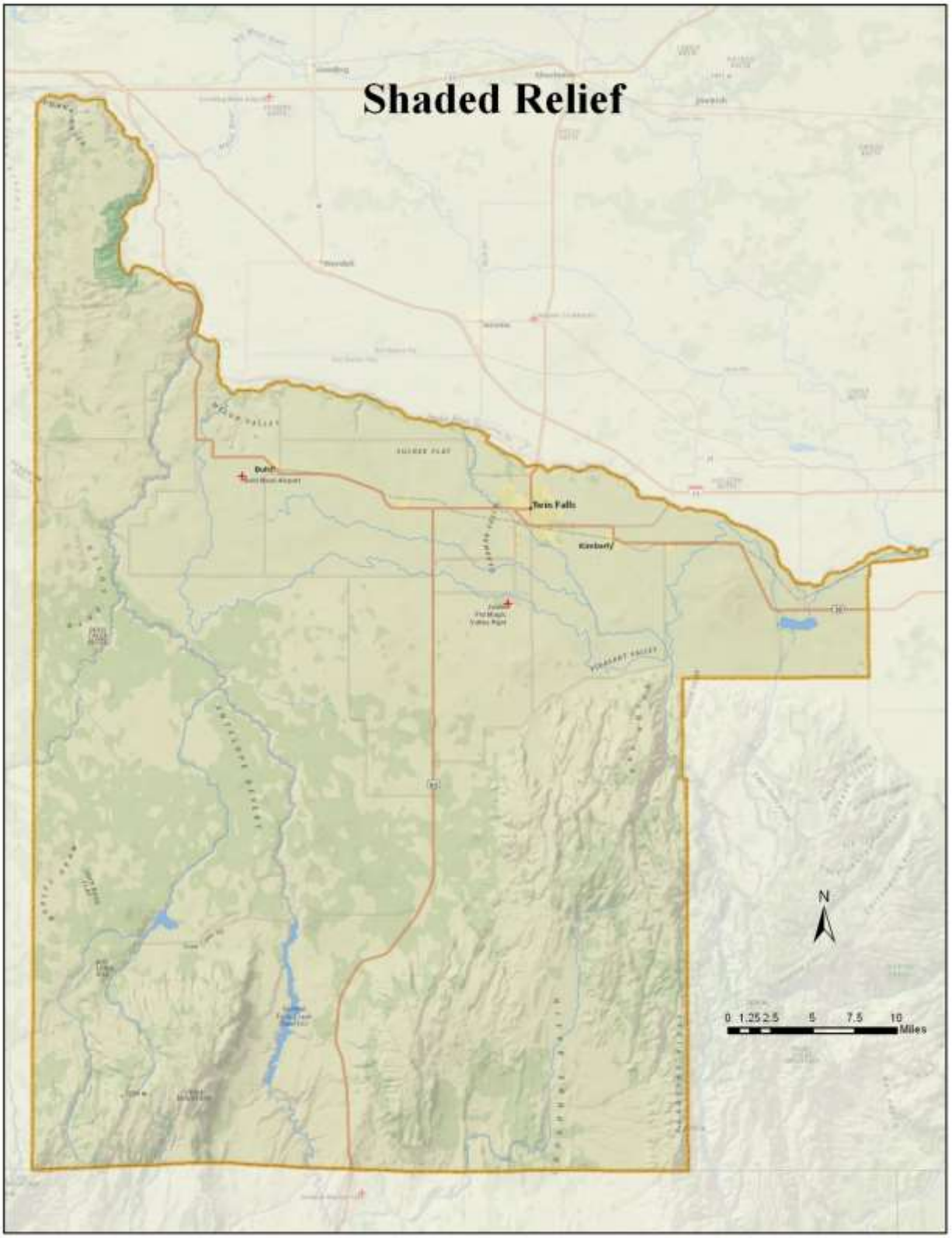


Figure 2.6.2: Twin Falls County shaded relief

Geology

Notable geological features in Twin Falls County are generally from two sources. The first and most prominent is volcanic activity. Figure 2.6.3 shows the general dispersion of volcanic deposits throughout the valley. The second is from the great flood of ancient Lake Bonneville. The map in Figure 2.6.3 below identifies different geological formations throughout the County.

The southwestern area of the valley includes the South Hills or Cassia Mountains, made of a felsic pyroclastic rock. This is visible in Rock Creek Canyon as spectacular piles of north dipping rhyolite ash flows. Under these rhyolites are Pennsylvanian and Permian sedimentary rocks that are of mixed carbonate and shale. Also exposed in the Cassia mountains and a small area southeast of Hollister are Mesozoic marine sediments of limestone, dolomitic limestone, quartzite and chert[44].

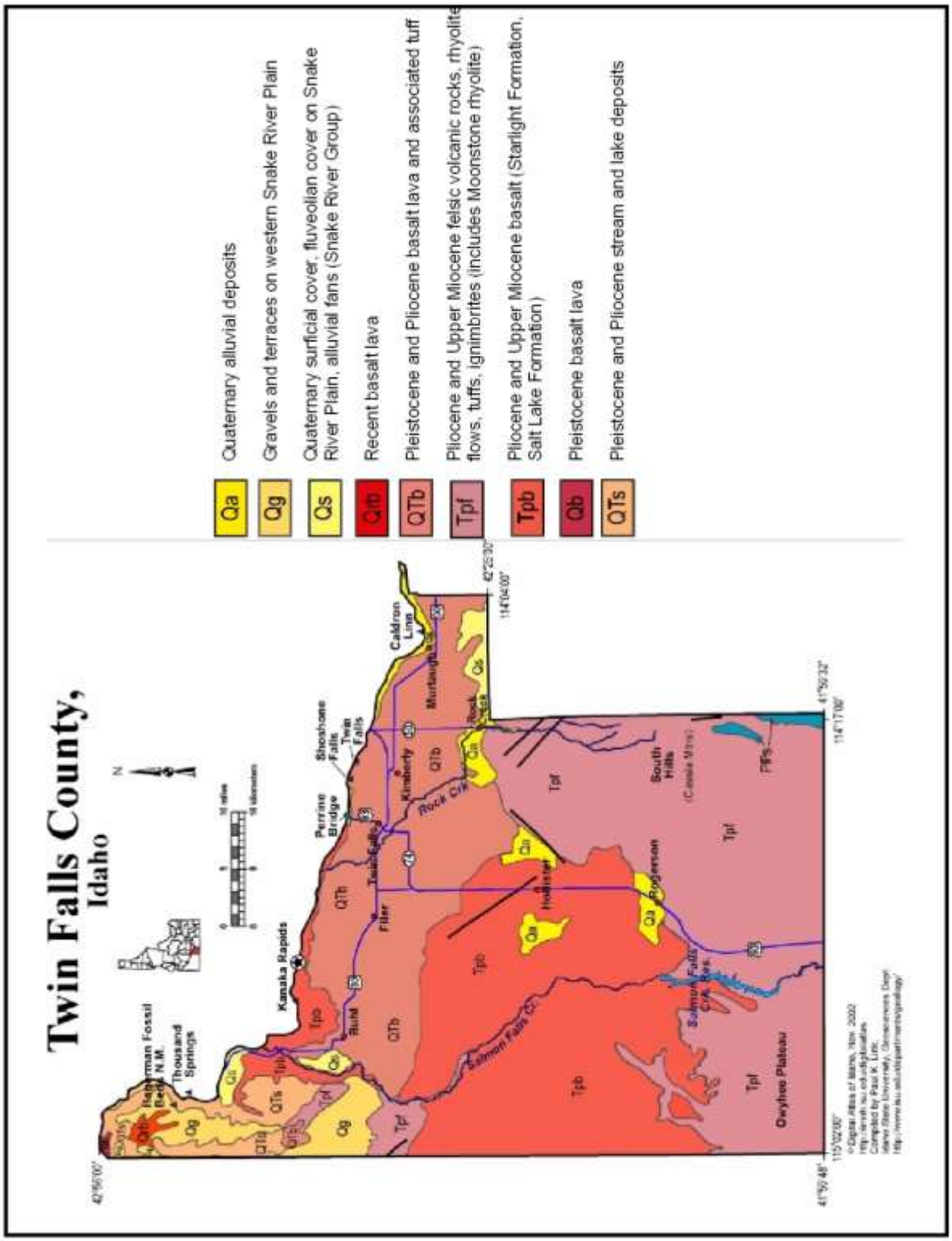
To the northwest are the foothills of the Owyhee Plateau, also underlain by felsic pyroclastic and mafic volcanic flow and Miocene ignimbrites.

The Snake River, with its spectacular canyon deepened during the Lake Bonneville Flood about 15,000 years ago, forms the northern boundary of the County. Shoshone Falls cascades over Miocene rhyolite of the same age as the ash flows in the South Hills. The Twin Falls is cut in Quaternary basalt. Huge gravel bars of "melon gravel" line the Snake River Canyon west of Twin Falls City near Buhl and Hagerman. Also along the Snake Rivers are large amounts of alluvial deposits left from the flood of Lake Bonneville.

In the northwestern corner of the County are the Pliocene fossils beds of Hagerman Fossil Beds National Monument. These river and lake beds contain diverse mammal, fish, reptile, and other fossils that are about 3 to 4 million years old[45].

Thermal water is prevalent throughout the County, but is primarily found in the northern portion of the County near Buhl, Filer, and Twin Falls. The area around Hollister and Rogerson also contains springs and wells that produce thermal water, probably from fractures in the volcanic rock underneath[46].

[44] Idaho Department of Water Resources, 1990, Geothermal Resources Analysis in Twin Falls County, Idaho Part 2, Page 4
[45] http://imnh.isu.edu/digitalatlas/counties/geomaps/geomap.htm
[46] Idaho Department of Water Resources, 1990, Geothermal Resources Analysis in Twin Falls County, Idaho Part 2. Page 6


Twin Falls County,
Idaho
Qa Quaternary alluvial deposits
Qg Gravels and terraces on western Snake River Plain
Qs Quaternary surficial cover, fluveolian cover on Snake River Plain, alluvial fans (Snake River Group)
Qrb Recent basalt lava
QTb Pleistocene and Pliocene basalt lava and associated tuff
Tpf Pliocene and Upper Miocene felsic volcanic rocks, rhyolite flows, tuffs, ignimbrites (includes Moonstone rhyolite)
Tpb Pliocene and Upper Miocene basalt (Starlight Formation, Salt Lake Formation)
Qb Pleistocene basalt lava
QTs Pleistocene and Pliocene stream and lake deposits
Kanaka Rapids
Perrine Bridge
Shoshone Falls
Twin Falls
Kimberly
Murtaugh
Caldron Linn
Hollister
Rogerson
Salmon Falls Cr.
Salmon Falls Cr. Res.
South Hills
Owyhee Plateau
Thousand Springs
Hagerman Fossil Beds N.M.
Rock Crk
Filer
Buhl
Tpb
QTb
Tpf
Qa
Qg
QTs
PIFs

Climate

Twin Falls County, at an elevation of 3,729 feet, experiences a dry climate with relatively low humidity. Average annual precipitation is 9.41 inches and average annual snowfall is 13.8 inches. The average length of the growing season, based on freeze-free temperatures, is 133 days, from May 13 to September 23. Table 2.6.1 provides an overview of the climate in Twin Falls County. Note that the highest average temperature is 89.3 degrees F in July and the average low temperature is 20.1 degrees F in December.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	37.8	43.5	53.3	61	70.5	79.8	89.3	87.9	77.8	64.9	48.9	37.7	62.7
Average Min. Temperature (F)	21	23.7	30.3	35.4	43.2	50.5	56.8	54.2	45.1	35.8	27.4	20.1	37
Average Total Precipitation (in.)	0.87	0.75	0.92	1.01	1.12	0.79	0.21	0.31	0.39	0.7	1.09	1.25	9.41
Average Total SnowFall (in.)	4	1.9	0.8	0.3	0	0	0	0	0	0.2	1.1	5.3	13.8

Table 2.6.1: Twin Falls Climate Summary

Land Ownership and Land Use

The map in Figure 2.6.4 below shows the distribution of Federal and non-Federal lands in Twin Falls County. Table 2.6.3 shows the distribution of land by type. Of the 1, 233,583 total land acres within the County, 619,338 are owned by the Federal Government (50.2% of total) and 577,491 are privately owned (46.8% of total). In 2006, there were 209,709 acres of mixed cropland. Potatoes, corn, sugar beets, peas, grain, malt barley, and alfalfa are commonly grown in Twin Falls County. Twin Falls County is the largest producer of dry beans, and second largest producer of alfalfa hay, and the third largest producer of silage corn in the State of Idaho. Other crops grown are oats, peas, apples, peaches, pears, sweet cherries, apricots, and nectarines. There are about 100 acres of orchards located mostly in the Snake River canyon[47]. Commercial cattle raising operations and industries associated with beef production are also very widespread. 522,290 of the total acres (42.3%) in the County are managed by the BLM, much of which has been leased for livestock grazing. Livestock production provides almost one-half of the agricultural income, and accounts for about 65% of the land use in the area.[48]

[47] http://extension.ag.uidaho.edu/twinfalls
[48] Schlosser, William E. 2004. Twin Falls County WUI Wildfire Mitigation Plan, Page 27

Total Area	1,233,583
Private Lands	577,491
Federal Lands	619,338
Forest Service	92,659
BLM	522,290
National Park Service	4,345
Military	45
Other Federal	0
State Lands	30,596
State Trust Lands*	0
Other State	30,596
Tribal Lands	0
Water	6,158
City, County, Other	0
Percent of Total	
Private Lands	46.8%
Federal Lands	50.2%
Forest Service	7.5%
BLM	42.3%
National Park Service	0.4%
Military	0.0%
Other Federal	0.0%
State Lands	2.5%
State Trust Lands*	0.0%
Other State	2.5%
Tribal Lands	0.0%
Water	0.5%
City, County, Other	0.0%

Table 2.6.2: Land Ownership Distribution in Acres

Land Use Type in Twin Falls County		
Land Use	**Total Acres**	**Percent**
Forest	1,730	25%
Grassland	703,142	17%
Shrubland	271,388	12%
Mixed Cropland	209,709	39%
Water	2,965	1%
Urban	6,919	3%
Other	7,660	0.6%

Table 2.6.3 – Land use type in Twin Falls County

Resource Dependency

The incorporated communities of Twin Falls County have been evaluated by the University of Idaho, College of Natural Resources Policy Analysis Group (PAG) for their degree of natural resource dependency. Idaho communities with more than 10% employment in resource-based sectors (wood products, travel & tourism, agriculture, and mining) were evaluated by PAG. Their findings indicate that Buhl, Filer, Hollister, Murtaugh, and Castleford are "Agriculture Only" dependent communities. Twin Falls City is considered a "Travel and Tourism" dependent community. Kimberly and Hansen are a combination of "Travel & Tourism and Agriculture" dependent. The group further evaluated Idaho communities based on their level of direct employment in several industrial sectors[49]. Their findings for incorporated communities in Twin Falls County are summarized in table 2.6.4 below.

Natural Resource Dependency					
Community	Economic Diversity Index	Agriculture	Timber	Travel & Tourism	Mining & Minerals
Buhl	Med. High	Med. High	Low	Med. Low	Low
Castleford	Med. High	High	Low	Low	Low
Filer	High	Med. High	Low	Med. Low	Low
Hansen	Med. Low	Med. High	Low	Med. High	Low
Hollister	Low	High	Low	Low	Low
Kimberly	Med. High	High	Low	Med. High	Low
Murtaugh	Med. Low	High	Low	Low	Low
Twin Falls	High	Low	Low	Med. High	Low

A "low" level of direct employment represents 5% or less of total employment in a given sector, "med low" 6 to 10%; "med high" 11 to 19%; and "high" 20% or more of total employment in a given sector.

Table 2.6.4 – Natural resource dependency for communities in Twin Falls County

[49] Schlosser, William E., 2004. Twin Falls County WUI Wildfire Mitigation Plan, Page 29

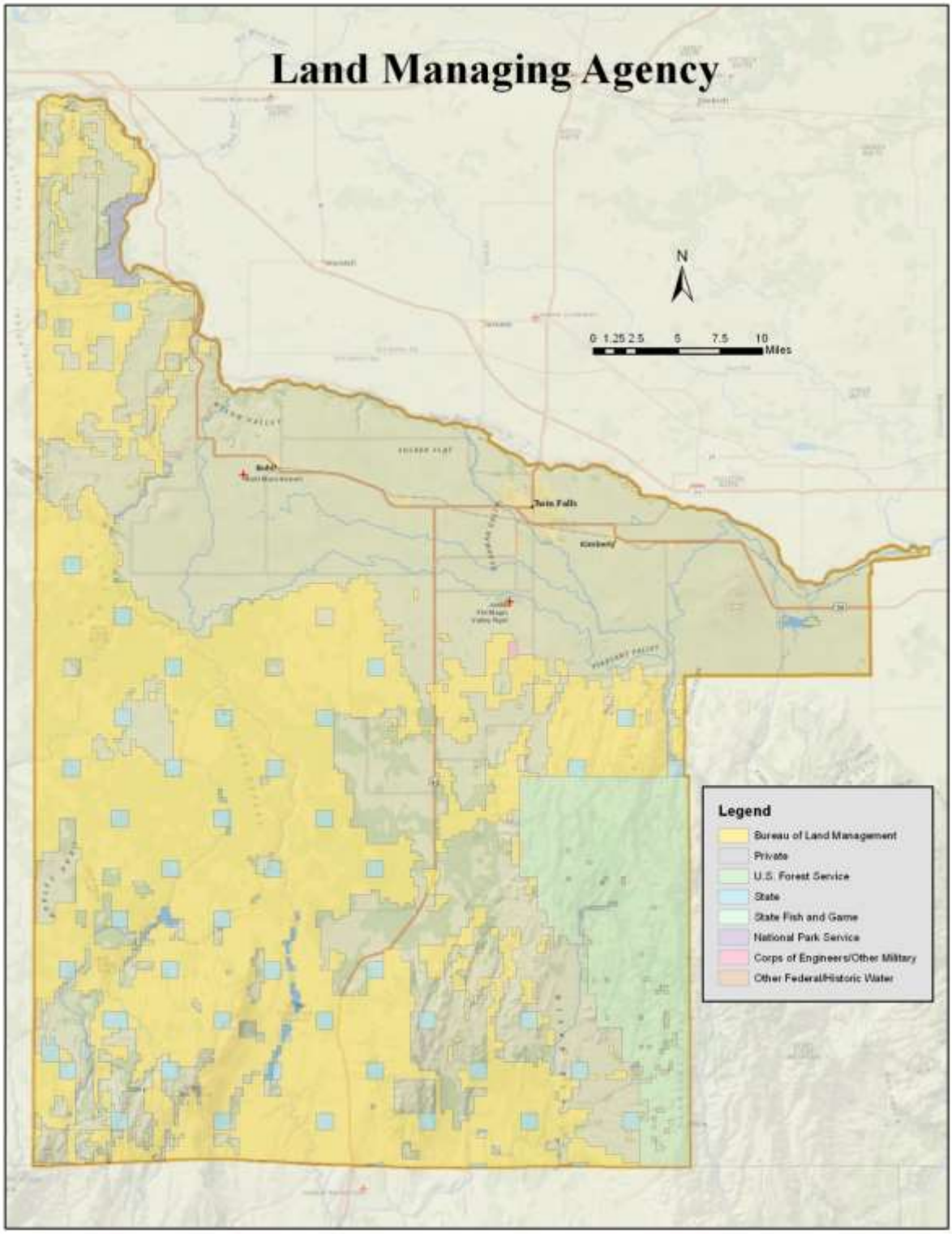


Figure 2.6.4: Land Ownership by Agency

Demographics

U.S. Census Bureau population data for Twin Falls County and its eight incorporated cities for the years 1990, 2000, and 2010 are shown in Table 2.6.5 below.

Total Population and Population Change from 1990 to 2010					
	1990	2000	2010	% change from 1990-2000	% change from 2000-2010
Twin Falls County	53,580	64,284	77,230	20%	20%
Twin Falls City	27,591	34,469	44,125	25%	28%
Buhl	3516	3985	4,122	13%	3%
Castleford	179	277	226	54.70%	-18%
Filer	1511	1620	2,508	7.20%	55%
Hansen	848	970	1,144	14.40%	18%
Hollister	144	237	272	64.60%	15%
Kimberly	2367	2614	3,264	10.40%	25%
Murtaugh	134	139	115	3.70%	-17%

Table 2.6.5 – Population changes for Twin Falls County and its incorporated cities.

Total County population in 2010 was estimated at 77,230, excluding those living in institutions, group quarters, and college dormitories. Between 1990 and 2000 the County population grew 20% from 53,580 to 64,284 as compared with the State of Idaho which grew by 28%[50]. Of the eight incorporated cities, Twin Falls City has by far the largest population with 44,125 as of the 2010 census, comprising over 57% of the total County population. Over the entire 120 year period, Twin Falls City grew by over 25% while the County grew by around 20%. The population growth pattern outside Twin Falls City has changed in the last two decades. Between 1990 and 2000 Castleford and Hollister, which are located further from Twin Falls City than the other communities, had population increases of around 50%. Since 2000, however, the population of Castleford has decreased by 18% in the past 10 years, while the urban area of Twin Falls City and areas in closer proximity have continued to grow.

As of 2010, the County has an estimated 31,072 housing units with approximately 28,760 of those households occupied and about 2,312 unoccupied.

U.S. Census Bureau data for the year 2010 gives the following reported ethnicity distribution for Twin Falls County:

- African American 342
- American Indian and Alaska Native persons 606
- Asian persons 922
- Native Hawaiian and Other Pacific Islander 83

[50] Rasker, 2006

- Persons reporting two or more races 1,755
- White persons not Hispanic 68,693

The median age in Twin Falls County increased from 29.4 in 1980 to 32.4 in 2010.

Critical Infrastructure

County Facilities

The Twin Falls County government offices and County Assistance are housed in two main buildings in downtown Twin Falls: the County Courthouse at 425 North Shoshone Street, and the County West Annex Building on Addison Avenue West. The County West Campus buildings include offices for the County Clerk/Auditor/Recorder, the County Commissioners (along with their hearing chambers), the Assessor, County Treasurer, and Planning and Zoning. The Prosecuting Attorney and the Sheriff's Office are located in the Courthouse.

Other government offices include: the Twin Falls County Criminal Justice Facility (juvenile) and the Juvenile Detention Center at 2515 Wright Avenue, the Parks and Recreation Department and Weed Bureau at 450 W. 6th Avenue, and the Adult Probation Office at 245 North 3rd Street.

Public Services and Facilities

With the exception of the County Sheriff's Office, Twin Falls County does not provide any public services directly, nor does the County operate any sort of coordinating public service authority, although informal cooperative agreements have been established among certain districts. All of the County's necessary services are divided among individual public service districts and city offices. Near or within the boundaries of the Areas of City Impact, most services are provided by the Cities or their respective service districts. In other unincorporated areas of the County, services are provided either by the various public service districts or individual landowners.

Sewer and Water

Within the cities and the areas of impact, domestic water distribution and sewage collection and treatment systems are provided by the cities. Decisions regarding development and the availability of sewer and water in the areas of impact, therefore, rest entirely with city governments. Beyond the boundaries of the areas of city impact, city service departments may opt to extend sewer or water lines only if boundaries are re-designated.

In the outlying, unincorporated areas of the County water is supplied by individual wells, and sewage is treated by septic systems. For any parcel of land, sewer and water arrangements must meet the standards of the Idaho Department of Health. All septic systems, regardless of size or location, must be approved by the South Central District Health Department. In addition, standards may also be enforced by the Idaho Department of Water Resources and the Idaho Department of Environmental Quality.

Water availability in Twin Falls County has become a concern because most of the County's developed water resources are concentrated near the Snake River. Surface and groundwater are available in this area. City water systems utilize extensive well networks from the Snake River Aquifer. Infrastructure to distribute water will remain concentrated in the northernmost part of the County.

In less developed parts of the County, individual wells are the primary source of water. The yield of such wells is sometimes marginal farther away from the Snake River. Water quality also becomes a problem for wells when recharge waters are affected by agricultural run-off or septic systems. Sewer service and discharge is provided in all incorporated cities. The City of Twin Falls treats the sewer discharge for the City of Kimberly.

Waste Management

Twin Falls County is one of the seven Magic Valley counties that own Southern Idaho Solid Waste, a special local government unit providing solid waste management services. Southern Idaho Solid Waste provides disposal facilities for Twin Falls County residents, businesses, and industries at two large waste transfer stations; one in Southeast Twin Falls City and the other five miles west of Buhl. Three smaller rural transfer stations are located in the south Twin Falls County area, Roseworth, and three Creek communities.

Five solid waste collections companies and the City of Buhl provide residential and commercial collection services through the County. Two commercial recycling facilities, along with a residential curbside recycling program, are located in Twin Falls City, while five public satellite recycling drop-off sites and six Twin Falls School District recycling sites provide public sector recycling services in the County.

Public Utilities

The major utilities in the County are electrical, gas, telecommunications, and irrigation. There are potential solar and wind power resources in the County.

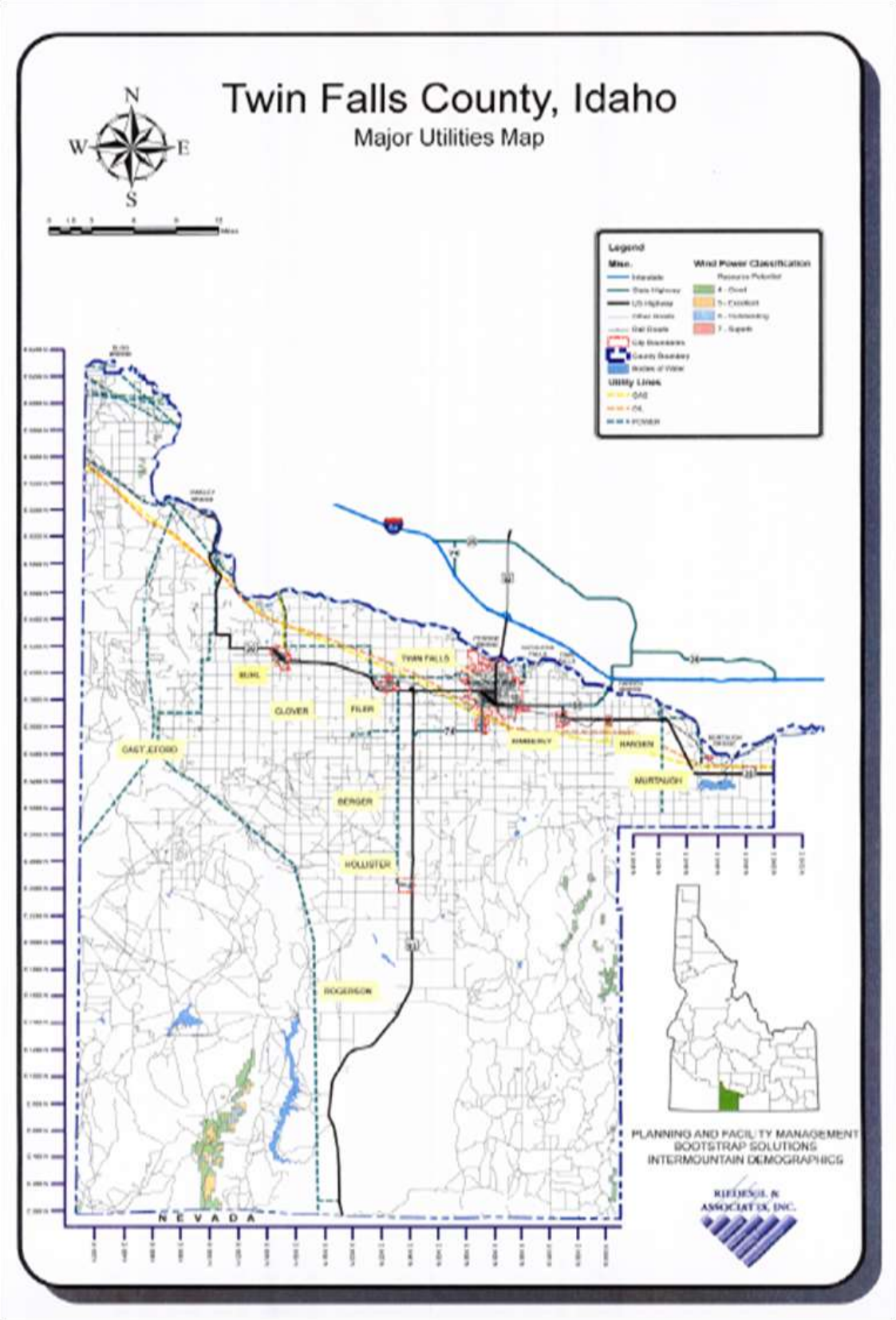


Figure 2.6.5

Twin Falls County Major Utilities Map

The Idaho Power Company supplies electric distribution lines for all homes and commercial areas of the County.

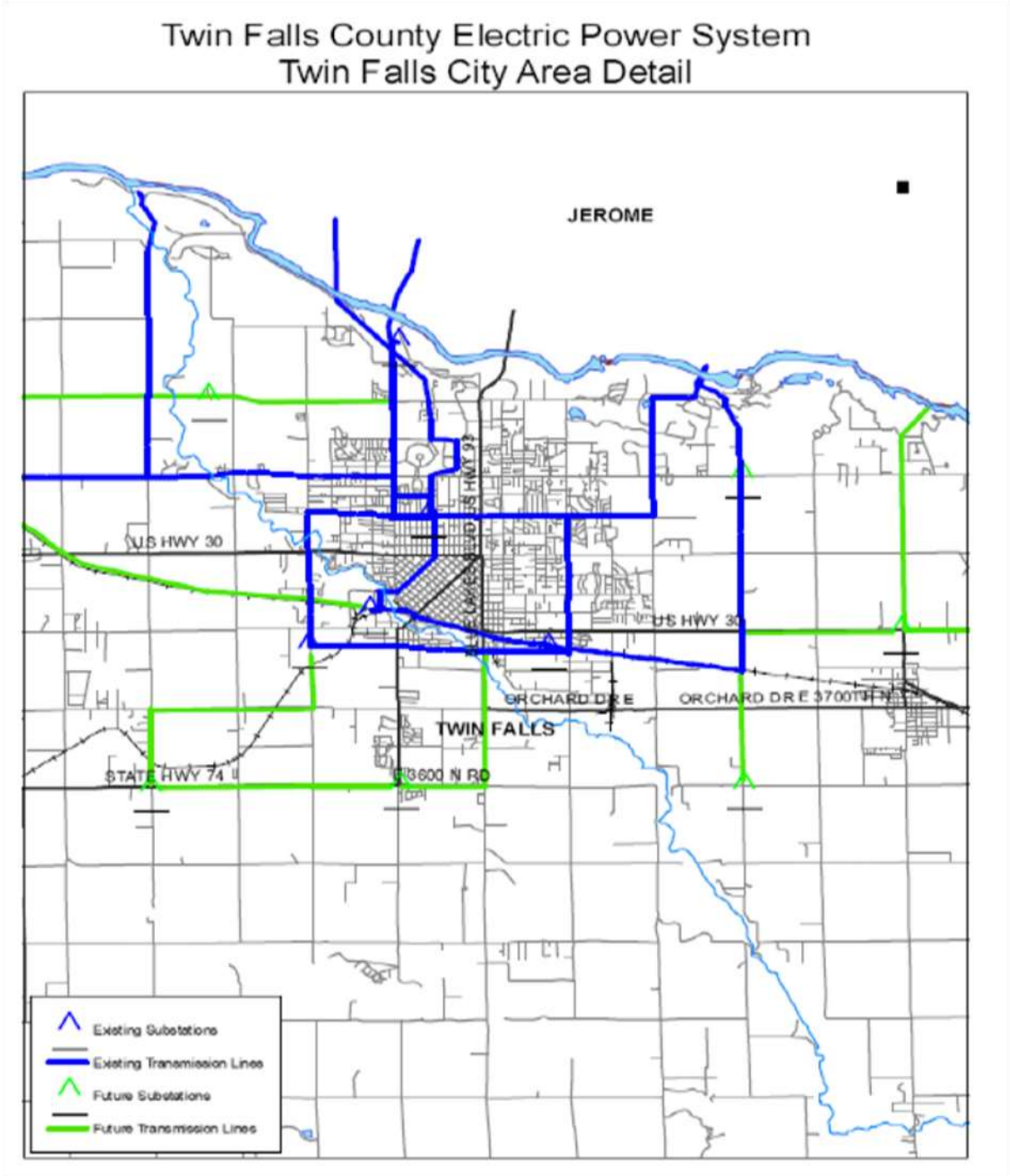


Figure 2.6.6

Twin Falls County Electric Power System Map

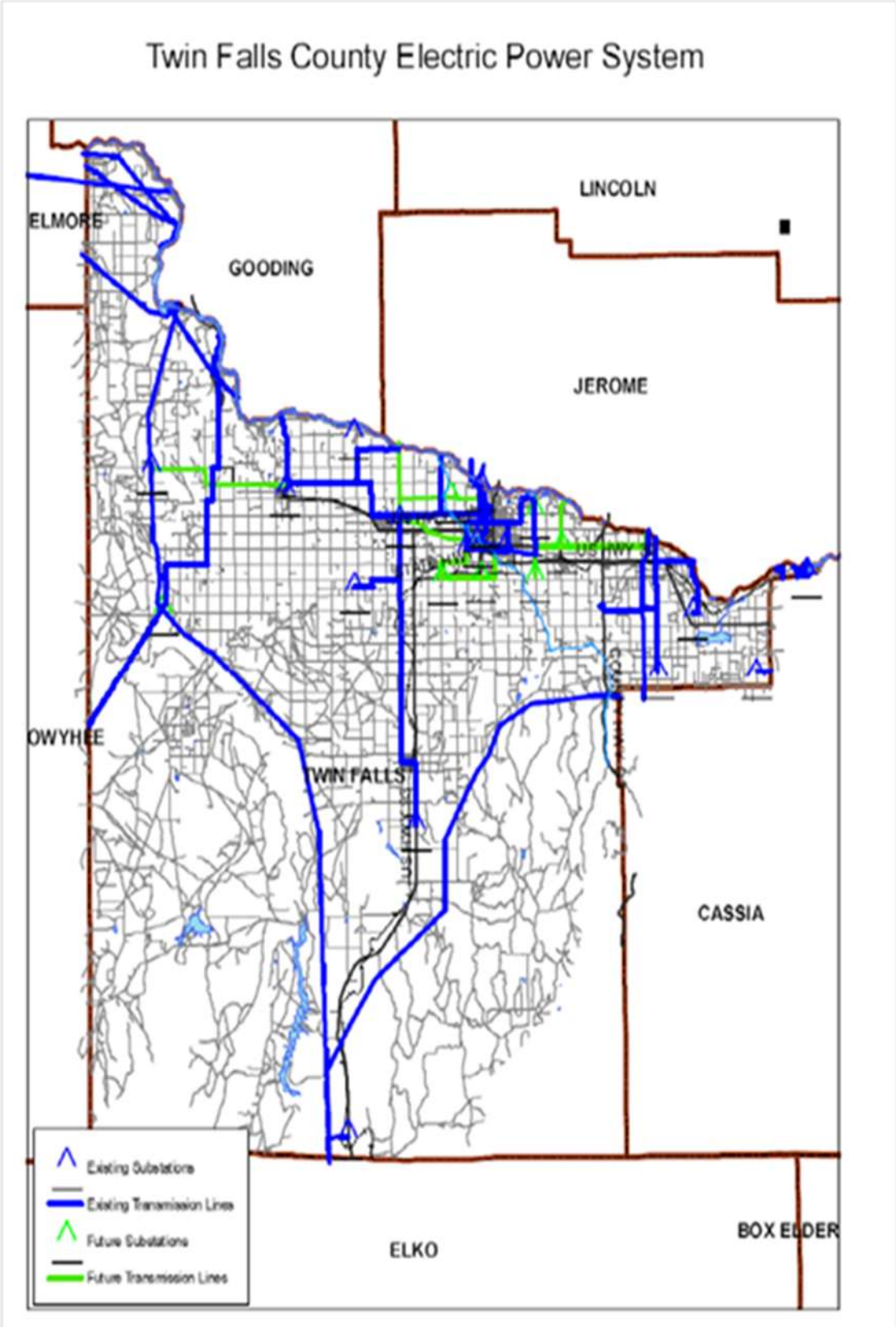


Figure 2.6.7

Twin Falls County Electric Power System Map

Telecommunications lines coincide with the main power transmission and distribution lines throughout most of the County. In Filer, Hollister, and Rogerson telephone service is provided by the Filer Mutual Telephone Company.

Intermountain Gas Company provides services to cities in the northern part of the County. Most of the outlying unincorporated areas of the County rely on home heating oil, coal, or electric heat. The availability of geothermal resources and solar energy do present some feasible energy development alternatives, although minimal exploration of these resources for public use has taken place to date.

Propane services are provided by private companies and are used as an energy source in locations not served by Intermountain Gas Company.

Water Resources

This section includes discussion of existing surface and groundwater resources in the local region. Water quality and availability in the County is largely dependent on the relationship between the Snake River and the underlying aquifer beneath Twin Falls County on the south side of that river.

Surface Water

The Snake River and its tributaries are the principal sources of surface water in Twin Falls County. The Snake River supports such uses as irrigation, recreation, and wildlife and fish habitat. The Snake River watershed upstream of King Hill, Idaho, commonly called the Upper Snake River Basin, drains an area of 35,857 square miles in Idaho, Wyoming, Nevada, and Utah. At Heise, Idaho, upstream from nearly all irrigation uses, the average flow of the Snake River is about five million acre-feet per year. Irrigation diversions along the Snake River, however, reduce the flow at Milner Dam, where the river enters Twin Falls County, to 2.5 million acre-feet per year. Major tributaries of the Snake River within the Twin Falls County area include: Rock Creek, Deep Creek, Mud Creek, Cedar Draw, and Salmon Falls Creek. Nearly all of these carry substantial amounts of irrigation return flow and/or groundwater discharge. Other significant surface water drainages in Twin Falls County include Cottonwood Creek, McMullen Creek, Fifth Fork of Rock Creek, Shoshone Creek, and Big Creek. Salmon Falls Reservoir has an active capacity of approximately 185,000 acre-feet, and Cedar Creek Reservoir stores roughly 30,000 acre-feet. Other reservoirs of significant yield are located on Deep Creek, Worley Draw, Cottonwood Creek, and along various laterals of the County's canal system.

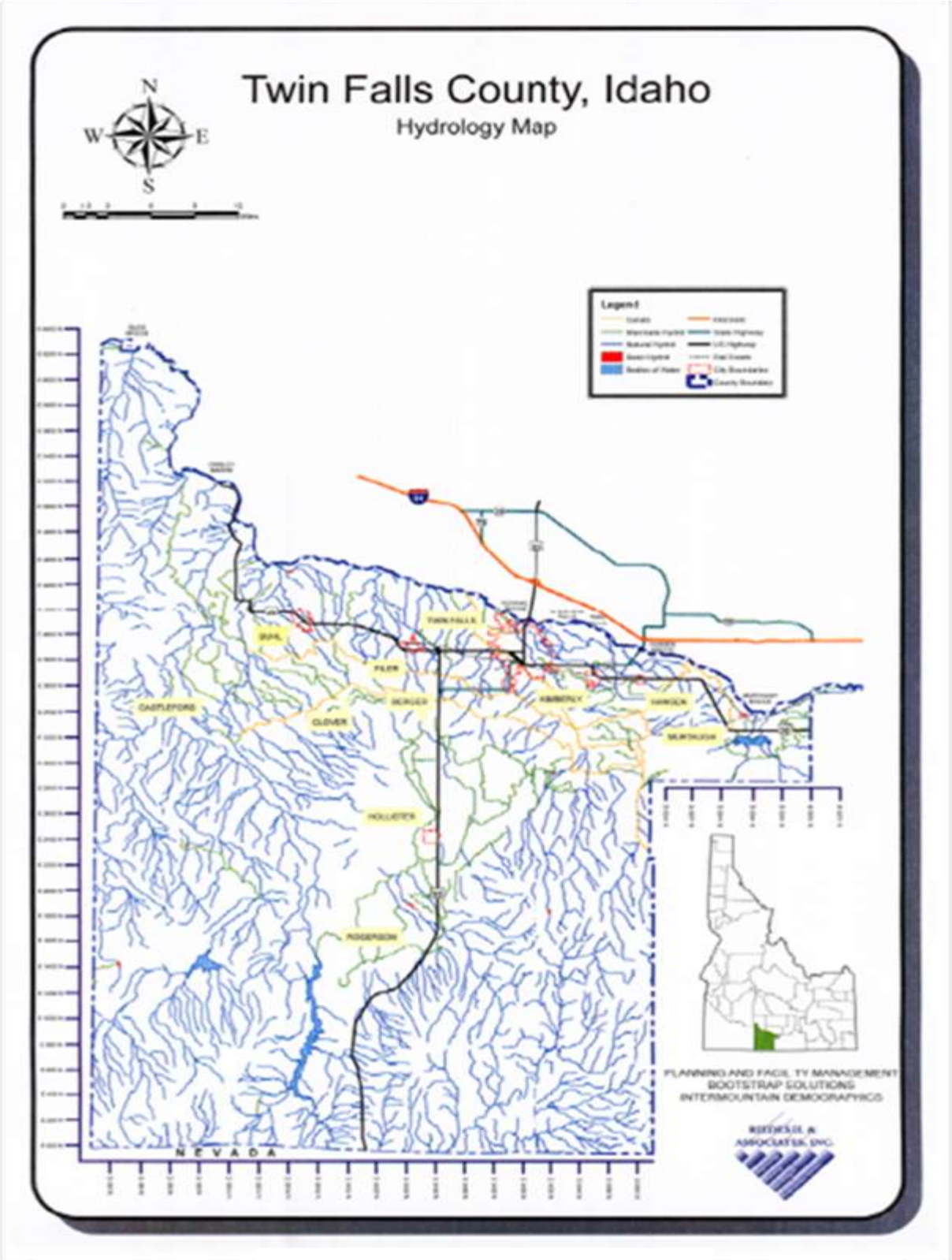


Figure 2.6.8

Twin Falls County Hydrology Map

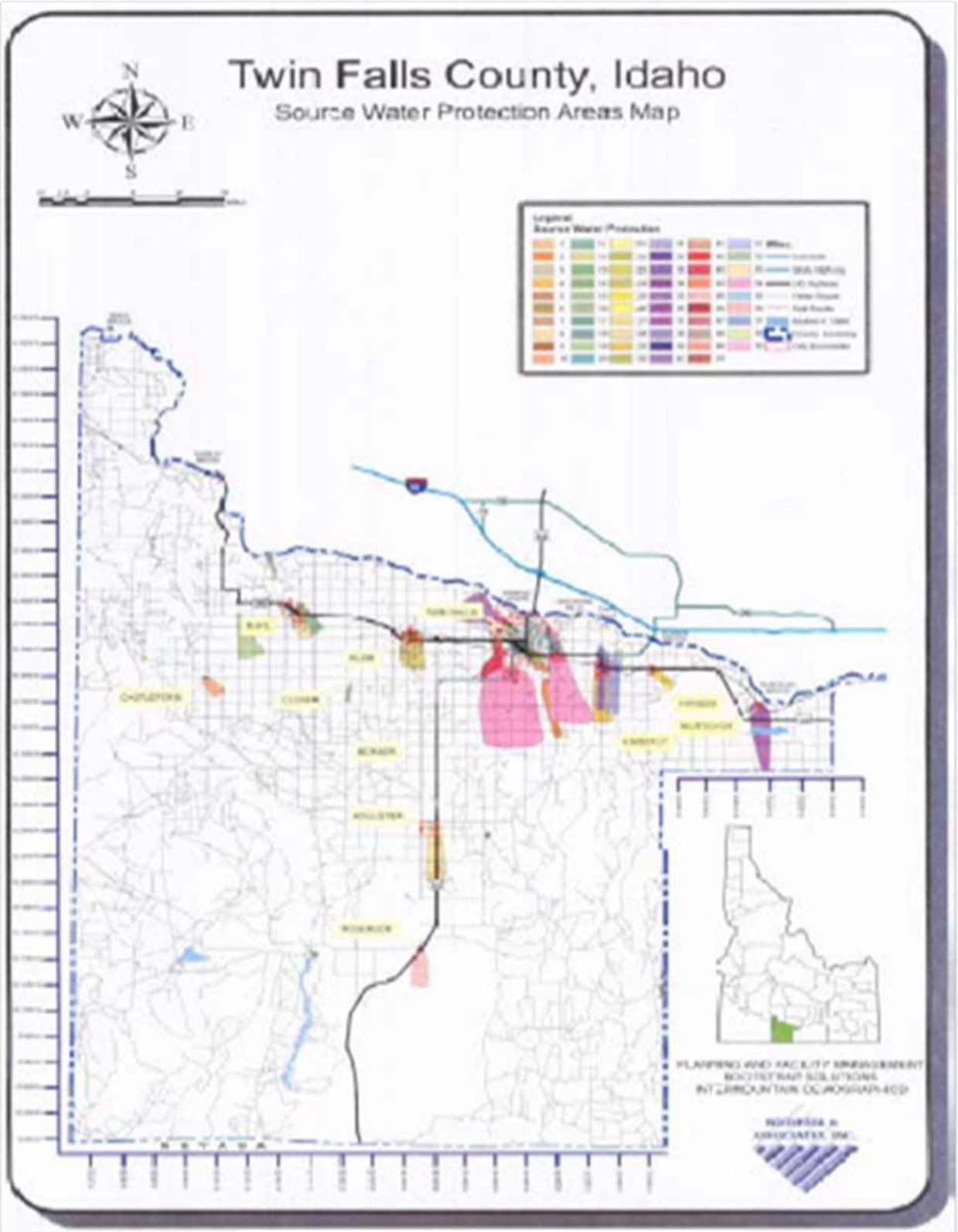


Figure 2.6.9

Twin Falls County Source Waters Protection Area Map

Irrigation

Since annual rainfall is limited, irrigation is vital to crop production in Twin Falls County. Surface water is the main source of water for irrigation use with more than 83 percent of cropland being irrigated by surface water sources in Twin Falls County. The Twin Falls Canal Company diverts water from Milner Dam and delivers water to approximately 203,000 acres of irrigated cropland through a system consisting of 110 miles of main canals and over 1000 miles of laterals and drains. The High-Line Canal and Low-Line Canal are the main canals that supply water to laterals and farms. The Canal Company also holds storage rights for 96,000 acre-feet at Jackson Lake and 150,000 acre-feet at American Falls. The average annual diversion for irrigation by the Twin Falls Canal Company is 1,113,700 acre-feet of water, an average of 5 acre-feet per acre.

Milner Irrigation District in Twin Falls County diverts an average of 60,000 acre-feet of water from Milner Dam yearly. Approximately 13,500 acres in the eastern portion of Twin Falls County are served by the Milner Irrigation District. Below Milner Dam, the majority of irrigation withdrawals from the Snake River require high-lift pumping because of the steep canyon walls. Other irrigation districts include the Southwest Irrigation District, Salmon River Canal Company, Magic Water Users, Rosewood Irrigation District, and a few small independent water users groups.

Groundwater

One of the largest groundwater systems in the United States, the Snake River Plains Aquifer, borders Twin Falls County to the North. This aquifer provides the largest inflow of water to the Snake River from Milner Dam to King Hill, discharging approximately 5,700 cfs. Another, shallower aquifer in the Twin Falls County region discharges approximately 500 cfs into the Middle Snake River reach from Milner to King Hill.

The primary source of recharge to the Twin Falls aquifer groundwater system is seepage of surface irrigation water from the Twin Falls Canal Company. Other sources of recharge include the Salmon Dam Reservoir, reservoir irrigation supplies, and the precipitation accumulated and transported in drainages from the mountains bordering the County on the south.

Ground water is the sole source of potable water for the residents of Twin Falls County. About 69% of the County residents rely on municipal systems for their drinking water, all of which use ground water as their source. Municipal systems include: Twin Falls, Filer, Castleford, Kimberly, Hollister, Hansen, Rogerson, and Murtaugh. There are many other public water systems within the County including mobile home and trailer parks, campgrounds, Recreational Vehicle (RV) parks, homeowner associations, and others.

Transportation

The safe and efficient movement of goods by an efficient transportation network is an important component of the economic strategy for Twin Falls County. Goods are transported via air, rail, and truck in Twin Falls County and all play an important role in promoting the efficiency of County transportation.

Roadways

Roads provide the primary transportation mode in Twin Falls County. Within the County there is a complex network of roads and highways of varying conditions and governed by different agencies working together to unite the region with an efficient and functional roadway system. Federal and state highways in Twin Falls County operate under the authority of the Idaho Transportation Department (ITD). The Federal highways in the County are US Highways 30 and 93.The only State Highway is a short section of Highway 50 and 74. Twin Falls County has four Highway Districts: Buhl, Filer, Murtaugh, and Twin Falls. These four districts are responsible for all County highway maintenance other than those within the cities of Twin Falls, Buhl, Filer, Kimberly, and Hansen. Each of these cities is responsible for the transportation needs within its annexed boundaries. .

Bridges

There are nearly 100 bridges exceeding 20 feet in Twin Falls County. Four of these have been recommended for replacement, and eight others qualify for rehabilitation due to low ITD bridge sufficiency ratings. All other bridges have ratings of fair to excellent. Preparation of the environmental document identifying potential alignments and environmental impacts for a proposed third bridge crossing of the Snake River is underway. This project, however, is probably 20-25 years from completion because former Governor Dirk Kempthorne's "Connecting Idaho" legislation that could have sped up the timetable was compromised to exclude this crossing with its projected $1.64 billion budget.

Airports

Twin Falls County has two airports: Joslin Field Magic Valley Regional Airport located in Twin Falls and Buhl Municipal Airport in Buhl. Commercial air service in Twin Falls County has decreased over the past decade. Joslin Field, which previously had direct commercial flights to Boise and Southeast Idaho, now connects only to Salt Lake City, UT. Joslin Field also serves as the primary backup airport for Friedman Memorial Airport in Hailey, Idaho. Buhl Municipal Airport serves small private planes and crop dusters.

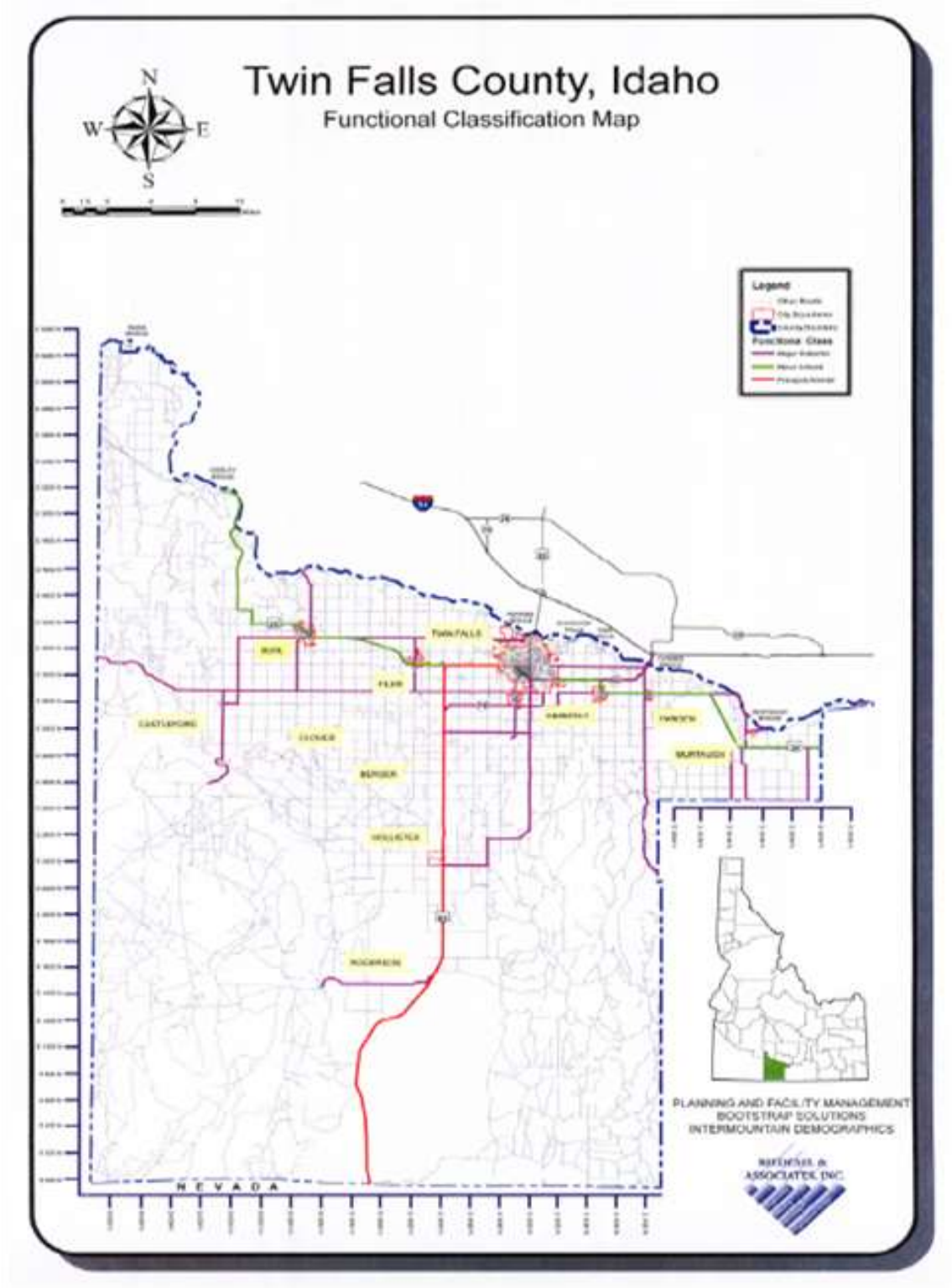


Figure 2.6.10

Twin Falls County Functional Classification Map

Railroads

There is no passenger rail service in Twin Falls County. Freight service is provided by Union Pacific Railroad and by Eastern Idaho Railroad, a short line that carries about 100 cars per day within the County. The majority of the freight is grain, potatoes, and other agricultural commodities.

Housing

The County had almost 31,072 total housing units in 2010, a 21 percent increase from 2000. There were 28,760 owner occupied housing units as of 2010. Owner occupied housing units accounted for 66.5 percent of all occupied units. Renter occupied units accounted for the balance (33.5 percent). In 2010 there was a vacancy rate of 7.4% with about 2,313 housing units being vacant.

76.5% of all housing units in Twin Falls County are traditional single family dwelling units. About 18% percent of the entire County's housing stock is considered multi-family, containing two or more housing units. Mobile homes account for 9.7% of the County's housing stock.

As of 2010 over 50% of the population had lived in their current house 5 years or less. The housing stock in Twin Falls County is aging. The following table shows the age of housing stock in Twin Falls County.

Year Built	Percent of Housing Stock
Built 2005 or later	8.40%
Built 2000 to 2004	6.60%
Built 1990 to 1999	13.80%
Built 1980 to 1989	13.80%
Built 1970 to 1979	20.40%
Built 1960 to 1969	8.90%
Built 1950 to 1959	8.60%
Built 1940 to 1949	4.40%
Built 1939 or earlier	15.10%

Educational Facilities

There are forty-one (41) public and private schools from pre-school to twelfth grade serving the citizens of Twin Falls County. There are seven (7) public school districts in the County including Twin Falls, Buhl, Castleford, Filer, Hansen, Kimberly and Murtaugh School Districts. All school districts are located in incorporated cities, but their boundaries extend into the County. Eight schools are affiliated with churches.

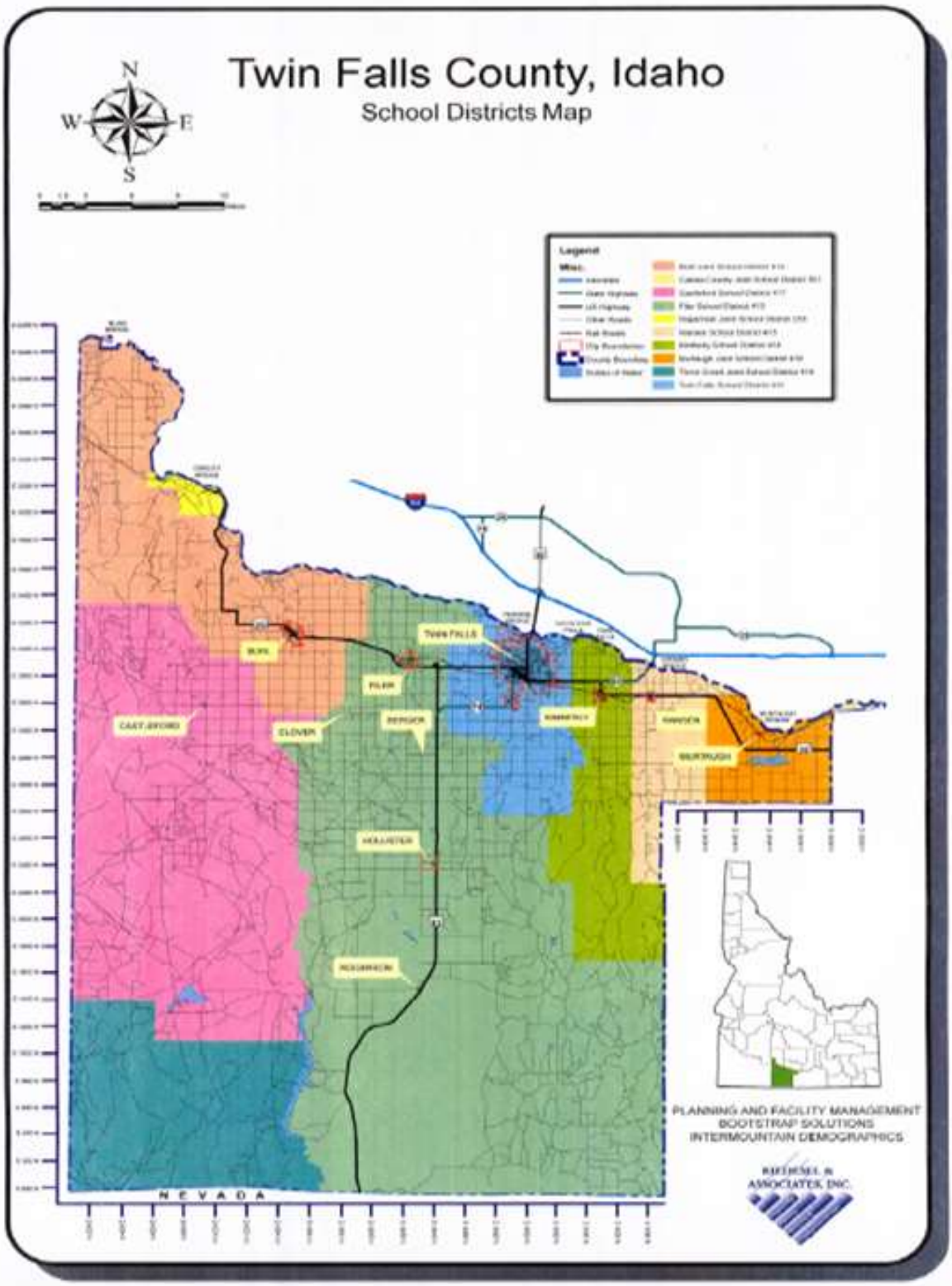


Figure 2.6.11

Twin Falls County School Districts Map

College of Southern Idaho (CSI)

The CSI campus is located on 350 acres in Twin Falls, Idaho and was established in 1964. CSI also provides educational services in Gooding, Burley, Jerome, Boise, and Hailey at its outreach center locations. Presently, the college serves more than 12,000 students annually with a wide array of academic, professional, and continuing education curricula.

Recreation Areas

The Snake River corridor is certainly the most acclaimed recreational resource within Twin Falls County. The river itself is a source of abundant fishing and water sports activities, and the Snake River Canyon is home to numerous parks, golf courses, and hiking areas. The views afforded from the canyon rim are among the most spectacular to be found anywhere. Many of these Snake River sites are inter-county in nature; that is, they are either physically located in adjacent counties or else reside within Twin Falls County while attracting many visitors from other counties.

Among the most heavily used local recreational sites in the County are Dierkes Lake, Shoshone Falls, and Rock Creek Park, all of which are within Twin Falls City. The Twin Falls City Parks Department estimates annual attendance for Dierkes Lake to be 61,000 visitors, most from nearby urban locations. Shoshone Falls, with more than 45,000 annual visitors, is more of a regional or national tourism site. Dierkes Lake is approximately 190 acres and Shoshone Falls Park is over 330 acres including the canyon rim area. For a more detailed description of recreation sites in Twin Falls County see Section 2 County Description.

The Twin Falls County Fairgrounds, located near Filer, is also a significant recreation site. The annual fair lasts one week and in 2006 attendance was approximately 117,000.

Federal Recreation Areas

Hagerman Fossil Beds National Monument is located in the northwestern portion of the County and is north of U.S. Highway 30 on approximately 4,300 acres along the Snake River Canyon rim The fossil beds contain preserved remains of animals from the Pliocene era, some 3.5 million years ago. Because the monument was established only recently (in 1988), current facilities are minimal, consisting of an overlook on the canyon rim and a visitor center located across the canyon in Hagerman.

The National Park Service provides Federal law enforcement services for the Monument to enforce Code of Federal Regulations 36, the federal laws of the National Park system that primarily provide for the protection of the cultural and natural resources of the Monument. The National Park Service recognizes their management obligation and responsibility to the park visitor, and is willing to develop cooperative programs to provide adequate emergency services that would be in the best interests of the public, the County, and the National Park Service.

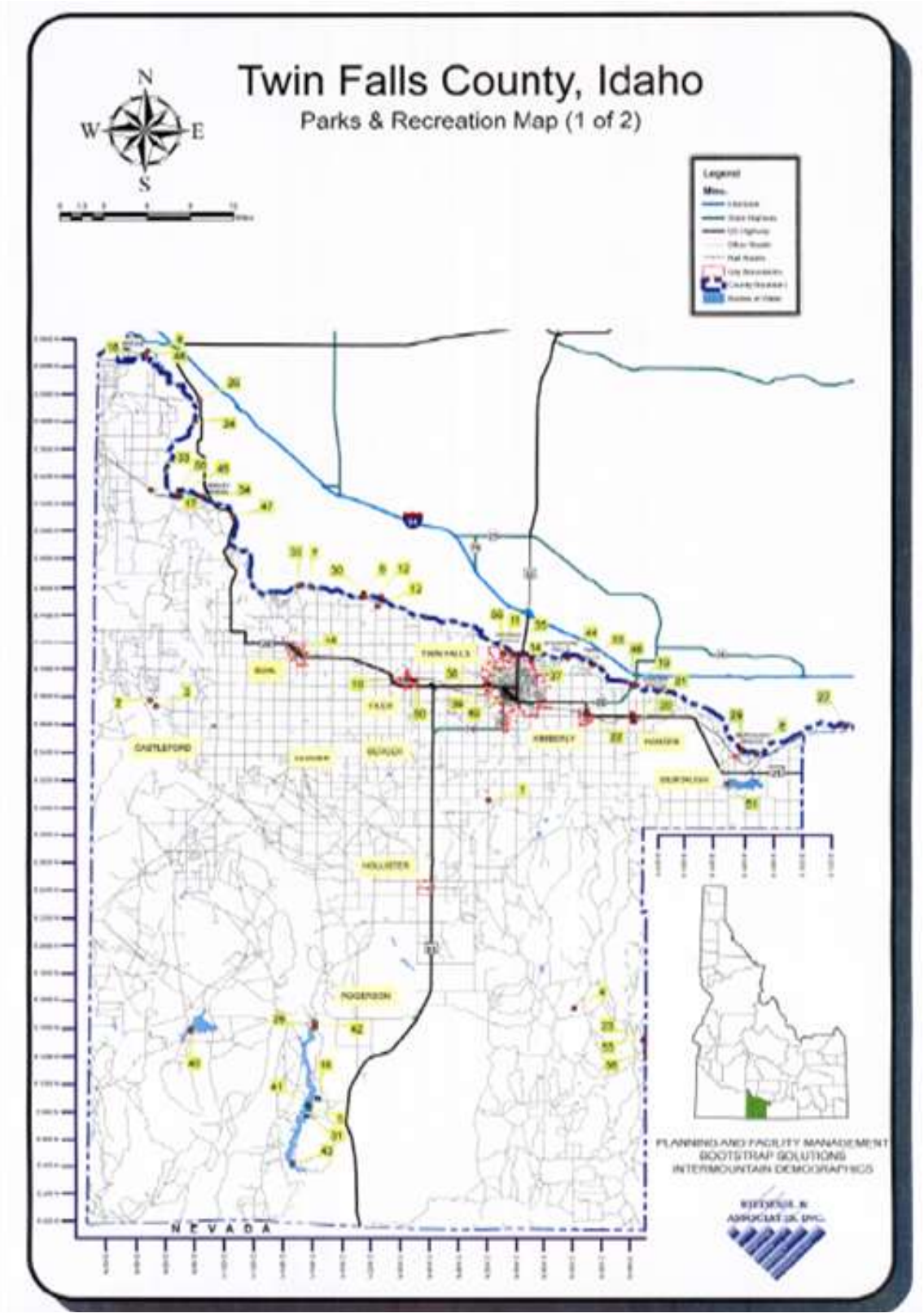


Figure 2.6.12

Twin Falls County Parks & Recreation Map

Twin Falls County, Idaho

Parks & Recreation Map (2 of 2)

1. AEROMODELERS AIRFIELD
2. BALANCED ROCK
3. BALANCED ROCK PARK
4. BEAR GULCH CAMPGROUND
5. BIG SAND BAY
6. BLISS BRIDGE
7. BORDEWICK ACCESS
8. CAULDRON LINN
9. CEDAR DRAW ACCESS
10. CEDAR DRAW RV PARK
11. CENTENNIAL WATERFRONT PARK
12. CRYSTAL SPRINGS
13. CRYSTAL SPRINGS OVERLOOK
14. DIERKES LAKE
15. EASTMAN PARK
16. GRAY'S LANDING
17. HAGERMAN FOSSIL NATIONAL MONUMENT
18. HAGERMAN REACH
19. HANSEN BRIDGE
20. HANSEN CITY PARK
21. HANSEN ROLLING HILLS PARK
22. KIMBERLY PARKS
23. LOWER PENSTEMON CAMPGROUND
24. LOWER SALMON FALLS
25. LUD DREXLER RV PARK
26. MALAD RIVER PARK
27. MILNER DAM
28. MILNER RECREATION AREA
29. MURTAUGH RAPIDS
30. NIAGARA SPRINGS
31. NORTON BAY
32. OLD CLEAR LAKES BRIDGE
33. OREGON TRAIL OVERLOOK
34. OWSLEY PARK
35. PERRINE BRIDGE
36. PETTIT CAMPGROUND
37. PILLAR FALLS OVERLOOK
38. ROCK CREEK PARK
39. ROCK CREEK RV
40. ROSEWORTH LAKE
41. SADDLE POINT
42. SALMON DAM MARINA
43. SALMON RESERVOIR BACKWATERS
44. SHOSHONE FALLS
45. SNAKE RIVER OVERLOOK
46. SPRINGTOWN
47. THOUSAND SPRINGS STATE PARK
48. TUANA GULCH
49. TWIN FALLS CITY VISITOR CENTER
50. TWIN FALLS COUNTY FAIRGROUNDS RV PARK
51. TWIN FALLS COUNTY WATERFRONT PARK (SILVER COVE)
52. TWIN FALLS FALLS PARK & MARINA
53. UPPER PENSTEMON CAMPGROUND
54. UPPER SALMON CANOE LAUNCH
55. UPPER SALMON FALLS PARK
56. WASHINGTON STREET OVERLOOK

PLANNING AND FACILITY MANAGEMENT
BOOTSTRAP SOLUTIONS
INTERMOUNTAIN DEMOGRAPHICS

RIDDER & ASSOCIATES, INC.

Figure 2.6.13

Twin Falls County Parks & Recreation Map Legend

Cultural and Historical Sites

An abundance of natural resources and the presence of prehistoric and historic elements are among the cultural resources of the County. These resources include archaeological sites, trail remnants, historic camp sites, and historic structures.

Sites associated with the area's prehistory may be attributed to the area's natural resources, particularly in the Snake River Canyon and other drainages. Some of these are documented at the CSI Herrett Center for the Arts and Science, at the Twin Falls County Museum, and at the Idaho State Historical Preservation Office (SHPO) in Boise, Idaho. As of 2005 Twin Falls County had 1846 prehistoric archaeological sites and 1583 historic sites documented in records on file at SHPO.

The County's oldest prehistoric site is the Buhl Woman burial site. This is the second oldest burial discovered in North America dating to approximately 12,600 B.C. The remains of prehistoric hunting and fishing camp sites as well as rock art sites are scattered throughout the County. Twin Falls County also contains significant evidence and sites relating to the early Euro-American exploration and fur trade era, the Oregon Trail migration, the gold rush, including extensive Chinese placer sites along the Snake River, ranching, and Carey Act irrigation settlements. Sites such as Auger Falls, Kanaka Rapids, Drytown, Springtown, Shoshone (1870's placer gold camps), the Stricker Stage Station, the Union School, Hollon Family home site, Nat-Soo-Pah, CCC projects, the Evel Knievel jump site, the KTFI radio station, and Salmon Dam are examples of significant historic sites.

The Twin Falls County Historical Preservation Commission developed a survey of many of these sites in 1987 and has worked through the years with signage projects, nominations of sites to the National Register of Historic Places, historic road surveys, and surveys/mapping of Auger Falls in the Snake River Canyon. The commission is a participant of the Certified Local Government (CLG) Program administered by the Idaho State Historic Preservation Office / Idaho State Historical Society. The following are historical sites in Twin Falls County:

- **Alvis, James, House** (added 1980 - **Building** - #80001335) 1311 Pole Line Rd., Twin Falls
- **Bickel School** (added 1990 - **Building** - #90001233) Also known as **Bickel Elementary School; 001703** 607 Second Ave. E., Twin Falls
- **Bowlby, T. P., Barn** (added 1983 - **Building** - #83000293) NE of Buhl, Buhl
- **Buhl City Hall** (added 1978 - **Building** - #78001099) Broadway and Elm St., Buhl
- **Buhl IOOF Building** (added 1984 - **Building** - #84000482) 1014-16 Main St., Buhl
- **Caldron Linn** (added 1972 - **Site** - #72000442) 2 mi. E of Murtaugh, Murtaugh
- **Carlson, Alfred, Barn** (added 1989 - **Building** - #83000296) NE of Buhl, Buhl
- **Cedar Draw School** (added 1991 - **Building** - #91000986) Also known as **Keeton, Raymond & Fairy Faye Frank, House** 4300 N. Rd. between 1900 and 2000 E., Buhl
- **Continental Oil Company Complex** (added 1982 - **Building** - #82005188) Second Ave. S. and Sixth St. S., Twin Falls

- **Dau-Webbenhorst Barn** (added 1983 - **Building** - #83000295) SE of Buhl, Buhl
- **Duquesne, Achille, House** (added 1993 - **Building** - #93000990) 710 W. Midway, Filer
- **Hollister School** (added 1991 - **Building** - #91000984) Also known as **Hollister Elementary; 007973** 2464 Salmon Ave., Hollister
- **Hotel Buhl** (added 1985 - **Building** - #85002158) Also known as **Buhl Hotel** 1004 Main St., Buhl
- **Idaho Power Substation** (added 1978 - **Building** - #78001100)
- **Morse, Burton, House** (added 1993 - **Building** - #93000992) Van Buren St. and Filer Ave., Twin Falls 136 Tenth Ave. N., Twin Falls
- **Kimberly High School** (added 1990 - **Building** - #90001229)
- **Peck, D. H., House** (added 1993 - **Building** - #93000993) Also known as **Kimberly Junior High and District Office/015781** 207 E. 8th Ave., Twin Falls 141 Center St. W., Kimberly
- **Pleasant Valley School** (added 1991 - **Building** - #91000985)
- **Kunze, Gustave, Barn** (added 1994 - **Building** - #83000294) Also known as **O'Marra, Pat and Margaret, House** SE of Buhl, Buhl 3501 E. 3100 N., Kimberly
- **Kunze, Rudolf, Barn** (added 1994 - **Building** - #83000292)
- **Pleasant View School** (added 1991 - **Building** - #91000987) NE of Buhl, Buhl Also known as **Knull Grange** 2500 E. 3600 N., Twin Falls
- **Lincoln School** (added 1990 - **Building** - #90001218) Also known as **Lincoln Elementary School; 015782**
- **Priebe, Walter, House** (added 1993 - **Building** - #93000991) 238 Seventh St., Twin Falls 155 7th Ave. E., Twin Falls
- **Lincoln Street Electric Streetlights Ramona Theater** (added 1976 - **Building** - #76000682) (added 1992 - **Object** - #92000413) 113 Broadway, Buhl
- 105, 120, 147, 174, 189, 210, 217, 242, 275 and 290 Lincoln St., Twin Falls
- **Schick, Henry, Barn** (added 1983 - **Building** - #83000290) SE of Buhl, Buhl
- **Maxwell, Art and Frieda, Barn** (added 1983 - **Building** - #83000291)
- **Smith, C. Harvey, House** (added 1978 - **Building** - #78001101) SE of Buhl, Buhl Also known as **Carl Hahn Residence** 255 4th Ave., E., Twin Falls
- **McCollum, Robert, House** (added 1982 - **Building** - #82000386) 708 E. Shoshone St., Twin Falls
- **Stricker Store and Farm** (added 1979 - **Building** - #79000810) N of Rock Creek, Twin Falls
- **Milner Dam and the Twin Falls Main Canal** (added 1986 - **Structure** - #86001720)

- **Twin Falls Bank and Trust Company Building** Twin Falls Main Canal between Murtaugh and (added 1986 - **Building** - #86002155) Milner Lakes, Murtaugh 102 Main Ave. S, Twin Falls
- **Twin Falls Canal Company Building** (added 1996 - **Building** - #96000944) Also known as **Paul T. Smith Law Office** 162 2nd St., W, Twin Falls
- **Twin Falls City Park Historic District** (added 1978 - **District** - #78001102) 2nd N., 2nd E., and Shoshone Sts., 4th and 6th Aves., Twin Falls
- **Twin Falls Downtown Historic District** (added 2000 - **District** - #00000035) Roughly bounded by 2 Ave. N, 2 St. E, 2 St. W, 2 St. S, 3 Ave. S, 3 St. W., Twin Falls
- **Twin Falls Milling and Elevator Company Warehouse** (added 1995 - **Building** - #95001059) 516 Second St. S., Twin Falls
- **Twin Falls Original Townsite Residential Historic District** (added 2001 - **District** - #01001306) Roughly bounded by Blue Lakes Ave., Addison Ave., 2nd Ave. E, and 2nd Ave. W, Twin Falls
- **Twin Falls Warehouse Historic District** (added 1997 - **District** - #96001592) Roughly bounded by 2nd Ave., 4th St. S and W, and Minidoka Ave., Twin Falls
- **US Post Office--Buhl Main** (added 1989 - **Building** - #89000130) Also known as **Buhl Main Post Office** 830 Main, Buhl
- **Union School** (added 2003 - **Building** - #03000123) Also known as **83-16951** 21337 US 30, Filer.

Between 1862 and the 1880s, major transportation thoroughfares passed through the area now known as Twin Falls County. Besides the Oregon Trail, the Toano and Kelton freight roads were constructed at this time, and were well used until the advent of the railroad in 1883.

Twin Falls County has a rich ethnic heritage that forms the foundations for a very diverse population. Some important ethnic groups represented in the County prior to 1900 were Native American, French Canadian, and Chinese. People of Japanese, Basque, Hispanic, Southeast Asian, Czechoslovakian and other Eastern European origin comprise some of the more contemporary ethnic groups.

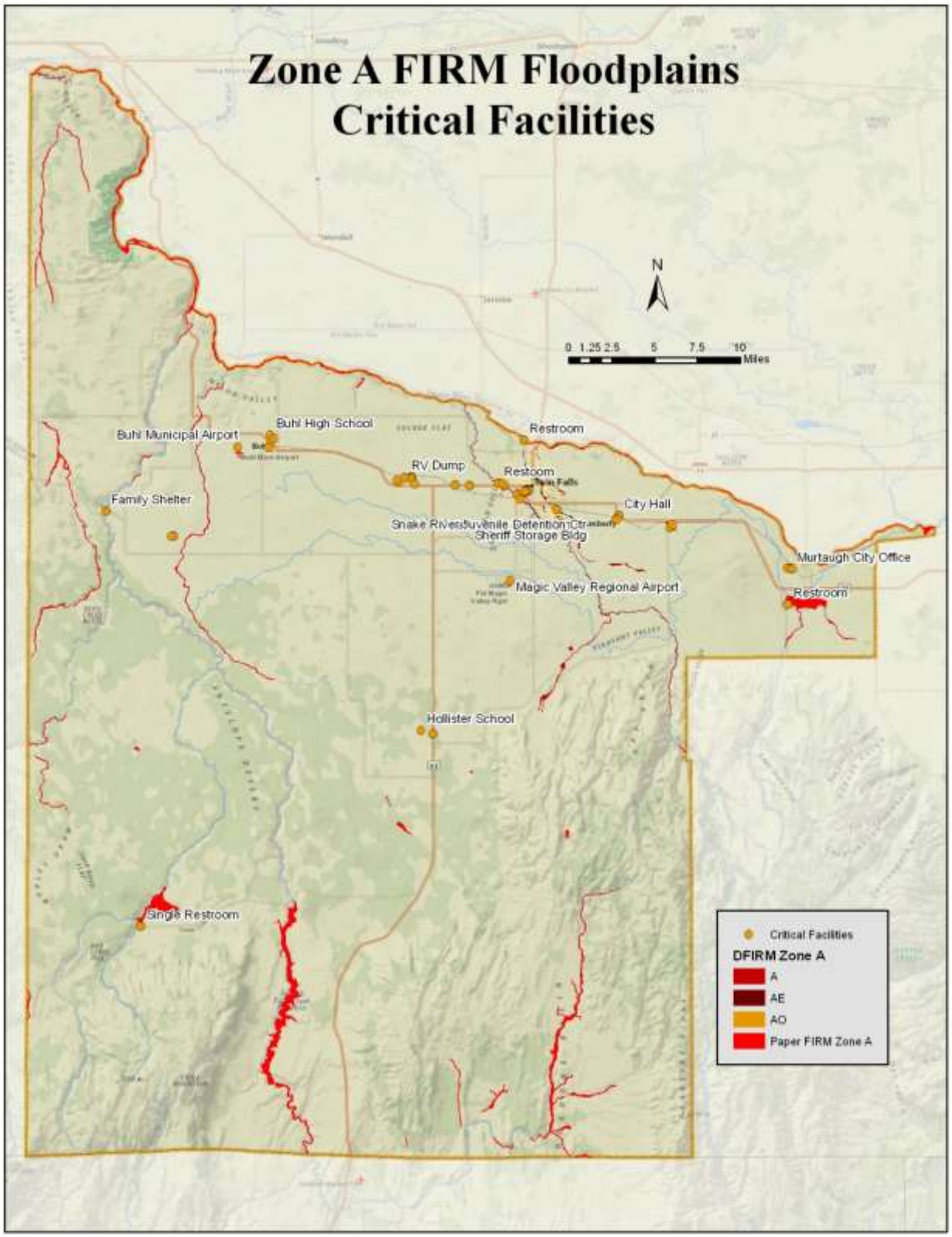


Figure 2.6.14

Critical Facilities Floodplain Map

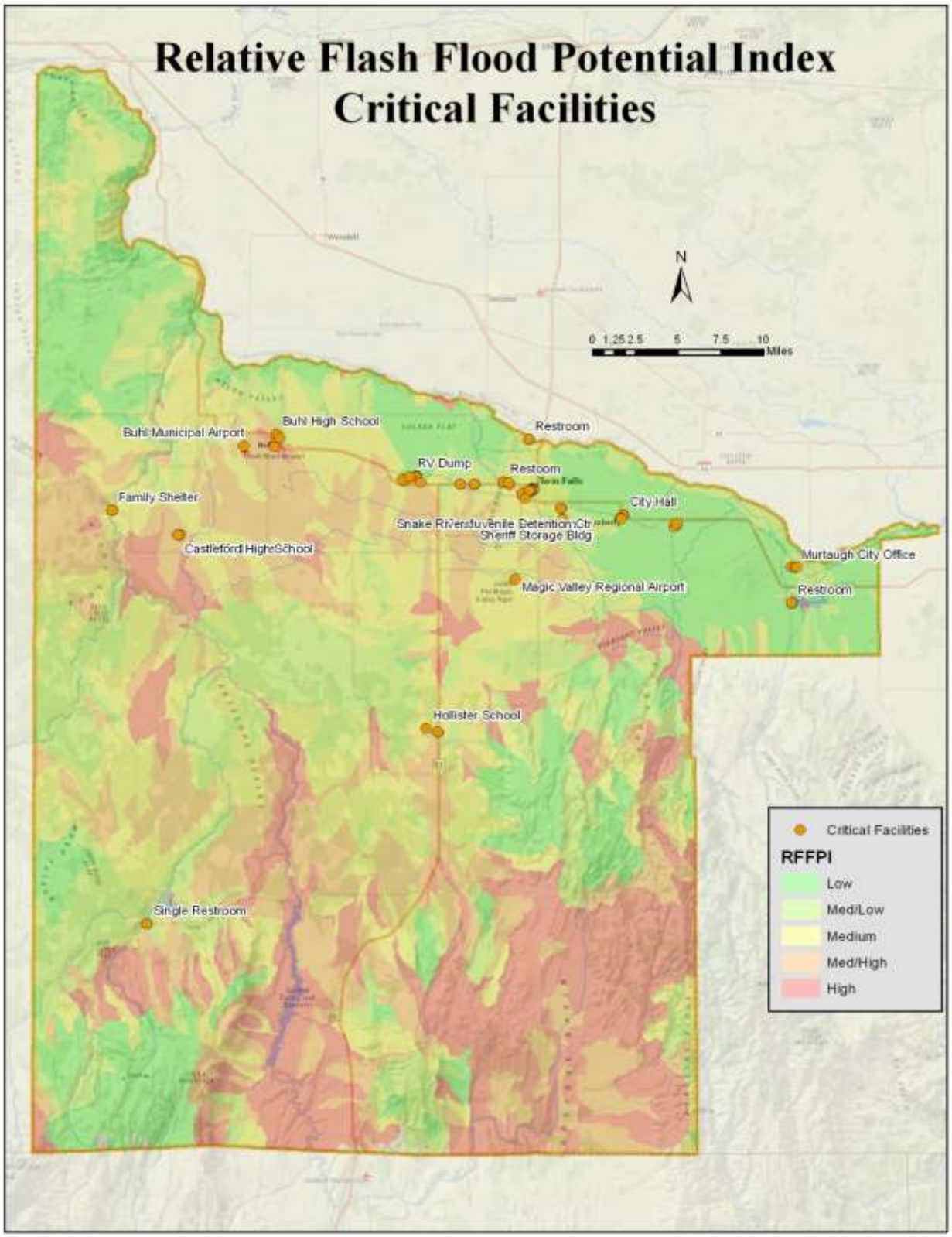


Figure 2.6.15

Critical Facilities RFPI Map

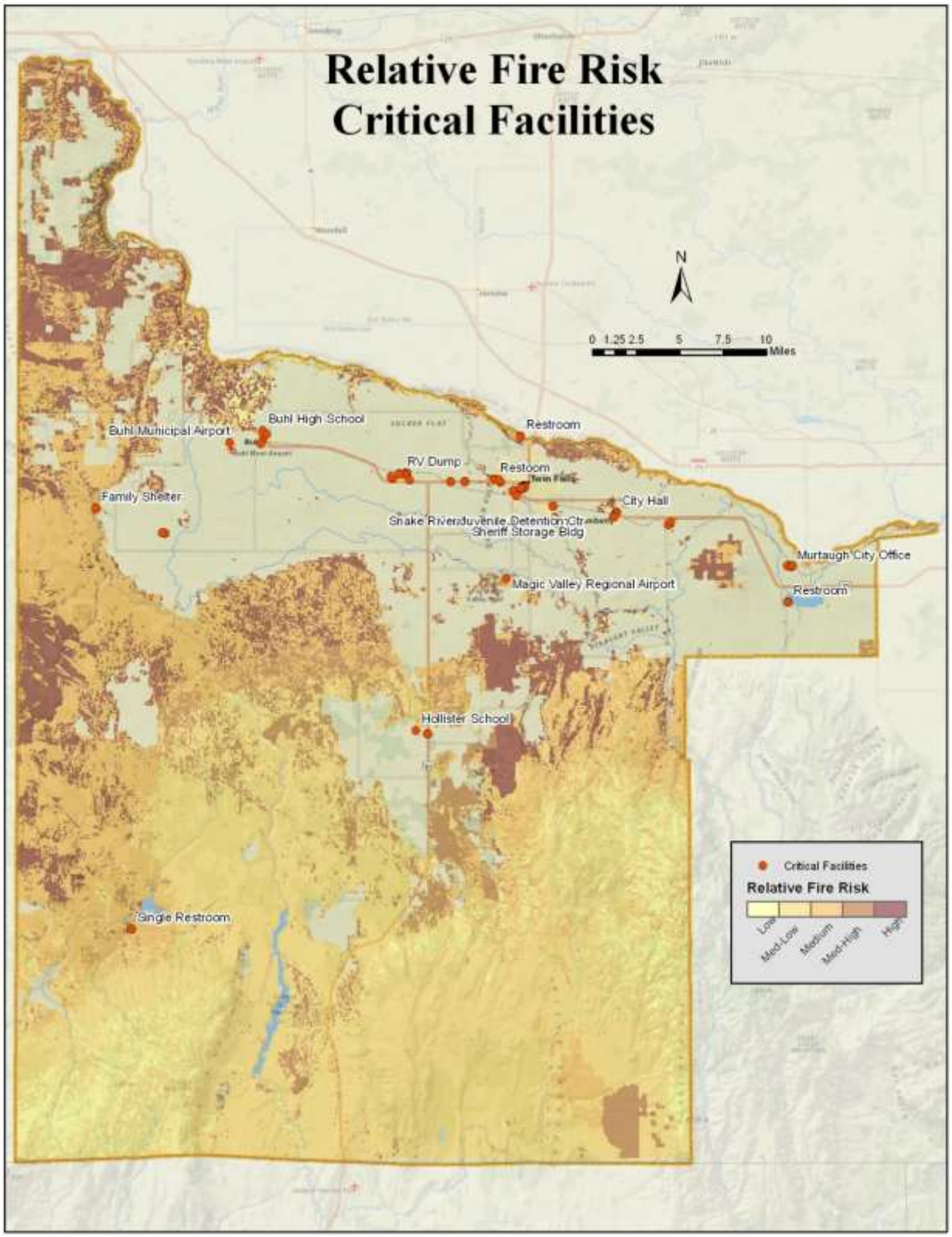


Figure 2.6.16

Critical Facilities Relative Fire Risk Map

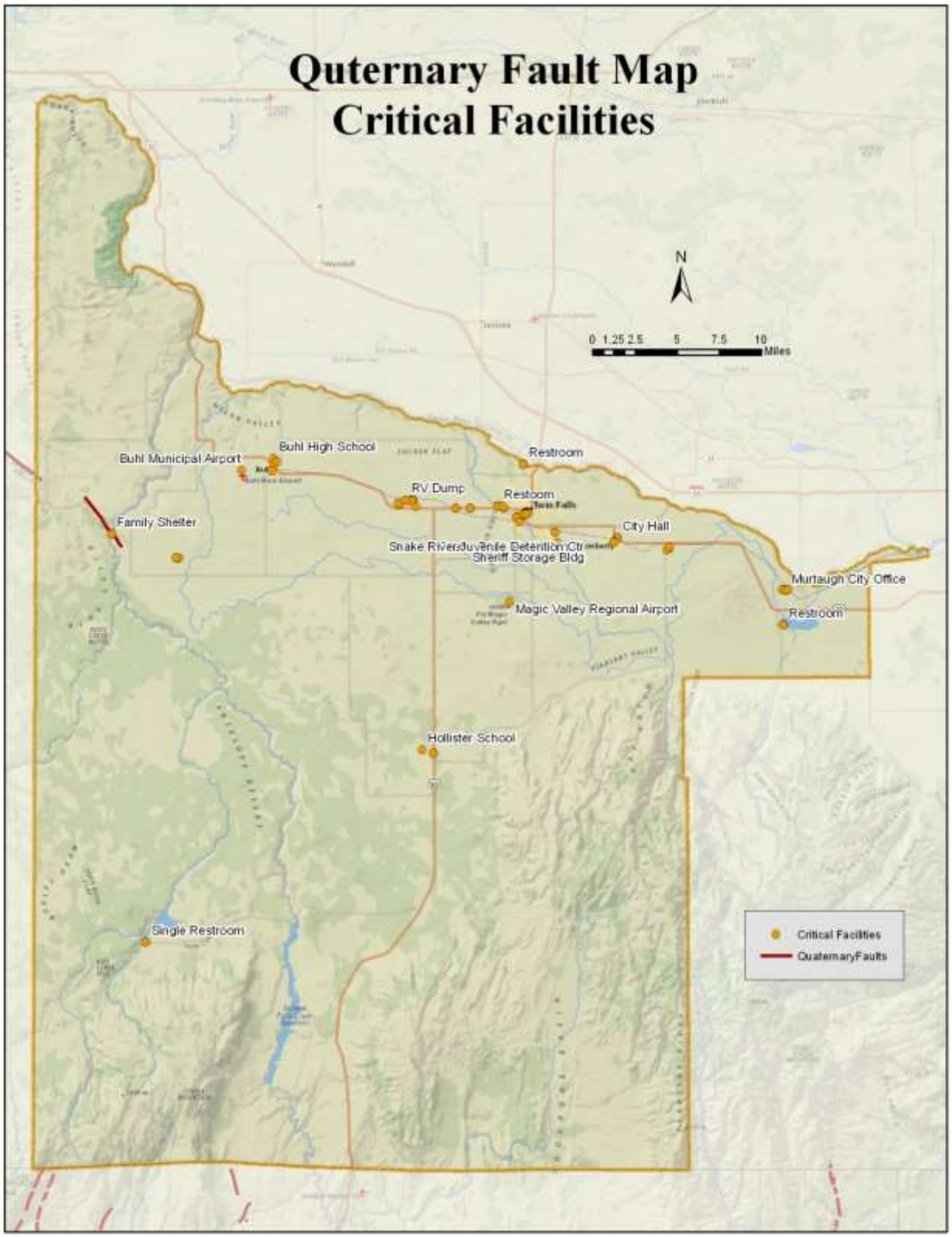


Figure 2.6.17

Critical Facilities Fault Map

2008 Risk Ranking

Twin Falls County 2008 Magnitude Ranking	
Hazard	**Magnitude**
Earthquake	28
Terrorism	22
Wildfire	20
Nuclear	20
Epidemic	19
Drought	18
Winter Storm	16
Hazardous Materials	16
Flash Flood	15
Tornado	15
Dam Failure	15
Hail	14
Structural Fire	14
Straight Line Wind	13
River/stream Flooding	13
Lightning	12
Extreme Cold	11
Landslide	11
Extreme Heat	10
Riot/Demonstration	10
West Nile Virus	7

Table 2.6.6 Magnitude Ranking

Risk Rankings

The table below shows the ranking of all hazards analyzed in this plan.

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Drought	3	4	4	4	3	**18**	**H**
Wildfire	3	4	2	3	4	**16**	**H**
Severe Weather	3	4	3	3	3	**16**	**H**
Severe Winter Storms	3	4	2	4	2	**15**	**H**
Communicable Diseases	2	3	3	3	3	**14**	**H**
Structural Fire	3	4	1	1	4	**13**	**M**
H5N1 Bird Flu	0	1	4	4	4	**13**	**M**
West Nile Virus	3	4	1	1	3	**12**	**M**
Hazardous Materials	3	4	2	1	2	**12**	**M**
Terrorism	0	1	4	3	4	**12**	**M**
Vesicular Stomatitis	2	4	1	1	3	**11**	**M**
Flood	2	4	1	1	3	**11**	**M**
Flash Flood	2	4	2	1	2	**11**	**M**
Canal Failure	2	4	1	1	2	**10**	M
Lyme and Other Tick-Borne Diseases	1	4	1	1	3	**10**	**M**
Nuclear Event	0	1	3	3	3	**10**	**M**
Burrowing Rodents	1	4	1	1	2	**9**	**L**
Earthquake	0	2	1	2	2	**7**	**L**
Landslide	1	2	1	1	1	**6**	**L**
Dam Failure	0	1	1	1	3	**6**	**L**

Table 2.6.7 Hazard Ranking Scores

The breakdown of ranking is as follows:

- ✓ Low - Generating a total score of </=9
- ✓ Medium - Generating a score of 10-13
- ✓ High - Generating a score >13

Categorical Comparisons

By using a multi-category risk ranking system it is possible to compare the different risk scores for each category. The following is example of those comparisons:

Total Score v. Probability

Drought	Drought
Wildfire	Wildfire
Severe Weather	Severe Weather
Severe Winter Storms	Severe Winter Storms
Communicable Diseases	Structural Fire
Structural Fire	West Nile Virus

Total Score v. Historical Frequency

Drought	Wildfire
Wildfire	Severe Weather
Severe Weather	Severe Winter Storms
Severe Winter Storms	Drought
Communicable Diseases	Structural Fire
Structural Fire	West Nile Virus

Total Score v. Spatial Extent

Drought	Drought
Wildfire	Severe Winter Storms
Severe Weather	H5N1 Bird Flu
Severe Winter Storms	Wildfire
Communicable Diseases	Severe Weather
Structural Fire	Communicable Diseases

2008 – 2013 Comparison

There were some changes in the risk ranking from the previous version of this plan. The table below compares the 2013 risk ranking with the 2008 risk ranking.

Hazard	2008 Ranking	2013 Ranking
Drought	6	1
Severe Weather (SW)	In Separate Areas	3
Wildfire	3	2
Severe Winter Storms (SWS)	7	4
Earthquake	1	18
Communicable Diseases	5	5
H5N1 Bird Flu	Included with Communicable Disease	7
Structural Fire	13	6
Terrorism	2	10
Tornado	10	Merged w/WS
West Nile Virus	21	8
Hail	12	Merged w/WS
Vesicular Stomatitis	Not Included	11
Hazardous Materials Event	8	9
Extreme Cold	18	Merged with SWS
Extreme Heat	19	Merged w/WS
Flood	15	12
Lightning	16	Merged w/WS
Flash Flood	9	13
Burrowing Rodents	Not Included	17
Nuclear Event	4	16
Canal Failure	Not Included	14
Lyme and Other Tick-Borne Diseases	Not Included	15
Dam Failure	11	20
Riot/Civil Disorder	20	21
Landslide	17	19

Table 2.6.8 2008 and 2013 Hazard Ranking Comparison

There was a large change in rankings due largely to a new ranking system and new hazard data that was researched and analyzed during this update.

Section 2.7 Participating Jurisdiction Assessments

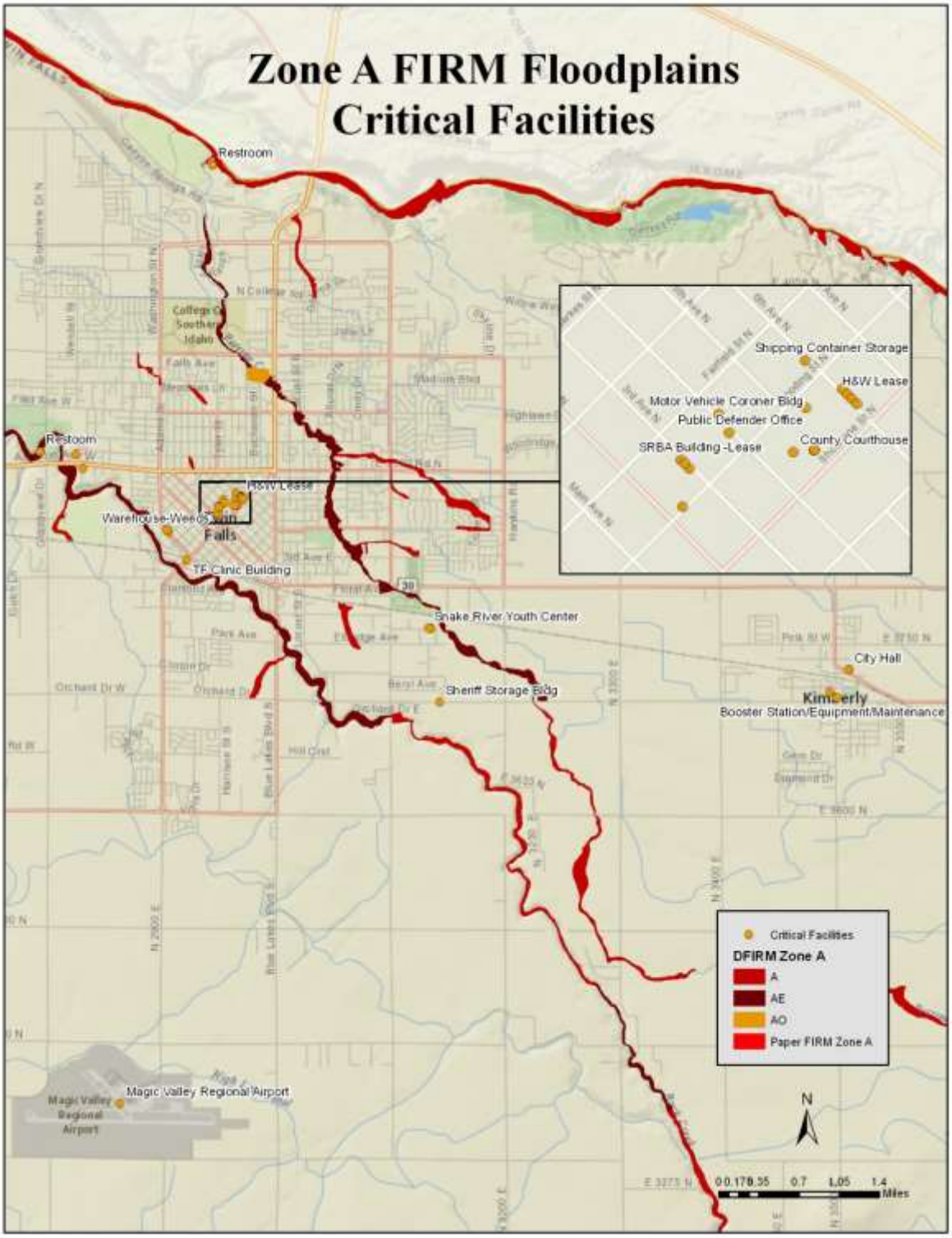


Figure 2.7.1

Critical Facilities Floodplain Map

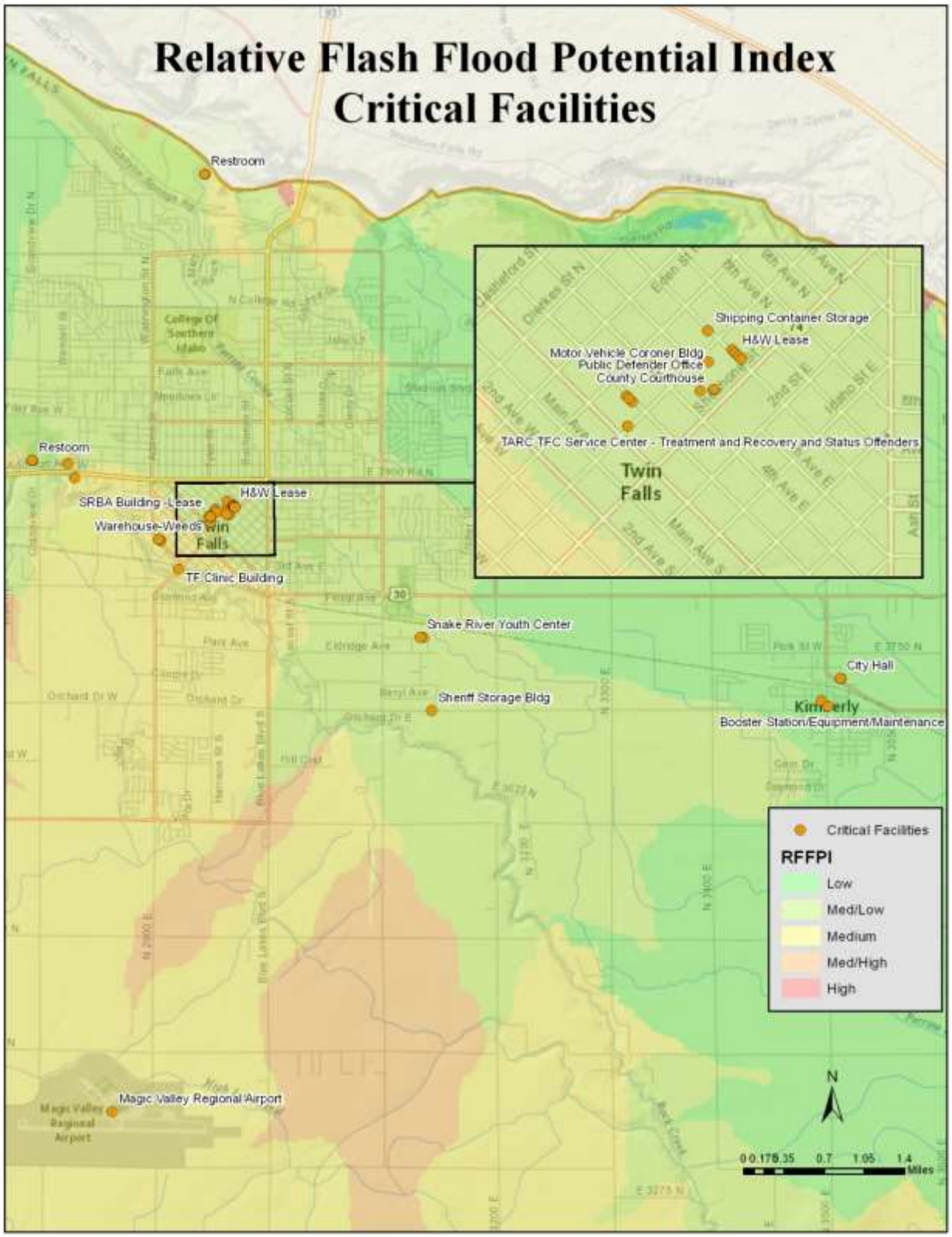


Figure 2.7.2

Critical Facilities RFPI Map

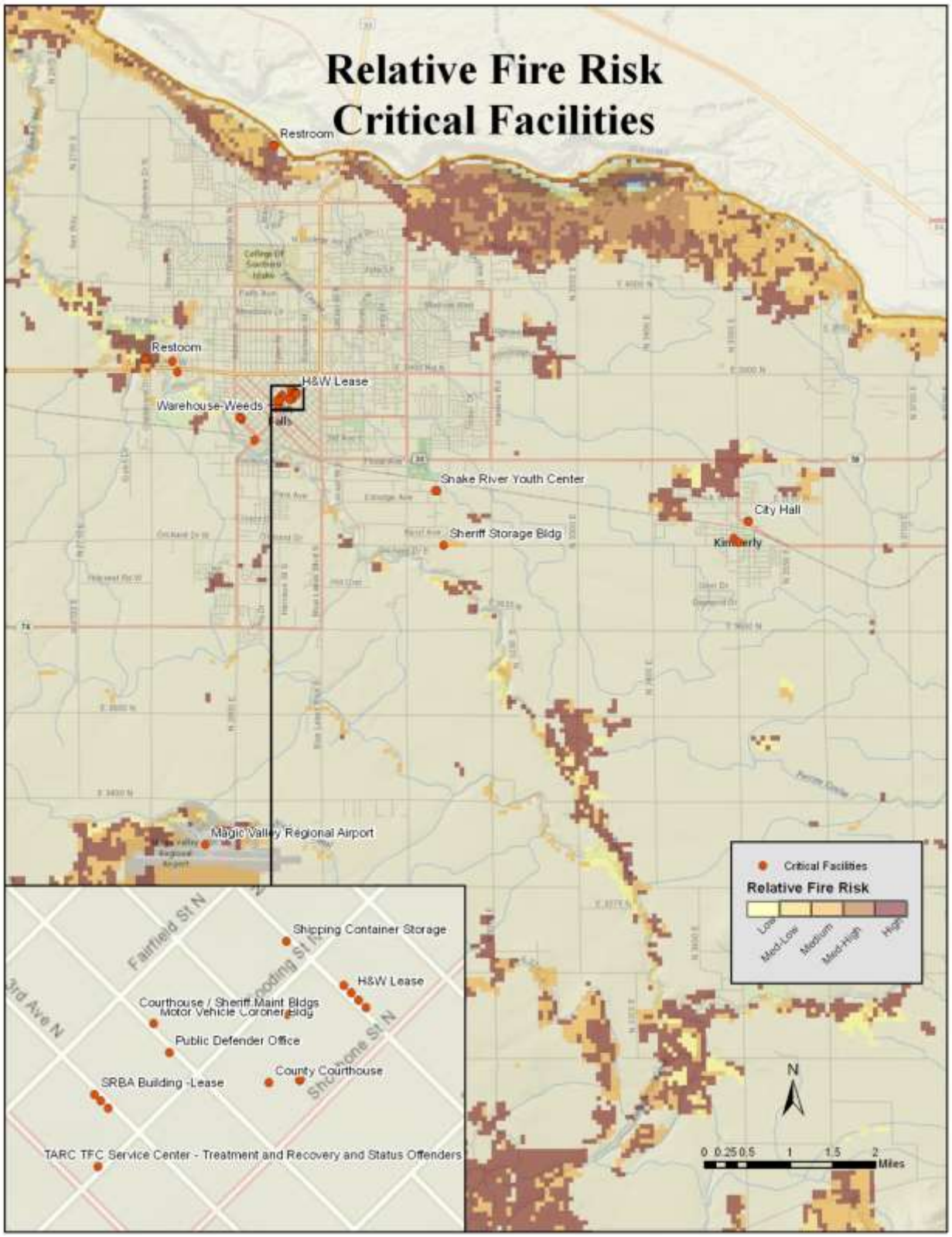


Figure 2.7.3

Critical Facilities Relative Fire Risk Map

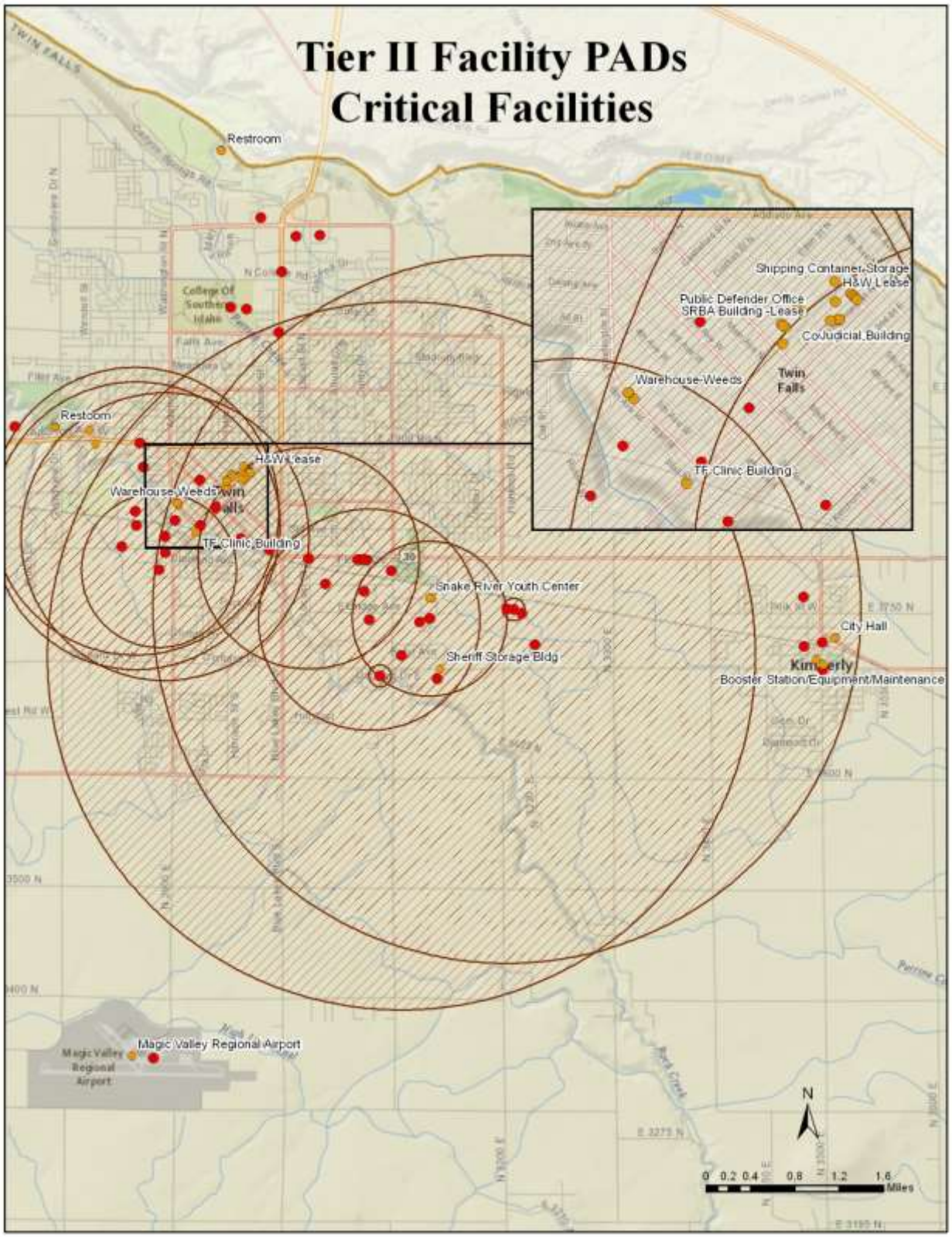


Figure 2.7.4

Critical Facilities Tier II Map

City of Buhl

Buhl is a city located on the old Oregon Trail in the western half of Twin Falls County. The population was 4,122 at the 2010 census, up from 3,985 in 2000. U.S. Route 30 passes through Buhl along the scenic Thousand Springs Scenic Byway from Twin Falls to Bliss. Known as the "Trout Capital of the World," Buhl boasts numerous hatcheries in the immediate surrounding area, which produce most of the rainbow trout consumed in the United States. Clear Springs Foods, located just north of Buhl, processes over 20 million pounds of rainbow trout each year, making it the world's largest producer.

Buhl was founded on April 17, 1906. It was named for Frank H. Buhl of Sharon, Pennsylvania, a major investor in a Carey Act project known as the Twin Falls South Side project, which introduced large-scale irrigation to the Magic Valley in the early 20th Century**.** According to the United States Census Bureau, the City has a total area of 1.7 square miles (4.4 km^2), all land**.**[51]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
Hazardous Materials	3	4	2	2	2	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Flash Flood	2	4	2	2	2	12	M
Burrowing Rodents	3	4	1	1	1	10	L
Wildfire	1	3	1	1	2	8	L
Canal Falure	1	2	1	2	2	8	L
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Earthquake	0	2	1	2	2	7	L
Flood	1	1	1	1	2	6	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Landslide	1	1	1	1	1	5	L
Lyme and Other Tick-Borne	0	1	1	1	2	5	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[51] http://en.wikipedia.org/wiki/Buhl,_Idaho

City of Castleford

Castleford is a city in Twin Falls County. The population was 226 at the 2010 census. According to the United States Census Bureau, the city has a total area of 0.1 square miles (0.26 km^2), all of it land.

Castleford was named for an early crossing of Salmon Falls Creek. The ford was so named because of the odd-shaped obelisks of rhyolite near the stream. The ford, used by pioneers in 1849, was also used by the Kelton-Dalles stage route.

In 1890, Cephas Lilly settled the area that would later become Castleford. He was considered to be an honest, hardworking pioneer by his contemporaries. However, recent historical evidence has illuminated a very different man. Most notable was the fact that he used forced Chinese labor to build the famous Lilly Grade.

After his sudden death while on a business trip to Denver, the Lilly family was forced to sell his estate to the Ferguson Fruit and Land Company in order to pay off the massive debts that Cephas had accrued from his secret life of gambling and alcoholism. Ferguson Fruit and Land were quick to utilize the fertile farmland, planting acres of apple orchards. The new fruit business revitalized the local economy, bringing in many new settlers. This new influx of settlers led to the official founding of Castleford in 1907. Business there continued to remain prosperous until the Great Depression, at which point Ferguson Fruit and Land became bankrupt and the town was almost abandoned..

During the Cold War, the United States Army conducted subterranean high-explosive tests at the Idaho Firing Range, thirty miles west of Castleford. It is locally believed that the residue from these explosives seeped into the area's water supply, which later created the town's record-breaking arsenic levels.[52]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Flash Flood	2	4	2	2	2	12	M
Wildfire	3	4	1	1	2	11	M
Hazardous Materials	2	3	2	2	2	11	M
Burrowing Rodents	3	4	1	1	1	10	M
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Earthquake	0	2	1	2	2	7	L
Canal Falure	0	2	1	2	2	7	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Flood	0	1	1	1	2	5	L
Lyme and Other Tick-Borne Diseases	0	1	1	1	2	5	L
Landslide	0	1	1	1	1	4	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[52] http://en.wikipedia.org/wiki/Castleford,_Idaho

City of Filer

Filer (FĪ-ler) is a city in Twin Falls County. The city population was 2,508 at the 2010 census, up from 1,620 in 2000. Filer is located just west of the intersection of U.S. Routes 93 and 30. According to the United States Census Bureau, the City has a total area of 0.8 square miles (2.1 km^2), all of it land

It was named after Walter G. Filer, who served as general manager of the Twin Falls Water and Land Company. The City was established in 1906 as the terminus of the Oregon Short Line branch of Twin Falls. Walter Filer was a mining engineer and surveyor from Sharon, Pennsylvania, who supervised the construction of the Milner Diversion Dam on the Snake River. Since 1916, the City of Filer has been the home of the Twin Falls County Fair and Rodeo (Magic Valley Stampede).[53]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Flash Flood	2	4	2	2	2	12	M
Hazardous Materials	2	3	2	2	2	11	M
Burrowing Rodents	3	4	1	1	1	10	M
Earthquake	2	2	1	2	2	9	L
Wildfire	1	3	1	1	2	8	L
Canal Falure	1	2	1	2	2	8	L
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Flood	1	1	1	1	2	6	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Lyme and Other Tick-Borne Diseases	0	1	1	1	2	5	L
Landslide	0	1	1	1	1	4	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[53] http://en.wikipedia.org/wiki/Filer,_Idaho

City of Hansen

Hansen is a city in Twin Falls County. The population was 1,144 at the 2010 census. According to the United States Census Bureau, the City has a total area of 0.4 square miles (1.0 km^2), all of it land.[54]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Canal Falure	2	4	2	2	2	12	M
Flood	2	4	2	2	2	12	M
Hazardous Materials	2	3	2	2	2	11	M
Burrowing Rodents	3	4	1	1	1	10	M
Flash Flood	2	3	1	1	2	9	L
Wildfire	1	3	1	1	2	8	L
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Earthquake	0	2	1	2	2	7	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Lyme and Other Tick-Borne Diseases	0	1	1	1	2	5	L
Landslide	0	1	1	1	1	4	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[54] http://en.wikipedia.org/wiki/Hansen,_Idaho

City of Hollister

Hollister is a city in Twin Falls County. The population was 272 at the 2010 census. According to the United States Census Bureau, the City has a total area of 1.0 square mile (2.6 km^2), all of it land.[55]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Wildfire	3	4	4	4	4	19	H
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Flash Flood	2	4	2	2	2	12	M
Hazardous Materials	2	3	2	2	2	11	M
Burrowing Rodents	3	4	1	1	1	10	M
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Earthquake	0	2	1	2	2	7	L
Canal Falure	0	2	1	2	2	7	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Flood	0	1	1	1	2	5	L
Lyme and Other Tick-Borne Diseases	0	1	1	1	2	5	L
Landslide	0	1	1	1	1	4	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[55] http://en.wikipedia.org/wiki/Hollister,_Idaho

City of Kimberly

Kimberly is a city in Twin Falls County. The population was 3,264 at the 2010 census, up from 2,614 in 2000. Kimberly was founded in 1905. It is named after Peter L. Kimberly, a major investor in the construction of Milner Dam which made commercial irrigation practical in the area. According to the United States Census Bureau, the City has a total area of 0.8 square miles (2.1 km^2), all land.[56]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Hazardous Materials	3	4	2	3	3	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Burrowing Rodents	3	4	1	1	1	10	L
Flash Flood	2	3	1	1	2	9	L
Wildfire	1	3	1	1	2	8	L
Canal Falure	1	2	1	2	2	8	L
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Earthquake	0	2	1	2	2	7	L
Flood	1	1	1	1	2	6	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Lyme and Other Tick-Borne Diseases	0	1	1	1	2	5	L
Landslide	0	1	1	1	1	4	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[56] http://en.wikipedia.org/wiki/Kimberly,_Idaho

City of Murtaugh

Murtaugh is a City in Twin Falls County. The population was 115 at the 2010 census. Murtaugh is named after Mark Murtaugh, who oversaw a local irrigation project. According to the United States Census Bureau, the City has a total area of 0.2 square miles (0.52 km^2), all of it land. The community is located at a bend in U.S. Route 30. Murtaugh Lake is south of the City on the opposite side of US-30.[57]

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Drought	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Canal Falure	2	4	2	2	2	12	M
Flood	2	4	2	2	2	12	M
Burrowing Rodents	3	4	1	1	1	10	M
Flash Flood	2	3	1	1	2	9	L
Earthquake	2	2	1	2	2	9	L
Hazardous Materials	1	3	1	1	2	8	L
Wildfire	1	3	1	1	2	8	L
Terrorism	0	1	3	1	3	8	L
Nuclear Event	0	1	2	2	3	8	L
Riot/Civil Disorder	0	1	2	1	2	6	L
Lyme and Other Tick-Borne Disea	0	1	1	1	2	5	L
Landslide	0	1	1	1	1	4	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

[57] http://en.wikipedia.org/wiki/Murtaugh,_Idaho

City of Twin Falls

Twin Falls is the county seat and largest city of Twin Falls County. The City had a population of 44,125 as of the 2010 census. Twin Falls is the largest city of Idaho's Magic Valley region. As the largest city in a 100-mile (160-kilometer) radius, Twin Falls serves as a regional commercial center for both south-central Idaho and northeastern Nevada. The resort community of Jackpot, Nevada, in Elko County is unofficially considered part of the greater Twin Falls area.

During the last quarter of the 20th century, gradual diversification of the agriculture-based economy allowed the City to continue to grow. Major Twin Falls employers in 2006 included computer maker Dell, Inc., Glanbia, and Jayco, a recreational vehicle manufacturer. In September 2009 Dell announced it would close its Twin Falls facility by January 2010. Later in 2010 the call center company C3 opened a facility in the former Dell location.

In recent years Twin Falls has become quite multicultural, thanks in large part to a refugee center operated by the College of Southern Idaho. Since 1995 significant numbers of people from Bosnia and Herzegovina and the former Soviet Union have settled in Twin Falls. The city also has a sizable Hispanic population.

Twin Falls is one of only three Idaho cities which have a council-manager form of government. The seven-member Twin Falls City Council is directly elected in non-partisan municipal elections to four-year terms. The mayor, who holds little executive power, is periodically selected among current city council members to chair meetings and is "considered the official representative of the city." City council meetings are usually held on Mondays.

The city's day-to-day operations are overseen by a city manager, who is appointed by the city council. The city government through various citizen boards oversees parks and recreation, planning and zoning, sanitation and garbage collection, street maintenance, wastewater collection, and maintains police and fire departments. Twin Falls Public Library, Twin Falls Municipal Golf Course and Joslin Field-Magic Valley Regional Airport are also under the city's jurisdiction.

Twin Falls is home to the College of Southern Idaho (CSI), a large community college in the northwestern part of the city. Several Idaho universities, including Boise State University, Idaho State University, and the University of Idaho, offer classes on the CSI campus. The nursing program received money from the 2007-2008 state budget to construct a state of the art nursing facility which complements the nursing program.

Public schools are administered by the Twin Falls School District, including Twin Falls High School, Canyon Ridge High School, the alternative Magic Valley High School, two middle schools and seven elementary schools. Also, Twin Falls is home to Xavier Charter School and the recently established Wings Charter Middle School.

On March 14, 2006, registered voters approved a bond to build an additional high school thus officially giving birth to the Canyon Ridge High School. Private schools include Lighthouse Christian School, St. Edward's Catholic School and Twin Falls Christian Academy.

Twin Falls, the state's 7th largest city, is the fastest growing city in South-Central Idaho. As of April 2011 unemployment in Twin Falls County stood at 9.5%, below Idaho's average of 9.6%. From 1998 to 2007 the unemployment rate was steadily decreasing to a low of just fewer than

2%. Then, in tandem with the national economy, the unemployment rate increased to nearly 9.5% as of April 2011.

Most growth seen today has taken place over the last 20 years, with an acceleration of growth between 2006-2011. However, there are businesses that have been a mainstay for many decades.

Twin Falls is the home of award-winning cheese producer Glanbia Foods, a major American division of the Irish food company Glanbia plc. The corporation selected Twin Falls due to its being one of the world's premier farming regions, and as such, Twin Falls' economy is based on agriculture. Falls Brand, another award-winning food company, is located in the southern part of Twin Falls. In early 2011, Falls Brands' Old Fashioned Basque Chorizo sausage won the "Hold the Mustard" award presented by the National Meat Association (NMA) every year during their annual, "NMA Annual Gourmet Sausagefest." Another mainstay is The College of Southern Idaho (CSI). Boasting a student-population of 3,433 students, this Junior College is a popular alternative to students not yet ready to attend a four-year university. Many students are from out of state living in CSI's residential halls. These entities are examples of nationally successful, long-standing job opportunities for residents of Twin Falls.

Other large employers include Amalgamated Sugar Company, makers of White Satin Sugar, and Lamb Weston which has a food processing plant located in west Twin Falls. It employs no less than 500 residents and its annual revenue is about $100 million per annum.

In spite of a troubled national economy Twin Falls has seen rapid development. Many major retail outlets have opened stores in Twin Falls between 2006 and 2011.

In November 2009 a new Walmart Supercenter opened, bringing to the region an estimated 100 additional jobs. Less than a year later, in October 2010, C3, a customer call center, opened in the former Dell facility. It was a large boost to an already busy economy providing close to 1,000 jobs, and in July 2011 C3 announced that an additional 300 C3 jobs would be created in Twin Falls due to brisk business.

In November 2011 Agro-Farma announced that they will construct a state of the art processing facility in Twin Falls which will produce the company's Chobani brand Greek style yogurt. With the announcement came the prospect of 400 initial jobs and at least $100 million for constructing the processing facility and the possibility of close to $300 million in additional revenue for Southern Idaho dairymen on an annual basis. That project came to fruition in 2013 and is in full operation as designed. Creating 40-50 new jobs, Magic Valley 14 Cinemas will construct a new theater equipped with IMAX screens and D-Box seating. Magic Valley Cinema's opened their new complex in December 2011. The new entertainment center comes in the wake of unprecedented growth in the Magic Valley.

In response to a growing population base, Twin Falls County voters voted to construct a new hospital in the northwest section of Twin Falls to replace the city's existing hospital. In spring 2011 the new 700,000 sq/ft. facility, St. Luke's Magic Valley, was opened. One of the features of the new hospital is that all 186 rooms are private with family accommodations.

Other businesses which have recently opened locations in Twin Falls include Five Guys Burgers and Fries, Buffalo Wild Wings, and Coldwater Creek. Wanting to catch some momentum, a movement has begun to rebuild downtown in hopes of moving some business back to where it originated. [58]

Although Twin Falls has the distinction of being the largest Idaho city not directly on the Interstate Highway System, the City is served by several major highways including U.S. Route 30 and U.S. Route 93. Access to Interstate 84 is afforded by a junction with U.S. Route 93 approximately 5 miles (8.3 km) north of the city in Jerome County. Idaho State Highway 74 provides direct access from downtown Twin Falls to southbound locations on U.S. Route 93, including Hollister, Rogerson, and Jackpot, Nevada.

Trans IV, a small public transportation system operated by the College of Southern Idaho, is also available.

Limited commercial air service is provided at Joslin Field-Magic Valley Regional Airport. As of January 2012 daily flights to Salt Lake City International Airport are operated by SkyWest Airlines using the Embraer EMB 120 Brasilia. Twice-weekly service between Twin Falls and McCarran International Airport in Las Vegas was operated by Allegiant Air, but citing insufficient ticket prices Allegiant permanently discontinued the route in January 2012.

According to the United States Census Bureau, the City has a total area of 12.0 square miles (31.1 square kilometers), all of it land.

The Snake River Canyon forms the city's northern limits, separating it from Jerome County. There are three waterfalls in the immediate area. Shoshone Falls is located approximately 5 miles (8 kilometers) east of Twin Falls city. Pillar Falls is located approximately 1½ miles (2½ kilometers) upstream from the Perrine Bridge, while Twin Falls, the city's namesake, is located upstream of Shoshone Falls.

Shoshone Falls is taller than Niagara Falls by about 36 feet (58 meters).

The Perrine Bridge, which spans the Snake River Canyon, is immediately north of the City.[59]

[58] http://en.wikipedia.org/wiki/Twin_Falls,_Idaho
[59] http://en.wikipedia.org/wiki/Twin_Falls,_Idaho

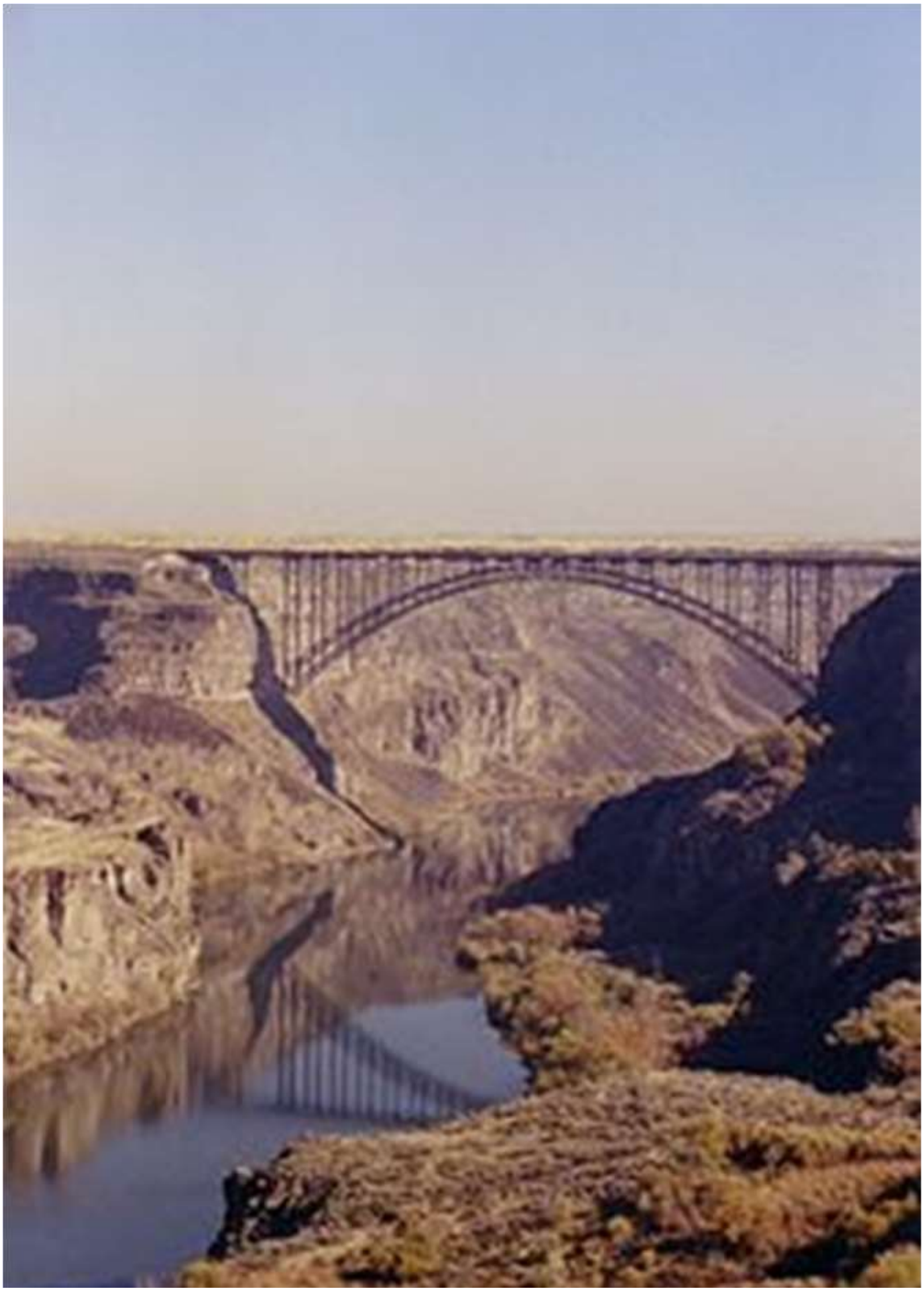


Figure 2.7.5 Perrine Bridge

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	3	3	3	16	H
Severe Winter Storms	3	4	2	4	2	15	H
Communicable Diseases	2	3	3	3	3	14	H
Drought	3	4	1	4	1	13	M
Structural Fire	3	4	1	1	4	13	M
H5N1 Bird Flu	0	1	4	4	4	13	M
West Nile Virus	3	4	1	1	3	12	M
Hazardous Materials	3	4	2	1	2	12	M
Terrorism	0	1	4	3	4	12	M
Burrowing Rodents	3	4	1	1	2	11	M
Flood	2	4	1	1	3	11	M
Flash Flood	2	4	2	1	2	11	M
Canal Failure	2	4	1	2	2	9	L
Nuclear Event	0	1	2	2	3	8	L
Wildfire	1	3	1	1	1	7	L
Riot/Civil Disorder	1	1	2	1	2	7	L
Landslide	1	3	1	1	1	7	L
Earthquake	0	2	1	2	2	7	L
Lyme and Other Tick-Borne Di	0	1	1	1	2	5	L
Vesicular Stomatitis	0	1	1	1	1	4	L
Dam Failure	0	1	1	1	1	4	L

Section 3 Mitigation Strategy

Section 3.1 Capability Assessments

Agency Name (Mission/Function	Programs, Plans, Policies, Regulations, Funding, ,or Practices	Effect of Loss Reduction*			Comments
		Support	Facilitate	Hinder	
Twin Falls County Department of Emergency Services	Twin Falls County EOP Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan	X	X		
Twin Falls County Planning and Zoning	Twin Falls County Comprehensive Plan Twin Falls County Land Use Ordinances	X	X		
Twin Falls County Highway Districts	Twin Falls County Transportation Plan	X	X		Covers All Highway Districts in the County
City of Twin Falls Planning and Zoning	City of Twin Falls Comprehensive Plan City of Twin Falls Land Use Ordinances	X	X		
City of Buhl Planning and Zoning	City of Buhl Comprehensive Plan City of Buhl Land Use Ordinances	X	X		
City of Filer Planning and Zoning	City of Filer Comprehensive Plan City of Filer Land Use Ordinances	X	X		
City of Kimberly Planning and Zoning	City of Kimberly Comprehensive Plan City of Kimberly Land Use Ordinances	X	X		
City of Hansen Planning and Zoning	City of Hansen Comprehensive Plan City of Hansen Land Use Ordinances	X	X		
City of Murtaugh Planning and Zoning	City of Murtaugh Comprehensive Plan City of Murtaugh Land Use Ordinances	X	X		
City of Castleford Planning and Zoning	City of Castleford Comprehensive Plan City of Castleford Land Use Ordinances	X	X		
City of Hollister Planning and Zoning	City of Hollister Comprehensive Plan City of Hollister Land Use Ordinances		X	X	Land Use Ordinances do not support fire mitigation

Land Use Planning

This section of the Twin Falls County All Hazard Mitigation Plan examines the relationship between the County's Comprehensive Plan, Land Use or Zoning Ordinances, and the AHMP. Incorporating hazard mitigation practices into land use planning is extremely important as future developments are planned and constructed. Through proper planning within the individual jurisdictions' risk to property owners can be reduced and future disaster related economic losses avoided. Land Use and Mitigation Planning Integration are seen as critical components of the mitigation program in Twin Falls County.

Figure 3.1.1 provides a listing of the number of building permits issued since 2009 and provides an analysis of the number of buildings that have been added to hazard areas within the jurisdiction. The addresses for each building permit were mapped using Geographical Information System (GIS) technology and juxtaposed against the hazard areas analyzed in Section 2. The increase of hazard vulnerability is quantified by the number of new structures in the hazard zone.

Jurisdiction	# Building Permits (BP)	# BP in Floodplain	# BP in WUI	# BP in Other Hazard Areas	Comments
Twin Falls County	149	0	149	0	Wildland Areas
Twin Falls City	550	0	0	0	None
Buhl	67	0	0	0	None
Filer	75	0	0	0	None
Kimberly	96	0	0	0	None
Hansen	32	0	20	0	Adjacent to Wildland Area
Murtaugh	2	0	0	0	Not located in Floodplain
Castleford	6	0	0	0	Adjacent to Wildland Area
Hollister	1	0	1	0	Wildland Area

Figure 3.1.1 Twin Falls County Development Impacts

Twin Falls County Comprehensive Plan

As adopted and updated on April 8, 2008, the Twin Falls County Comprehensive Plan supports the tenants and goals of this AHMP. The land use goal of the Comprehensive Plan specifically seeks to set positive, rather than restrictive, statements concerning what Twin Falls County wishes to be and to accomplish.

The Plan states "Planning is a continuous process. As conditions change and new information becomes available, objectives and properties of the County may change and goals and policies may be modified. This plan is intended to be the public growth policy of Twin Falls County and as such, must be responsive to change, forward-looking, understood, and publicly supported."[60] The information in the Comprehensive Plan and the Multi-Jurisdiction AHMP has been closely correlated.

This meets the requirements of the Idaho Land Use Planning Act and contains the thirteen elements set forth in the Planning Act. The Plan does have a Hazardous Areas section which is closely aligned with the Hazard Analysis found in the 2008 Twin Falls All Hazard Mitigation Plan.

[60] http://twinfallscounty.org/planning_zoning/docs/Final_comp_plan_with_map.pdf

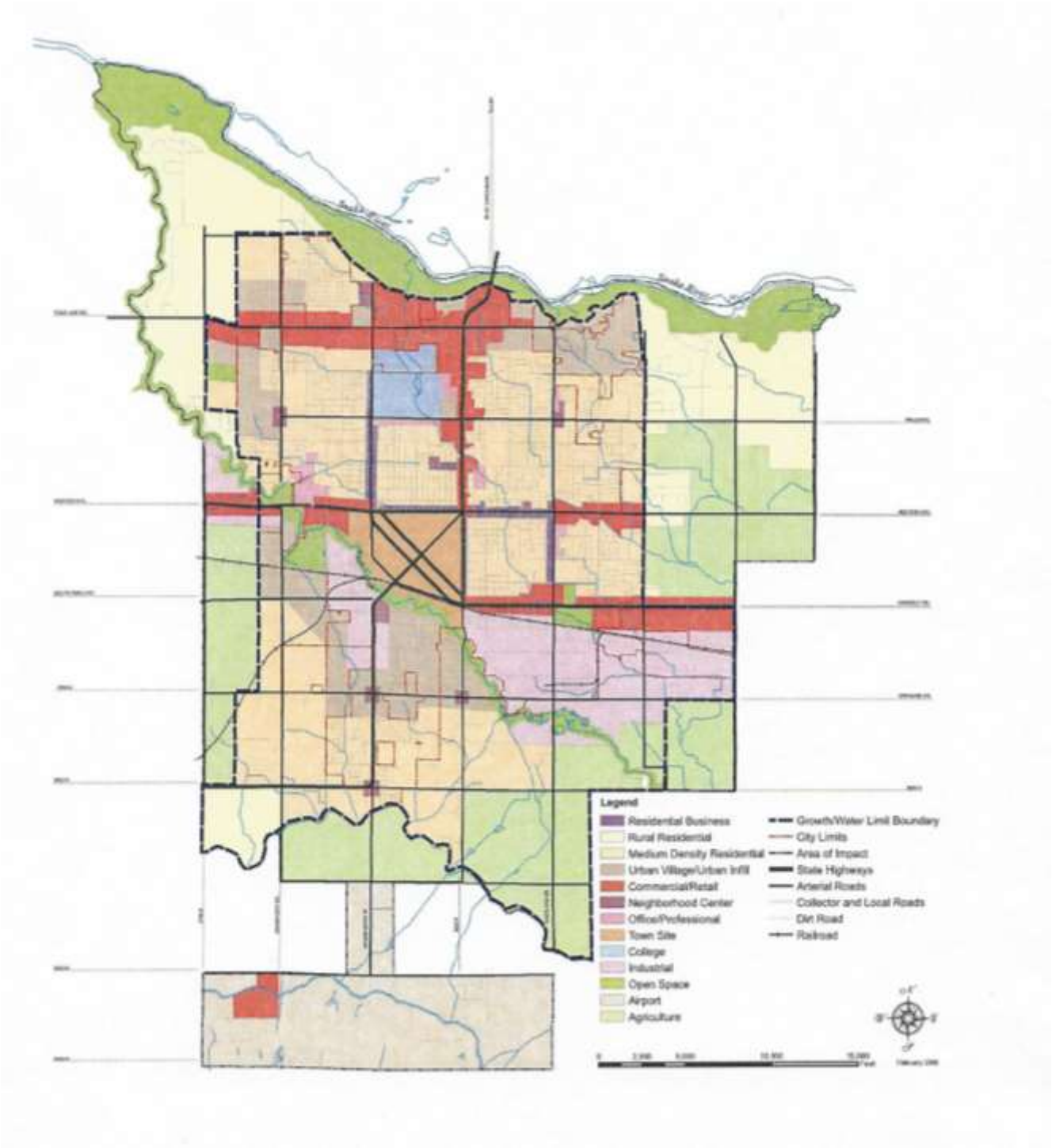


Figure 3.1.1 Twin Falls City Land Use Map

City of Twin Falls Comprehensive Plan

The Twin Falls Comprehensive Plan titled "Twin Falls Vision 2030: A Comprehensive Plan for a Sustainable Future" was developed in 2009. It meets the requirements of the Idaho Land Use Act and provides a 5, 10, and 20 year vision for the City.

The City of Twin Falls City covers approximately 17 square miles and oversees an Area of impact that is approximately 31 square miles. Combined, the City serves nearly 48 square miles. Twin Falls residents have high expectations for the future of their city and the quality of life it offers. Rapid development in the recent past, the lack of sufficient water to accommodate such growth, a sprawling development pattern, and strained infrastructure are viewed as primary threats to continued growth and development. The Future Land Use Concept focuses on a future community that is more sustainable and integrated, which can be achieved in large part by focusing on the development of attractive, well-connected and viable neighborhoods. The number of neighborhoods should be increased to develop a stronger "sense of place". The existing Water Limit Boundary should serve as a defacto "urban growth boundary" throughout the 2030 planning horizon.[61]

Development near the Canyon Rim should be carefully considered, helping to ensure the preservation of the unique resource provided by the unique and iconic landscape. Existing natural features such as canyons, creeks, and drainages should be preserved to the greatest degree possible, serving as trail and open space connections between the various neighborhoods, districts, and destinations in the community. Major streets and roadways will serve the needs of both motorists and pedestrians. New roads will be developed with a high-level system of landscape treatments and pedestrian facilities than is currently provided, and the establishment of a fully-interconnected off-road trails and an on street system of sidewalks and roadside trails.[62]

One of the biggest utility concerns brought up by the City and members of the community is the lack of water supply. Water is and will continue to be the main focus of this area. Finding and producing more water is the highest priority for the existing water system. Protection of that system is also a critical component of the Mitigation Planning actions. The Rock Creek Sewer Lift Station is at capacity thus limiting the ability to expand and develop portions of the south section of town. The ability to provide sewer services will be a determining factor in the amount of growth that the City of Twin Falls can accommodate. The Rock Creek Sewer Lift Station is in the Rock Creek Floodplain but has been constructed above the 100 year flood elevation. [63]

The City of Twin Falls' long term storm drain philosophy has been to limit the concentration of storm water whenever possible. Recently Twin Falls has required new developments to handle the 25 year storm water generated on that development before release.

The Twin Falls Comprehensive Plan does not specifically address hazardous areas. There is an Environmental Section that includes some discussing of protection of the environment and natural resources. The Environmental Action items in the Comprehensive Plan that promote mitigation include the following:

- Re-evaluate the Canyon Rim Overlay District (CRO) to determine if larger minimum setbacks and reduced building heights can be achieved

[61] ftp://ftp.tfid.org/From_City/Comprehensive%20Plan/Final_Comp_Plan_02-02-09.pdf, page x
[62] ftp://ftp.tfid.org/From_City/Comprehensive%20Plan/Final_Comp_Plan_02-02-09.pdf, page xi
[63] ftp://ftp.tfid.org/From_City/Comprehensive%20Plan/Final_Comp_Plan_02-02-09.pdf, page xiv

- Require minimized disturbance of natural landscapes through the development review and zoning approval process
- Require additional site analysis for all developments within the CRO District and the Open Space District, including sensitive wildlife habitat, natural vegetation inventory, wet and marshy areas, and other conditions that may affect the potential development and the evaluation of environmental damage

City of Buhl Land Use Ordinances

The City of Buhl has not adopted a Comprehensive Plan, but do have an adequate range of land use ordinances. The Ordinances cover land use issues including a flood overlay zone. The ordinances provide requirements for fire protection and hazardous materials operations and storage. The City also has codified a Well Head Protection Plan which protects the public water supply from groundwater pollution.

City of Castleford Comprehensive Plan

The City of Castleford Comprehensive Plan was adopted on August 6, 2003. The stated purpose of the Plan is to promote the health, safety, and general welfare of the people of the City of Castleford. The Plan sets forth guidance which is used to make proper land use decisions and to aid in the community's growth and economic development. The Hazards discussed in the Plan are limited to agricultural practices.

City of Filer Comprehensive Plan and Land Use Ordinances

The City of Filer Comprehensive Plan has been developed to guide decision makers in identifying appropriate land use policies. The Comprehensive Plan was developed as set forth by the State of Idaho Land Use Law. The Plan contains a hazardous section; however, the hazards are limited to irrigation and traffic. The Plan should be updated to encompass the hazards identified in the Twin Falls Multi-Jurisdiction All Hazard Mitigation Plan for the City of Filer. Special attention should be paid to weather related hazards. The Plan does provide guidance for storm water drainage, seeking to mitigate the effects of the weather related drainage issues.

The City of Filer zoning ordinances set forth specific land use practices for individual land use zones as well as general performance standards that are applicable in each zone. There is a general statement in the performance standards that states "The governing board shall review the particular facts and circumstances of each proposed special use in terms of the following standards and shall find adequate evidence showing that such use at the proposed location: (Ord. 509, 3-7-2000)" and includes the following conditions:

"D. Will not be hazardous or disturbing to existing or future neighboring uses"

"E. Will be served adequately by essential public facilities and services such as highways, streets, police and fire protection, drainage structures, refuse disposal, water and sewer and schools; or that the persons responsible for the establishment of the proposed use shall be able to provide adequately any such services."

"F. Will not create excessive additional requirements at public cost for public facilities and services and will not be detrimental to the economic welfare of the community."

"G. Will not involve uses, activities, processes, materials, equipment and conditions of operation that will be detrimental to any person, property or to the general welfare by reason of excessive production of traffic, noise, smoke, fumes, glare, or odors."

The City of Filer also has a codified Well Head Protection Plan which has a purpose of protecting the public water supply from pollutants.

City of Hansen Land Use Ordinances

The City of Hansen has not adopted a comprehensive plan, but has codified the use of the International Building Code throughout the City and has adopted a comprehensive set of Land Use Ordinances. The ordinances establish land use zones that are typical of a rural community. In addition to the zoning regulations, there is a General Provisions ordinance that is designed to promote public health, safety, and the general welfare of the residents of the City of Hansen; however, general goals to protect the public health, safety, and general welfare are all that the ordinance contains.

The City of Hansen has a Floodplain Ordinance. The Ordinance appears to meet the intent of the National Flood Insurance Program guidance.

City of Hollister

The City of Hollister has land use planning ordinances, but did not provide them for review.

City of Kimberly Comprehensive Plan

The City of Kimberly's Comprehensive Plan was last adopted in 2009, and is currently under revision. The Plan sets forth the land use goals and polices for the City of Kimberly and meets the Idaho Land Use Planning Act requirements. The Plan contains a section of Hazardous Areas; however, the areas do not reflect the current hazard analysis conducted as part of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan. The 2013 revision of the Plan references the Twin Falls County EOP, however, which does contain a summary from the 2009 All Hazard Plan analysis. It is recommended that the Comprehensive Plan update reflect the hazards found in the City of Kimberly which have been documented in the Multi-Jurisdiction AHMP 2013 update.

The City of Kimberly does have a land use zoning ordinance. The purpose of the zoning ordinance is to "To protect and provide for the public health, safety, and general welfare of the municipality and surrounding area." The zoning districts are those typical of a rural community and very similar to other cities in the County. The general performance standard contains a drainage and storm water management section which protects the community from storm water hazards. The Subdivision Ordinance provides fire protection standards for new developments as well as provisions for storm water management.

City of Murtaugh

The City of Murtaugh has land use planning ordinances, but did not provide them for review.

Section 3.2 NFIP Continuity Strategy

Twin Falls County participates in the NFIP, as well as the City of Twin Falls and the City of Hansen. City of Twin Falls has a Community Rating System designation of nine (8).

Twin Falls County has no communities within the 100 year flood plain hazard areas that are not participating in the NFIP. Twin Falls County has no communities under suspension or revocation of participation in the NFIP.

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

As evidenced in the Community Questionnaire, overall participation by individuals and business in the NFIP appears to be low. Potential reasons for continuing low participation in the program are:

- Current cost of insurance is prohibitive
- A lack of knowledge about the existence of the availability of low cost flood insurance
- Home and business owners unaware of their vulnerability to flood events

The last two reasons can be addressed through public education. The first could be addressed by all communities in the County taking advantage of the Community Rating System (CRS). To encourage communities to go beyond the minimum requirements and further prevent and protect against flood damage, the NFIP established the Community Rating System (CRS). To qualify for CRS, communities can do things like make building codes more rigorous, maintain drainage systems, and inform residents of flood risk. In exchange for becoming more flood ready, the CRS community's residents are offered discounted premium rates. Based on the community's CRS ratings, they can qualify for up to a 45% discount of annual flood insurance premiums. FEMA has developed FIRM’s for the following streams and rivers in Twin Falls County:

- Deep Creek
- Cottonwood Creek
- Hot Creek
- Lost Creek
- Perrine Coulee
- Rock Creek
- Salmon Falls Creek
- Shoshone Creek
- Snake River

NFIP Participation Category	Twin Falls County	City of Twin Falls	City of Hansen
Number of properties in the community	21514	14683	417
Date Participating in Regular Phase of NFIP	9/28/1984	11/1/1984	6/8/1982
Participating in CRS (class)	Not Participating	8	Not Participating
Date of current FIRM	9/28/1984 & 9/26/2008	9/26/2008	9/26/2008
Number of NFIP Policies	12	76	1
Are FIRMs digital or paper	Partly Digital	Digital	Paper
Insurance in Force (Total coverage)	$2,882,900	$13,136,200	$350,000
Total Premiums	$9,337	$55,082	$405
Number Claims Paid	0	10	1
$ Total Claims Paid	$0	$11,558	$732
# Substantial Damage Claims	0	0	0
Rep Loss Properties	0	0	0
Severe Rep Loss Properties	0	0	0

Table 3.2.2 : NFIP Participation Summary

The cities of Buhl, Castleford, Filer, Hollister, and Kimberly have been identified as having no flood-prone areas in the 2008 FIS.

Section 3.3 Mitigation Goals and Objects, Actions and Projects

Goals

AHMP goals describe the broad direction that Twin Falls County agencies, organizations, and citizens will take to select mitigating projects that are designed specifically to address risks posed by natural and manmade hazards. The goals are stepping-stones between the mission statement and the specific objectives developed for the individual mitigation projects.

Severe Weather

- Twin Falls County will develop methods to mitigate the losses due to severe weather in the County.

Flooding

- Twin Falls County will continue to participate in the National Flood Insurance Program and develop actions that will reduce the damage to County infrastructure due to flash and stream flooding.

Geological

- Twin Falls County will communicate the level of risk for earthquakes in the County and ensure building codes are applied properly.
- Twin Falls County will reduce the potential damage to property from Landslides by adopting codes and standards for construction in landslide prone areas.
- Twin Falls County will tightly control building on the Snake River Canyon Rim.

Wildfire

- Twin Falls County will reduce the losses caused by wildfire by continuing the Wildland Urban Interface Mitigation Program.

Biological

- Twin Falls County seeks to reduce the exposure of humans and animals to the West Nile Virus.
- Twin Falls County will identify risks to livestock from potential biological threats.

Structural Fire

- Twin Falls County will seek to reduce losses from Structure fires.

Nuclear Event

- Twin Falls County will examine the risks posed to the County from Nuclear Facilities and Improvised Nuclear Device.

Hazardous Material Event

- Twin Falls County will identify hazardous materials transported through the County.

Riot/Demonstration/Civil Disorder

- Twin Falls County will develop methods to identify and report Civil Disobedience activities.

Terrorism

- Twin Falls County will identify measures to protect critical County infrastructure and facilities from potential terror incidents.

Participating City Goals and Objectives

City of Buhl

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial, and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
  - Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
  - Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.
  - Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Castleford

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial, and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
  - Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
  - Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.
  - Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Filer

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency

Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.

- Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
- Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.
  - Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Hansen

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
  - Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
  - Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.

- Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Hollister

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
  - Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
  - Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.
  - Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Kimberly

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial and simple enough to provide effective guidance to the City for hazard mitigation.

- Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
- Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
- Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.
  - Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Murtaugh

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
  - Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
  - Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.

- Establish property owner incentives that encourage prudent land use practices in hazard areas.
- Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

City of Twin Falls

- ***Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.***

  Objectives:

  - Identify responsible individuals within city government for the purpose of carrying out the action items of the All Hazard Mitigation Plan and provide information to the City Council to facilitate the decision making process.
  - Endorse the Multi-Jurisdiction All Hazard Mitigation Plan that is feasible, beneficial and simple enough to provide effective guidance to the City for hazard mitigation.
  - Enhance coordination of local agencies and consistency in addressing natural, technological, and societal hazard issues by participating in the Local Emergency Planning Committee that oversees and coordinates emergency management preparedness and pre-disaster mitigation.
  - Increase local knowledge of hazards and hazard mitigation approaches by improving and maintaining the existing system of disseminating information to the public.
  - Establish a system of recording and updating mitigation-related data.

- ***Improve City policies and practices that effectively reduce the risk of hazards to people on private and public property, buildings, and infrastructure.***

  Objectives:

  - Establish a regulatory structure for fairly and equitably establishing zones that address All-Hazard concerns.
  - Establish property owner incentives that encourage prudent land use practices in hazard areas.
  - Align the Comprehensive Plan with the Hazards Analysis and Hazard Ranking in the All Hazard Mitigation Plan.

Section 3.4 Twin Falls County 2013 Mitigation Projects

Severe Weather

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will develop methods to mitigate the losses due to severe weather in the County.	Develop Warning Devices for High Winds.	Install High Wind Warning devices at the entrances of the Hansen and Perrine Snake River Bridges	State of Idaho Transportation Department	$108,560 (Engineered Estimate) 2015 – Apply for Budget Funds 2016 - Install
	Develop Methods to Reduce Straight Line Wind Damage	Plant Wind Breaks along Highway 93 between Rogerson and the Highway 30/93 Junctions.	Department of Emergency Services / Private Property Owners	$ 6.70/linear foot - $8.00/linear foot (Engineered Estimate) 2016 – Meet with Private Property Owners and apply for funding 2017 – Plant Fences

Flooding

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will continue to participate in the National Flood Insurance Program and develop actions that will reduce the damage to County infrastructure due to flash and stream flooding.	Promoting insurance coverage for severe weather events.	Establish a National Flood Insurance Program for areas prone to flash flooding in Buhl and Castleford	Floodplain Administrator	No Cost – Technical Assistance from IDWR

Geological

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will reduce potential damage to County infrastructure and structures through implementation of earthquake mitigation techniques.	The media can raise awareness about the level of earthquake risk by providing important information to the community.	Publish a special section in newspapers about the actual level of earthquake risk identified in the 2013 update.	Department of Emergency Services	No Cost
Twin Falls County will tightly control building on the Snake River Canyon Rim.	Protect Structures along Canyon Rim	Develop an ordinance that restricts building on the Snake River Canyon Rim.	P & Z Administrator	ROM - $5000 20014 – Seek Funding from County to develop ordinance. 2015 – Adopt Ordinance

Wildfire

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will reduce the losses caused by wildfire by continuing the Wildland Urban Interface Mitigation Program.	Conduct Roadside Vegetation Treatments to reduce flammable fuels immediately adjacent to roads in high risk areas.	Develop a standard practice for roadside vegetation management in the Mellon Valley Area.	Wildfire Working Group/ Department of Emergency Services	No Cost 2015– Develop standard as part of WUI Planning ongoing effort.
	Ensure coordination of WUI Fire Mitigation Projects	Organize a group to jointly apply for grants and other funding avenues to implement WUI Fire Mitigation Actions.	Department of Emergency Services	No Cost 2014 – WUI Working Group Task.

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
	Develop Additional Water Supplies for Fire Protection	Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	Department of Emergency Services /Fire Districts	ROM- $5000 2015 – Seek Funding from BHS SHSP and develop standard agreement and requirements. 2016– Execute Agreements.
		Develop an ordinance which establishes the road widths, access, water supply, and building regulations suitable to ensure new structures can be protected.	P & Z Administrator	ROM - $15,000 2014 – Seek Funding from County to develop ordinance. 2010 – Adopt Ordinance.
		Incorporate new developments and structures into existing fire protection districts	Fire Districts	ROM - $5000 2014 – Develop List of properties 2015 – Meet with property owners and promote annexation in Fire District
	Improve access to areas prone to Wildland Fire	Develop a listing of roads, bridges, cattle guards, culverts, and other limiting conditions and incorporate improvements into the Highway District Transportation Plans	Highway Districts	ROM - $150,000 plus annual maintenance cost. 2016 – Develop a LHTAC Grant to evaluate all roadways in the County. Determine Priority actions. 2017 – Ongoing: Repair or Replace damaged culverts, bridges etc.

Biological

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County seeks to reduce the exposure of humans and animals to the West Nile Virus.	Provide Public Education regarding West Nile Virus	Maintain the "Fit the Bite" program with the Health District.	Health District.	No Cost
Twin Falls County will identify risks to livestock from potential biological threats.	Provide Livestock owners with protection information regarding biological threats to their industry.	Work with the Idaho Department of Agriculture to develop protection measures for livestock from Biological Threats.	U of I Extension/Pest Abatement District	ROM - $15,000 2014 – Apply for Funding and Conduct Assessments 2015 – Begin Education Campaign

Structure Fire

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will seek to reduce losses from Structure fires.	Develop Additional Water Supplies for Fire Protection	Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	Fire Districts	ROM- $7000 2016 – Seek Funding from BHS SHSP and develop standard agreement and requirements. 2017 – Execute Agreements.

Hazardous Materials Event

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will identify hazardous materials transported through the County.	Provide commodity flow information to the Hazardous Materials Response Teams in the area.	Conduct a Hazardous Materials Commodity Flow Study for the County.	Department of Emergency Services	Cost Estimate - $10,000 2013 – Apply for an HMEP Grant and Conduct Study.

Riot/Demonstration/Civil Disobedience

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will develop methods to identify and report Civil Disobedience activities.	Provide information to the Citizens in the Community on reporting Civil Disobedience activities.	Conduct a Law Enforcement Public Education Campaign on Civil Disobedience.	Sheriff's Office	ROM - $10,000 2014 – Apply for a Law Enforcement Grant to Conduct Public Education. 2015 – Conduct Program.

Terrorism

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Twin Falls County will identify measure to protect critical County infrastructure and facilities from potential terror incidents.	Protect Critical Infrastructure and facilities.	Identify all Critical Infrastructure and Facilities in the County and participate with the new BHS Critical Infrastructure Protection Program.	Department of Emergency Services	ROM - $15,000 2015 – Apply for Funding 2016 - Work with LEPC to conduct assessment.

Non-Hazard Specific

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
		Emergency Power for Relocation Centers	Department of Emergency Services	ROM - $100,000 2009- Engineering Cost Estimate Required 2018 – Conduct BCA and Apply for Funding
	Identify Evacuation Routes and Relocation Centers	Post Evacuation Route Signs directing evacuees to Relocation Centers	Department of Emergency Services	ROM - $15,000 2019 – Seek LHTAC Funding 2010 – Install Signs

Section 3.3 Participating Jurisdictions 2013 Mitigation Projects

City of Twin Falls

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Establish a comprehensive, ongoing All Hazards Mitigation planning and project implementation structure that can effectively address multiple natural, technological, and societal hazards.	Protect the City Sewer System	Construct of an Industrial Sewer Sludge Tank	City Public Works	ROM $400,000 Future Project
		Sewer Line Replacement	City Public Works	ROM $350,000 Future Project
		Sewer Collection System Model Update	City Public Works	ROM $200,000 Future Project
		Auger Falls Project	City Public Works	ROM $100,000 Future Project
	Protect the City Water System	Four Water Pumps at Blue Lake Pump Site	City Public Works	ROM $800,000 Future Project
		Water Mainline Replacement	City Public Works	ROM $350,000 Future Project
		Purchase of Land for a Future Replacement of a Water Reservoir	City Public Works	ROM $350,000 Future Project
		Water Reservoir Design	City Public Works	ROM $1,700,000 Future Project
		Water Reservoir Construction, 5 MGD Tank	City Public Works	ROM $7,500,000 Future Project
		Water System Redundancy at Canyon Springs	City Public Works	ROM $4,500,000 Future Project

City of Hollister

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Promote Community Safety through Mitigation	Protect Structures from Wildfire	Create a fire break around the City of Hollister	Fire District / City	ROM – $25,000 2014 – Apply for Wildfire Mitigation Funding 2015 – Create Fire Break
		Develop a City Ordinance requiring fire fuel reduction on private property	City Council	ROM - $1000 2013 – Develop and Adopt Ordinance

City of Murtaugh

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Promote Community Safety through Mitigation	Protect Infrastructure from storm water flooding	Create a storm water collection system at the intersection of Boyd and 1st Streets	City	ROM – $150,000 2014 – Engineer Collection System 2015 – Apply for HMA Funding 2016 – Install Collection System

City of Filer

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Promote Community Safety through Mitigation	Protect City Drinking System	Create a method to remove the naturally occurring Arsenic from the water system	City Water Department	ROM – $1, 500,000 2014 – Engineer Removal System 2015 – Apply for DEQ Funding 2016 – Install Removal System

City of Hansen

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Promote Community Safety through Mitigation	Protect Private Property From Flooding	Develop Policies or Practices that protect residences from being flooded by the neighboring properties irrigation ditch	Public Works	No Cost 2014 Develop Policy

City of Buhl

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Promote Community Safety through Mitigation	Protect City Drinking System	Protect City Drinking Water System from Freezing	City Water Department	ROM – $1,000,000 2014 – Engineer System Changes 2015 – Apply for HMA Funding 2016 – Upgrade System

City of Kimberly

Goal	Objective	Project	Responsible Entity	Planning Horizon/ROM $
Promote Community Safety through Mitigation	Protect Infrastructure from storm water flooding	Create a storm water collection system for the west side of the City	City Public Works	ROM – $750,000 2014 – Engineer Collection System 2015 – Apply for HMA Funding 2016 – Install Collection System

Section 3.5 Project Ranking

During the preparation of the Twin Falls County Local Plan Review Crosswalk the AHMP Committee reviewed the following criteria items and wondered if the priority ranking was being done correctly.

"C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))"

During the development of the 2008 Twin Falls County All Hazard Mitigation Plan, the projects were prioritized based primarily on Cost Benefit approach, as that is typically how projects are funded, and it was in line with the Guidance. The 2011 guidance says the following:

"The plan must demonstrate when prioritizing hazard mitigation actions that the local jurisdictions considered the benefits that would result from the hazard mitigation actions versus the cost of those actions. The requirement is met as long as the economic considerations are summarized in the plan as part of the community's analysis. A complete benefic-cost analysis is not required. Qualitative benefits (for example, quality of life, natural and beneficial values, or other "benefits") can also be included in how actions will be prioritized."

The new guidance states:

"b. At a minimum, this list of prioritized projects will be based on a process that results in identification of cost effective hazard mitigation projects with public input, including:

i. An analysis of proposed mitigation projects focused on several key areas, ***including but not limited to: economic (including benefits and cost), engineering, technical, legal, environmental, social, and political feasibility. Selected options will best fit the community's needs and meet most or all aspects of the feasibility analysis."***

The Committee reviewed the FEMA Mitigation Planning How to Guides which suggested the **STAPLEE Method** to complete the prioritization process. The AHMP Committee chose to organize a small subcommittee of the AHMP Committee who understand a wide range of the issues, i.e., social, technical, political, economic, etc. and score the projects using a weighted, (as suggested in the how to guide) STAPLEE Criteria. Figure 3.4.1 below provides an illustration of

the scoring sheet and weighting. On July 25, 2013 the subcommittee met and scored the projects then gave each a ranking of High (H), Medium (M), or Low (L). The results of that ranking process are presented in Tables 3.4.1 and 3.4.2 below.

STAPLEE Criteria	S (Social)	T (Technical)	A (Administrative)	P (Political)	L (Legal)	E (Economic)	E (Environmental)	Total Score
Considerations → for Alternative Actions ↓	Community Acceptance Effect on Segment of Population • •	Technical Feasibility Long-term Solution Secondary Impacts • • •	Staffing Funding Allocated Maintenance/ Operations • • •	Political Support Local Champion Public Support • • •	County Authority Existing Local Authority Potential Legal Challenge • • •	Benefit of Action Cost of Action Contributes to Economic Goals Outside Funding Required • • • •	Effect on Land/ Water Effect on Endangered Species Effect on HAZMAT/ Waste Sites Consistent with Community Environmental Goals Consistent with Federal Laws • • • • • •	
Weighted Score	1X	2.5X	1.5X	1X	1X	2X	1.5X	
Scoring Criteria from 1 – 3 with 3 being the most positive, for example:								
Install High Wind Warning devices at the entrances of the Hansen and Perrine Snake River Bridge	3X1=3	3 X 2.5=7.5	1X1.5=1.5	3X1=3	2X1=2	2X2=4	3X1.5=4.5	25.5
Plant Wind Breaks along Highway 93 from Rogerson to Highway 30 Junction	1X3=3	3X2.5=7.5	1X1.5=1.5	1X1=1	1X1=1	3X2=6	3X1.5=4.5	24.5
In these two examples, even though both of these actions have the same technical feasibility and the Wind Breaks have a higher economic benefit, the Wind Warning has a slightly higher score because of the fact that the Wind Breaks would be located on private ground and would take involvement from private property owners. Therefore the High Wind Warning in comparison would have a higher priority Project Ranking.								

Figure 3.4.1 STAPLEE Scoring Sheet

Twin Falls County Projects	STAPLEE Score	Ranking
Install High Wind Warning devices at the entrances of the Hansen and Perrine Snake River Bridge	150	**H**
Organize a group to jointly apply for grants and other funding avenues to implement WUI Fire Mitigation Actions.	148.5	**H**
Emergency Power for Relocation Centers	146	**H**
Maintain the "Fight the Bite" program with the Health District.	144	**H**
Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	143	**H**
Incorporate new developments and structures into existing fire protection districts.	142	**H**
Establish a National Flood Insurance Program for areas prone to flash flooding in Buhl and Castleford	139	**M**
Develop an ordinance which establishes the road widths, access, water supply, and building regulations suitable to ensure new structures can be protected.	136.5	**M**
Identify all Critical Infrastructure and Facilities in the County and participate with the new BHS Critical Infrastructure Protection Program.	132.5	**M**
Develop a listing of roads, bridges, cattle guards, culverts, and other limiting conditions and incorporate improvements into the Highway District Transportation Plans.	130	**M**
Develop a standard practice for roadside vegetation management in the Mellon Valley Area.	126	**M**
Conduct a Hazardous Materials Commodity Flow Study for the County.	124.5	**M**
Plant Wind Breaks along Highway 93 between Hollister and Rogerson	115	**M**
Develop an ordinance that restricts building on the Snake River Canyon Rim.	107	**L**
Post Evacuation Route Signs directing evacuees to Relocation Centers	102	**L**
Work with the Idaho Department of Agriculture to develop protection measures for livestock from Biological Threats.	99.5	**L**
Publish a special section in newspapers about the actual level of earthquake risk identified in the 2013 update.	97.5	**L**
Conduct a Law Enforcement Public Education Campaign on Civil Disobedience.	88	**L**

Table 3.4.1 Twin Falls County STAPLEE Project Ranking

City of Twin Falls Projects	STAPLEE Score	Ranking
Construct of an Industrial Sewer Sludge Tank	123.5	**M**
Sewer Line Replacement	128	**M**
Sewer Collection System Model Update	125.5	**M**
Auger Falls Project	117	**M**
Four Water Pumps at Blue Lake Pump Site	128.5	**M**
Water Mainline Replacement	134	**M**
Purchase of Land for a Future Replacement of a Water Reservoir	131.5	**M**
Water Reservoir Design	131.5	**M**
Water Reservoir Construction, 5 MGD Tank	132	**M**
Water System Redundancy at Canyon Springs	131	**M**
City of Hollister Projects	**STAPLEE Score**	**Ranking**
Create a fire break around the City of Hollister	150	**H**
Develop a City Ordinance requiring fire fuel reduction on private property	132.5	**M**
City of Murtaugh Projects	**STAPLEE Score**	**Ranking**
Create a storm water collection system at the intersection of Boyd and 1st Streets	132	**M**
City of Filer Projects	**STAPLEE Score**	**Ranking**
Create a method to remove the naturally occurring Arsenic from the water system	137	**M**
City of Buhl Projects	**STAPLEE Score**	**Ranking**
Protect City Water System from Freezing during extreme cold events	155	**H**
City of Hansen Projects	**STAPLEE Score**	**Ranking**
Develop Policies or Practices that will protect residences from being flooding by the neighboring property's irrigation ditch	119.5	**M**
City of Kimberly Projects	**STAPLEE Score**	**Ranking**
Protect western parts of the City from Storm Water Damage	123	**M**

Table 3.4.2 Participating Cities STAPLEE Project Ranking

Section 4 Plan, Review, Evaluation, and Implementation

The Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan 2013 is a complete revision of the 2008 Twin Falls County All Hazard Mitigation Plan. The entire Hazard and Vulnerability Assessment was updated. The hazard ranking was changed a new format deployed that ranks the hazards according to five indices, 1) historical occurrence, 2) probability, 3) vulnerability, 4) spatial extent, i.e, the extent impact based on geography, and 5) the magnitude which looks specifically at the loss of life, injuries, and economic impact. The Plan format was changed to match the FEMA Local Plan Crosswalk Guidance.

The Twin Falls County Multi-Jurisdiction All Hazard Mitigation Planning Project was led by Ms. Jackie Frey, Coordinator, Twin Falls County Department of Emergency Services, who, under the direction of the Twin Falls County Commissioners, is responsible for implementing the mitigation actions recommended in this Plan.

The Twin Falls County All Hazard Mitigation Planning Committee was comprised of members of the Twin Falls County LEPC. Community involvement took two forms, 1) an electronic based community questionnaire, and 2) invitation to attend the local elected officials' briefings. There was excellent community participation.

While the focus of this Plan is on County-wide mitigation activities, it was developed through an integrated effort by representatives from many County jurisdictions. The following Cities and taxation districts have also participated in the development of this Plan:

- City of Buhl
- City of Castleford
- City of Filer
- City of Hansen
- City of Hollister
- City of Kimberly
- City of Murtaugh
- City of Twin Falls
- Buhl Highway District
- Filer Highway District
- Murtaugh Highway District
- Twin Falls Highway District
- Twin Falls County Pest Abatement District
- Twin Falls Canal Company
- Three Creek Rangeland Fire Protection Association, Inc.
- Saylor Creek Rangeland Fire Protection Association, Inc.

Mitigation Actions have been reviewed and a status provided by the Mitigation Committee. Goals and Objectives, as developed in the initially planning process, were maintained and

additional mitigation actions added to the Plan. The mitigation actions were reviewed and analyzed using the STAPLEE Method with each action given a H, M, or L ranking.

The Plan as developed is much more user friendly, and designed specifically to enhanced implementation. The jurisdictions have completed many of the mitigation actions and as funding is available, additional mitigation actions will be addressed

Mitigation Project Status

2008 Mitigation Projects

Listed below are the goals and objectives developed by the AHMP Committee during 2007 and the proposed projects. A status on each project has been provided. Projects that were not complete were considered to be added to the new project listing.

Severe Weather

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will develop methods to mitigate the losses due to severe weather in the County.	Develop Warning Devices for High Winds.	Install High Wind Warning devices at the entrances of the Hansen and Perrine Snake River Bridges	State of Idaho Transportation Department	Moved to 2013 List
	Develop Methods to Reduce Straight Line Wind Damage	Plant Wind Breaks along Highway 93 between Hollister and Rogerson	Department of Emergency Services / Private Property Owners	Moved to 2013 List

Flooding

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will continue to participate in the National Flood Insurance Program and develop actions that will reduce the damage to County infrastructure due to flash and stream flooding.	Promoting insurance coverage for severe weather events.	Establish a National Flood Insurance Program for areas prone to flash flooding in Buhl and Castleford	Floodplain Administrator	Moved to 2013 List

Goal	Objective	Project	Responsible Entity	Status
		Raise the Twin Falls City Sewage Lift Station in the Rock Creek Canyon		2008 Engineering Review determined that this project is not necessary

Geological

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will reduce potential damage to County infrastructure and structures through implementation of earthquake mitigation techniques.	Ensure enforcement of seismic building code provisions in the International Building Code as adopted.	Ensure that all Cities within the County have adopted the IBC and properly trained their inspectors.	P & Z Administrator	Canceled
	Priority seismic retrofitting should be given to schools, public buildings, community evacuation and assessable sites.	Develop a listing of schools and public buildings that need to be seismically retrofitted	Department of Emergency Services	Canceled
		Earthquake Protection or Hardening of the Twin Falls County EOC, the County Jail, and the County Court House.	Department of Emergency Services	Canceled

Goal	Objective	Project	Responsible Entity	Status
	The media can raise awareness about earthquakes by providing important information to the community.	Publish a special section in newspapers with emergency information on earthquakes.	Department of Emergency Services	Canceled
Twin Falls County will reduce the potential damage to property from Landslides by adopting codes and standards for construction in landslide prone areas.		Harden the Twin Falls City Water Supply line coming out of the Snake River Canyon	Twin Falls City Public Works	Canceled
		Harden the Twin Falls City Sewer line going down the canyon wall into the Snake River Canyon	Twin Falls City Public Works	Canceled
Twin Falls County will tightly control building on the Snake River Canyon Rim.	Protect Structures along Canyon Rim	Develop an ordinance that restricts building on the Snake River Canyon Rim.	P & Z Administrator	Canceled

Wildfire

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will reduce the losses caused by wildfire by continuing the Wildland Urban Interface Mitigation Program.	Conduct Roadside Vegetation Treatments to reduce flammable fuels immediately adjacent to roads in high risk areas.	Develop a standard practice for roadside vegetation management in the Mellon Valley Area.	Wildfire Working Group/ Department of Emergency Services	Moved to 2013 List

Goal	Objective	Project	Responsible Entity	Status
	Ensure coordination of WUI Fire Mitigation Projects	Organize a group to jointly apply for grants and other funding avenues to implement WUI Fire Mitigation Actions.	Department of Emergency Services	Moved to 2013 List
	Develop Additional Water Supplies for Fire Protection	Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	Department of Emergency Services /Fire Districts	Moved to 2013 List
		Develop an ordinance which establishes the road widths, access, water supply, and building regulations suitable to ensure new structures can be protected.	P & Z Administrator	Moved to 2013 List
		Incorporate new developments and structures into existing fire protection districts	Fire Districts	Moved to 2013 List
	Improve access to areas prone to Wildland Fire	Develop a listing of roads, bridges, cattle guards, culverts, and other limiting conditions and incorporate improvements into the Highway District Transportation Plans	Highway Districts	Moved to 2013 List

Biological

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will identify risks to livestock from potential biological threats.	Provide Livestock owners with protection information regarding biological threats to their industry.	Work with the Idaho Department of Agriculture to develop protection measures for livestock from Biological Threats.	U of I Extension/ Emergency Services	Moved to 2013 List

Structure Fire

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will seek to reduce losses from Structure fires.	Develop Additional Water Supplies for Fire Protection	Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	Fire Districts	Moved to 2013 List

Nuclear Event

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will examine the risks posed to the County from Nuclear Facilities and Improvised Nuclear Devices.	Provide continuing information to the Citizens of Twin Falls County regarding the threats related to nuclear materials in the County.	Determine the usage of nuclear materials in the County. The owners and operators of facilities and the transportation methods for nuclear materials.	Department of Emergency Services	Canceled

Hazardous Materials Event

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will identify hazardous materials transported through the County.	Provide commodity flow information to the Hazardous Materials Response Teams in the area.	Conduct a Hazardous Materials Commodity Flow Study for the County.	Department of Emergency Services	Moved to 2013 List

Riot/Demonstration/Civil Disobedience

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will develop methods to identify and report Civil Disobedience activities.	Provide information to the Citizens in the Community on reporting Civil Disobedience activities.	Conduct a Law Enforcement Public Education Campaign on Civil Disobedience.	Sheriff's Office	Moved to 2013 List

Terrorism

Goal	Objective	Project	Responsible Entity	Status
Twin Falls County will identify measure to protect critical County infrastructure and facilities from potential terror incidents.	Protect Critical Infrastructure and facilities.	Identify all Critical Infrastructure and Facilities in the County and participate with the new BHS Critical Infrastructure Protection Program.	Department of Emergency Services	Moved to 2013 List

Non-Hazard Specific

Goal	Objective	Project	Responsible Entity	Status
Provide web based information tools which are accessible to the public in such a manner that they can make informed decisions regarding protective mitigation opportunities and actions.	Deploy the AHMP Hazard Mapping Tools	Develop an AHMP map web link to the Twin Falls County Web Page.	Department of Emergency Services	Complete
	Incorporate the hazard and risk information presented in the AHMP	Update Twin Falls Emergency Operations Plan – Base Plan	Department of Emergency Services	Complete
		Update the Twin Falls County Evacuation Plan Annex	Department of Emergency Services	Complete

Goal	Objective	Project	Responsible Entity	Status
		Develop an Emergency Support Annex for the Care and Protection of Special Needs Populations	Department of Emergency Services	Complete
		Emergency Power for Relocation Centers	Department of Emergency Services	Moved to 2013 List
	Identify Evacuation Routes and Relocation Centers	Post Evacuation Route Signs directing evacuees to Relocation Centers	Department of Emergency Services	Moved to 2013 List
Improve hazard assessment information and link it to comprehensive planning to manage new development by encouraging preventative measures in areas vulnerable to natural and manmade hazards.	Enforcement of land-use and development policy to reduce exposure to hazards	Provide AHMP Mapping tools to the Twin Falls County Planning and Zoning Commission	Department of Emergency Services	Complete
		Update the Twin Falls County Comprehensive Plan to include the risks identified in the AHMP	P & Z Administrator	Complete

Section 5 Plan Adoption

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

March 31, 2014

Honorable George Urie
Honorable Leon Mills
Honorable Terry Kramer
Twin Falls County Commissioners
630 Addison Ave W, 2nd floor
P.O. Box 126
Twin Falls, Idaho 83303

Dear Commissioners Urie, Mills, and Kramer:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the ***Twin Falls County All Hazard Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through March 31, 2019:

Twin Falls County	**City of Hansen**	**City of Twin Falls**
City of Castleford	**City of Hollister**	**Buhl Highway District**
Flier Highway District	**City of Buhl**	**City of Filer**
City of Kimberly	**City of Murtaugh**	**Twin Falls Highway District**
Murtaugh Highway District		

The plan's approval provides the above jurisdictions eligibility to apply for hazard mitigation projects through your State. All requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs. Approved mitigation plans may be eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Additional information regarding the CRS can be found at www.fema.gov/business/nfip/crs.shtm or through your local floodplain manager.

The following private non-profits (PNPs) are eligible to apply for only Hazard Mitigation Grant Program (HMGP) funds following a Presidential major disaster declaration.

Three Creek Rangeland Fire Protection Association, Inc.	**Saylor Creek Rangeland Fire Protection Association**

www.fema.gov

Commissioners Urie, Mills, and Kramer
March 31, 2014
Page 2

Over the next five years, we encourage your communities to follow the plan's schedule for its monitoring and updating, and to develop further mitigation actions. The plan must be reviewed, revised as appropriate, and resubmitted for approval within five years in order to continue project grant eligibility.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact our State counterpart, Idaho Bureau of Homeland Security, which coordinates and administers these efforts for local entities.

Sincerely,

Mark Carey, Director
Mitigation Division

Enclosure

cc: Mark Stephensen, Idaho Bureau of Homeland Security

BH:bb

TWIN FALLS COUNTY IDAHO MULTI-JURISDICTIONAL

ALL HAZARD MITIGATION PLAN

PROMULGATION OF ADOPTION

Be it known that the Twin Falls County Idaho Board of County Commissioners do hereby approve the Adoption of the Twin Falls County Idaho Multi-Jurisdictional All Hazard Mitigation Plan and direct its implementation through the Twin Falls County All Hazard Mitigation Planning Committee.

Be it also known that the Board of County Commissioners hereby directs the Coordinator of the Department of Emergency Services, to continue to lead the implementation of this plan as the Twin Falls County All Hazard Mitigation Committee Chair.

This Plan has been developed in the interest of providing all hazard mitigation protection to populations living in Twin Falls County and the incorporated Cities within its boundary. Through adoption of this Plan, all county and city agencies are requested to develop directives, Standing Operating Procedures, checklists, or other supplemental guidance to insure its maximum effectiveness.

Twin Falls County Commissioner — Date: 2/13/14

Twin Falls County Commissioner — Date: 2-13-14

Twin Falls County Commissioner — Date: 2/13/14

Attest:

Twin Falls County Clerk — Date: 2-13-14

Endorsed: Coordinator, Department of Emergency Services — Date: 2-13-14

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Tom McCauley, Mayor for the City of Buhl do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Buhl.

DATED this 19th day of February, 2014

CITY OF BUHL

By: _____

Mayor

Received by the City Clerk this 20th day of February 2014

Signature: _____

Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Twila Crawford, Mayor for the City of Castleford do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Castleford.

DATED this 19 day of February, 2014

CITY OF CASTLEFORD

By: Twila Crawford

Mayor

Received by the City Clerk this 19 day of February 2014

Signature:

Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Richard D Dunn, Mayor for the City of Filer do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Filer.

DATED this 4 day of March, 2014

CITY OF FILER

By: _____

Mayor Richard D Dunn

Received by the City Clerk this 4 day of March 2014

Signature: _____
Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, _____, Mayor for the City of Hansen do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Hansen.

DATED this 10 day of FEBRUARY, 2014

CITY OF HANSEN

By: _____

Mayor

Received by the City Clerk this 10 day of FEBRUARY 2014

Signature: Linda Morrill

Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Richard D. Self, Mayor for the City of Hollister do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Hollister.

DATED this 3 day of March, 2014

CITY OF HOLLISTER

By: Richard D. Self

Mayor

Received by the City Clerk this 3 day of March 2014

Signature:

Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Tracy Armstrong, Mayor for the City of Kimberly do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Kimberly.

DATED this 25 day of February, 2014

CITY OF KIMBERLY

By:

Mayor

Received by the City Clerk this 25 day of February 2014

Signature: Shoshonie Hartmann

Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Dee Hunsaker, Mayor for the City of Murtaugh do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Murtaugh.

DATED this 13th day of March, 2014

CITY OF MURTAUGH

By: _____

Mayor

Received by the City Clerk this 13 day of March 2014

Signature: Tonie L Adams

Clerk

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Don Hall, Mayor for the City of Twin Falls do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Twin Falls.

DATED this 7th day of February, 2014

CITY OF TWIN FALLS

By: Don Hall

Mayor

Received by the Deputy City Clerk this 7th day of Feb. 2014

Signature:

Clerk L. A. Sanchez

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Notice of Endorsement and Participation In the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Neal D Gier, Chairman of the Buhl Highway District do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Buhl Highway District.

DATED this 10 day of February, 2014

BUHL HIGHWAY DISTRICT

By: Neal D. Gier

Chairman

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Loren A. Holloway, Chairman of the Filer Highway District do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Filer Highway District.

DATED this 11th day of Febewary, 2014

FILER HIGHWAY DISTRICT

By: Loren A. Holloway

Chairman

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, MIKE J. STASTNY, Chairman of the Murtaugh Highway District do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Murtaugh Highway District.

DATED this 13 day of February, 2014

MURTAUGH HIGHWAY DISTRICT

By: Mike J Stastny

Chairman

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Notice of Endorsement and Participation In the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Dave Burgess, Chairman of the Twin Falls Highway District do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Twin Falls Highway District.

DATED this 19th day of February, 2014

TWIN FALLS HIGHWAY DISTRICT

By: Dave Burgess

Chairman

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction
All Hazard Mitigation Plan

I, _____, Chairman of the Twin Falls County Pest Abatement District do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Twin Falls County Pest Abatement District.

DATED this _____ day of _____, 2014

TWIN FALLS COUNTY PEST ABATEMENT DISTRICT

By: _____

Chairman

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, BRIAN OLMSTEAD, ~~Chairman~~ GENERAL MANAGER of the Twin Falls Canal Company do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Twin Falls Canal Company.

DATED this 14 day of FEB, 2014

TWIN FALLS CANAL COMPANY

By: Brian Olmstead

~~Chairman~~ GM.

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Notice of Endorsement and Participation
In the
Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

I, Michael A. Guerry, Chairman of the Three Creek Rangeland Fire Protection Association, Inc. do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Fire Protection Association.

DATED this 13th day of June, 2013

THREE CREEK RANGELAND FIRE PROTECTION ASSOCIATION, INC.

By: _____

Chairman

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Notice of Endorsement and Participation
in the
Twin Falls County Multi-Jurisdiction
All Hazard Mitigation Plan

I, Charles B. Jones, Chairman of the Saylor Creek Rangeland Fire Protection Association, Inc. do hereby endorse and agree to participate in the implementation of the Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the Fire Protection Association.

Dated this 19th day of June, 2013.

SAYLOR CREEK RANGELAND FIRE PROTECTION ASSOCIATION, INC.

By: Charles B. Jones
Charles B. Jones, Chairman

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Attachments

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Attachment 1 Meeting Minutes

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES October 9th, 2012

Attendance:

Jackie Frey	Gary W. Davis	Tami Pearson
Jason Desler	Roger Hinton	Suzy Cavenaugh
Jim Maxson	Georgia Ford	Eric Zechmann
Randy Sabin	Angie Durham	Major Ed Patterson
Dan Olmstead	Shana Fawcett	Larry Ford
Rick Fawcett	Dane Higdem	Susan Cleverly
Gilbert Schmidt	Dennis Pullin	Krista Anderson
Carl Voight	Kathy Elwell	Kevin Hanners
Robert Storm	Ashlee Novak	Brent Blamires

County Report:

Jackie Frey, Twin Falls County Emergency Services began the meeting with introductions and addressed a number of trainings being offered in the area and state.

Presentation:

Jackie introduced Rick Fawcett, Whisper Mountain Inc., who did a power point presentation on the revision of the All Hazard Mitigation Plan for the County. Rick will participate in a number of the LEPC meetings to address the revision; his next scheduled visit will be at the December 11th, 2012 meeting.

Some of the key items addressed were:

- The process used to revise the AHMP, and why the plan must be revised or updated every 5 years
- The importance of bringing in those partners from local government, namely Planning and Zoning, Public Water Departments, Canal Companies, Fire, Industry, Road and Bridge, etc. to ensure the plan is thoroughly done
- That the plan is critical for jurisdictions because if jurisdictions are not a part of an approved AHMP they cannot receive federal funding for post disaster mitigation funding
- The importance of having a jurisdiction involved because if they are not part of an approved AHMP they are not eligible for pre-disaster mitigation project grants

Upcoming Events/Information/Classes:

Please note that a number of classes dealing with a wide area of subject matter are being offered around the State. To review the course calendar or to register for the class listed above please go to www.idahoprepares.com Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov

Agency Reports - No reports this month

Meeting Adjourned

Next Meeting

The next Twin Falls County Local Emergency Planning Committee meeting will be held on November 13th, 2012 at 1:30 in the basement conference of the Twin Falls Clinic 660 Shoshone Street East. Our guest speaker will be Mark Crane, from Enviro Care.

Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan

Five Year Update Process

Dr. Rick Fawcett,
Whisper Mountain
Ms. Suzy Cavanaugh,
Environmental Planning Group (EPG)

AHMP Update Process

- Begin 1 Year Prior to Expiration Date
- Develop a Hazard Mitigation Assistance Sub Grant Application and Submit to BHS
  - Grant Requirements
    - Complete a FEMA e Grants Online Sub Application
    - Ensure that County and Cities are currently participating in the National Flood Insurance Program (to be eligible)
    - Developed a detailed Scope of Work outlining the Review and Update Process and provided it in the application
    - Invited Participating Jurisdictions to submit a letter of participation. This is to ensure that the Multi-Jurisdiction element of the Plan is maintained and that **all** jurisdiction in the County have been given an opportunity to participate.
    - A detailed budget was developed and placed in the application. The federal portion of the project is funded at 75%. A 25% soft match is required
    - The County submitted a letter detailing how the 25% match will be provided. The majority of the match comes from your participation and County and City property and infrastructure data which we will request.

Why - Multi-Jurisdiction AHMP

- Required by FEMA under the Disaster Act of 2000 so that Jurisdictions are eligible to receive Post Disaster Mitigation Funding, Pre-Disaster Mitigation Funding and Flood Mitigation Assistance Funding
  - If jurisdictions are not part of an approved AHMP they cannot receive federal funding for ***post*** disaster mitigation funding – participating in the AHMP is like an insurance policy.
  - If jurisdictions are not part of an approved AHMP they are not eligible for pre-disaster mitigation project grants.
  - If jurisdictions are not part of an approved AHMP they are not eligible for Flood Mitigation Assistance Projects even if they participate in the National Flood Insurance Program (NFIP). These grants are funded by portions of the NFIP Premiums – not participating means your portions of those premiums are going to some other jurisdiction.

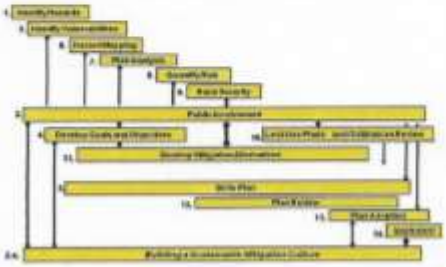
AHMP Update Process (Continued)

- Submit eGrants Sub Application to BHS
- BHS reviews application, comments are addressed, BHS approves the County's Sub Application
- BHS Ranks all Sub Applications according to benefit and submits the State Grant which encompasses all local government sub grants to FEMA Region 10.

AHMP Update Process (Continued)

- 1 Year Prior to Plan Expiration Date
- FEMA Region 10 awarded HMA Grant to State of Idaho BHS
- BHS awarded HMA Sub Grants to Twin Falls County
- Twin Falls County has Contracted with Whisper Mountain (and EPG) to begin Update.
- Whisper Mountain Begins AHMP Update.
- EPG is conducted a special Seismic Analysis as requested by BHS.

AHMP Update Process



AHMP Update Process (Continued)

- Year O Plan Expiration
- Twin Falls County Submits revised Multi-Jurisdictional Plan to BHS for review
- BHS Submits revised Plan to FEMA Region 10 for Review
- Participating Jurisdictions Sign Letters of Endorsement
- Twin Falls County Adopts Plan
- FEMA Region 10 Approves Plan
- Plan is good for another 5 years

Update Time Line Based on a 2008 Plan Adoption

Whisper Mountain's Services

- 2 Years Prior to Plan Expiration we contact our clients and ask if they want us to submit a HMA Subgrant Application in behalf of the County to complete the Five Year update date of the Multi-Jurisdiction AHMP.
- Application Includes
  - Detailed Scope of Work
  - Detailed Budget
  - Supporting Documentation
    - County Match Letter
    - Jurisdiction Participation Commitment Letters
    - Whisper Mountain provides documentation supporting the Contractual cost estimates for portions of the Scope of Work
    - Whisper Mountain donates the cost of preparing the Grant Application to the County for use as soft match.

Whisper Mountain's Services

- 1 Year Prior to Plan expiration, if HMA Sub Grant is awarded, we provide a contract for services to the County to complete the update.
  - We work with the County Coordinator to form a AHMP Planning Committee
  - We collect updated risk information
  - We complete the scope of work that includes public meetings with participating jurisdiction's elected officials
  - We submit the updated Plan to the Planning Committee for review and approval

Whisper Mountain's Services

- Year of Plan expiration
  - We submit the updated Plan to BHS in behalf of the County for review and final submission to FEMA
  - Upon FEMA approval we publish the Plan and deliver to the County.

Twin Falls County Special Seismic Analysis

- Whisper Mountain has asked Environmental Planning Group from Boise, an affiliate company, to perform the analysis
- Suzy Cavanaugh – Seismologist and Project Manager
- Outcome of Analysis will be presented in the AHMP Seismic Section.

Twin Falls County Soil Liquefaction Susceptibility and NEHRP Site Class Mapping

- The work, performed as a subcontract by EPG, will involve five basic tasks:

1. Compilation of public maps of surface geology, soils, groundwater, and seismicity.
2. Compilation of subsurface information, primarily geotechnical reports prepared for highway bridges and public buildings.
3. Calculation of liquefaction potential and seismic hazard based on soil type, blow counts from Standard Penetration Tests (SPT), and shear wave velocity (if available).
4. Classification by hazard category and mapping of potentially liquefiable saturated sands and relatively weak fine-grained soils.
5. Report preparation and review.

Seismic Mapping

- Surficial geology from the Twin Falls quadrangle 1:24,000 scale geologic map from the
- Idaho Geological Survey,
- Idaho Department of Water Resources Twin Falls area groundwater and well log data, and
- U.S. Geological Survey Twin Falls area groundwater data and seismicity data.

Subsurface Information

- EPG will use the geotechnical report data to verify geological and groundwater maps and to identify potentially hazardous or liquefiable soils. Depending on the amount of data obtained during the public file search, EPG may also attempt to obtain private borehole information.

Seismic Hazard and Liquefaction Calculations

- Using data gathered in Tasks 1.1 and 1.2, EPG will perform hazard and liquefaction calculations primarily from normalized SPT blow counts and available sheer wave data.
- Penetration tests are used to evaluate the liquefaction potential of a material.
- The SPT blow counts will be normalized to account for depth and groundwater effects, sampling methods, and other empirical factors.
- The liquefaction calculations will also account for fines (silt and clay) content of soils.

Seismic Hazard and Liquefaction Classification

- The calculations from Task 1.3 will be used to classify seismic hazard and liquefaction potential. Seismic hazard will be classified based on blow counts and available shear wave velocity using Building Seismic Safety Council methods for identifying site classes.
- Liquefaction hazard classification will be determined using the methods used by Idaho Geologic Survey, which incorporates age and depositional environment of the deposit, thickness, texture, and depth to groundwater and assigning a score to each classifying factor.
- An NEHRP site class map and a liquefaction susceptibility map for the Twin Falls County area will be produced.

Report Content

- Analytical techniques and results will be presented in reports to accompany the maps.
- Draft maps and reports will be submitted to Twin Falls County and revised and finalized after one review by county officials and Idaho Geological Survey.

Immediate Steps

- Update Hazard Analysis
- Update Property and Infrastructure Values
- Conduct an ***"electronic"*** Community Survey
- Issue Press Release to local Media
- Conduct the Seismic Analysis
- We will provide an update to the Planning Committee in December's LEPC Meeting
- Beginning in January – Local Elected Official Briefings

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES November 13th, 2012

Attendance:

Jackie Frey	Gary W. Davis	Tami Pearson
Mark Crane	Roger Hinton	Dane Higdem
Jim Maxson	Georgia Ford	Ben Dunbar
Craig Stotts	Angie Durham	Major Ed Patterson
Larry Ford	Jennifer Rowe	John Hathaway
Terry Kramer	Lori Stewart	Rob Storm
Robert Storm	Jim Ellington	Eric Zechmann

County Report:

Jackie Frey, Twin Falls County Emergency Services began the meeting with introductions and addressed the Community Organization Active in Disasters - COAD blanket drive (new or clean slightly used blankets) to be taken to Salvation Army to support those in our community who are homeless or in need, available training in the State, the revision of the All Hazard Mitigation Plan, and the possible purchase of a Reverse 911 system for the County or region.

Presentation:

Jackie introduced Mark Crane, Enviro Care who addressed the 1984 ECRA Law and the role of the county LEPC groups. Mark addressed the services (environmental cleanup) they provide to support the immediate response and recovery from a hazmat incident. He also showed slides on several incidents that they have responded to in surrounding states.

Upcoming Events/Information/Classes:

Please note that a number of classes dealing with a wide range of subject matter are being offered around the state. To review the course calendar go to www.idahoprepares.com. Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov/training

Agency Reports:

- Major Ed Patterson addressed disaster services in Salvation Army, and the partnership within the state with COAD/VOAD's and other LEPC's. Major also discussed the COAD blanket drive; at this time 60-75 blankets have been donated to support those in our community who are homeless or in need.
- Tami Pearson, SCPHD discussed the full scale statewide Strategic National Stockpile exercise that will be done on April 29th – May 1st. A Point of Dispensing (POD) will be opened at Canyon Ridge High School on the 1st. Tami also addressed the WebEOC training that is being done in house.
- Commissioner Kramer addressed the County All Hazard Mitigation Plan update from a single to a multi-jurisdictional plan, and encouraged all of the cities to participate. The need to address projects, and have a plan that is compliant with FEMA directives is critical when requesting funding.

- Trish Heath, St. Luke's Magic Valley discussed that a number of nurses are enrolled at CSI for advanced degrees, and are currently working with Jackie and SCPHD staff on community preparedness resources. She also reported on the upcoming Health Care Leadership and HERT training in Anniston, Alabama the first week of December.

Meeting Adjourned

Next Meeting

The next Twin Falls County Local Emergency Planning Committee meeting will be held on December 11th, 2012 at 1:30 in the basement conference of the Twin Falls Clinic 660 Shoshone Street East. Our guest speakers will be Rick Fawcett, Whisper Mountain to give an update on the AHMP for the county and Louis Zamora, Twin Falls Canal Company.

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES December 11th, 2012

Attendance:

Jackie Frey	Gary W. Davis	Tami Pearson
Shana Fawcett	Mark Korsen	Dan Olmstead
Jim Maxson	Paul Walz	Tim Reeves
Craig Stotts	Angie Durham	Trish Heath
Brent Blamires	Brandon Mcgoldrick	Tom Askew
Terry Kramer	Lori Stewart	Chuck Garner
Rob Storm	Louis Zamora	Eric Zechmann
Rick Fawcett	Reggie Finney	Ted Wasko
Jason Desler	Carl Voight	Randy Sabin
Gilbert Schmidt	Kirk Tubbs	

Presentation:
Jackie introduced Rick Fawcett, Whisper Mountain Inc. to update the LEPC on the revision of the All Hazard Mitigation Plan and Louis Zamora, Twin Falls Canal Company to present information dealing with the Canal Company.

Rick reported on the update to the AHMP for the County and the status of work that is being done at this time. Rick addressed the need for the support of the LEPC members to ensure the plan is accurate and projects addressed. At this time work is being done on the following:

- The Risk Assessment is 40% complete
- Burrowing rodents were addressed as a hazard in the plan
- Mapping of Critical Infrastructure
- Data collection for loss estimate is 75% completed
- Participation resolutions to include the highway and school districts
- Updated section 1 Planning Process
- Description of Partner jurisdictions
- Online Community Risk Survey
- Review of Comprehensive Plans
- Developed Project Status listing from 2008 projects

In closing, Rick discussed project goals and he will continue to work with the partners throughout the revision of the plan. Also, he encouraged everyone to go to https://www.surveymonkey.com/s/TwinFallsSurvey and do the survey addressing the "perception of hazards" in Twin Falls County. Please note: This information will help improve coordination of risk reduction activities in the County.

Louis Zamora, Twin Falls Canal Company did an informational power point presentation on projects that the Canal Co. has done or are involved in; ponds, canal/dams, wetlands, moss removal, weed control, and dam maintenance. Louis also addressed the Twin Falls City Pressure Irrigation System, the Midway Power Plant and their relationship with Idaho Power.

Upcoming Events/Information/Classes:

Please note that a number of classes dealing with a wide range of subject matter are being offered around the state. To review the course calendar go to www.idahoprepares.com. Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov/training

Agency Reports:

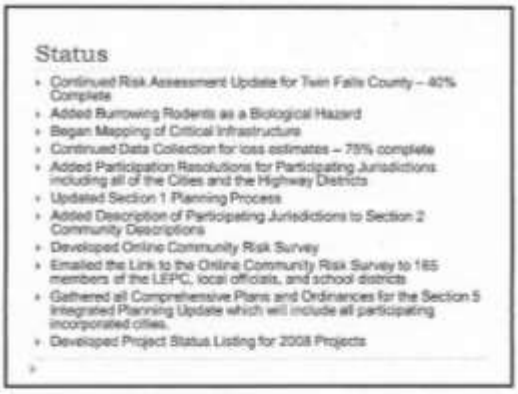
- Trish Heath, St. Luke's Magic Valley, addressed the Health Care Leadership and HERT training in Anniston, Alabama that she attended along with health care personnel from Jerome, Wood River, and the South Central Public Health District. There are plans for additional staff to attend. She will keep the LEPC membership apprised of dates and would love to see others attend training at the same time.
- Randy Sabin, Chobani, reported that the factory is in full production at this time, and that the Chobani Open House is scheduled for the 17th of December at 2:00. Please note: tours will be by invitation only.

Meeting Adjourned

Next Meeting

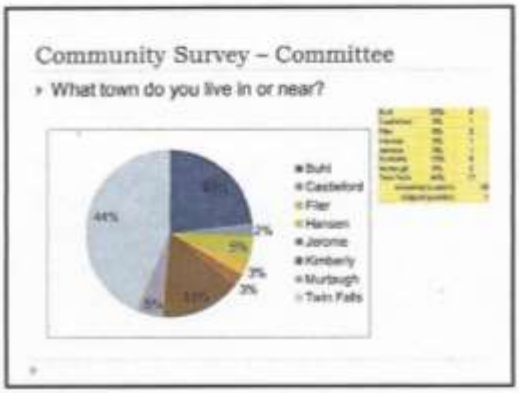
The next Twin Falls County Local Emergency Planning Committee meeting will be held on January 8th, 2013 at 1:30 in the basement conference of the Twin Falls Clinic 660 Shoshone Street East. Our guest speakers will be Valerie Waterland, EHS Manager from Chobani, and Trish Heath addressing the Health Care Leadership and HERT training in Anniston, Alabama.

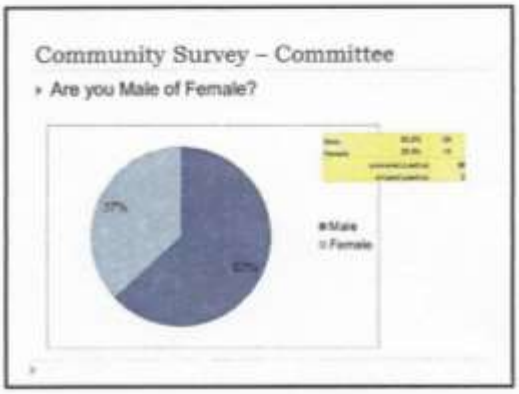
Twin Falls County
Multi-Jurisdiction All Hazard Mitigation Plan

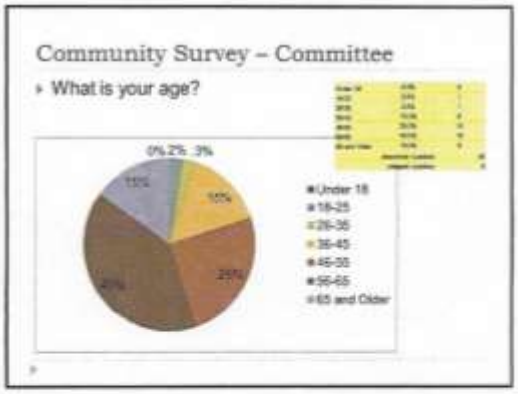

Status
Continued Risk Assessment Update for Twin Falls County – 40% Complete
Added Burrowing Rodents as a Biological Hazard
Began Mapping of Critical Infrastructure
Continued Data Collection for loss estimates – 75% complete
Added Participation Resolutions for Participating Jurisdictions including all of the Cities and the Highway Districts
Updated Section 1 Planning Process
Added Description of Participating Jurisdictions to Section 2 Community Descriptions
Developed Online Community Risk Survey
Emailed the Link to the Online Community Risk Survey to 165 members of the LEPC, local officials, and school districts
Gathered all Comprehensive Plans and Ordinances for the Section 5 Integrated Planning Update which will include all participating incorporated cities.
Developed Project Status Listing for 2008 Projects

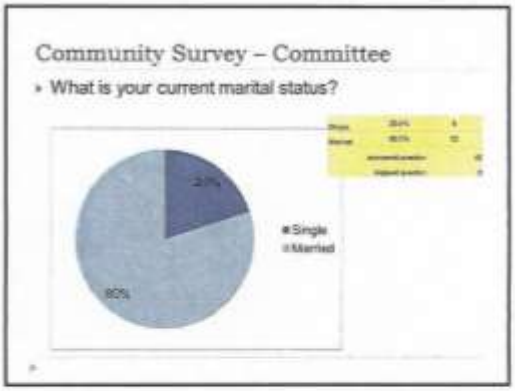
Project Listing

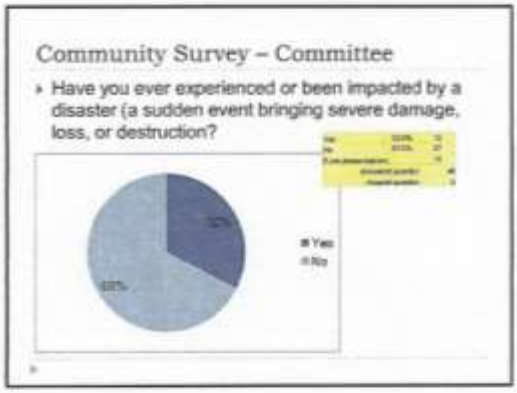
Project Goals –
To Be Discussed at the Next Meeting
Goals
Severe Weather
Flooding
Geological
Wildfire

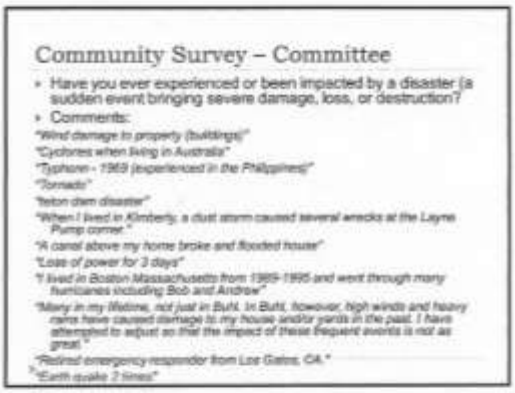

Community Survey – Committee
What town do you live in or near?
Buhl
Castleford
Filer
Hansen
Jerome
Kimberly
Murtaugh
Twin Falls
44%
2%
3%
3%

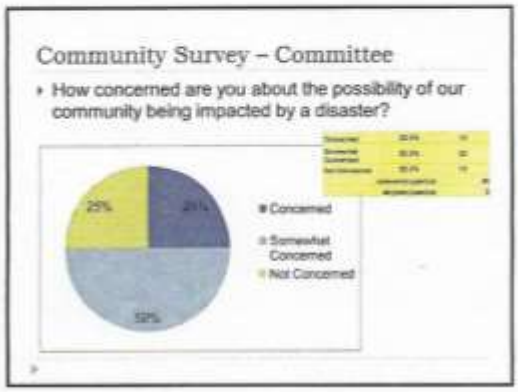

Community Survey – Committee
Are you Male of Female?
Male
Female

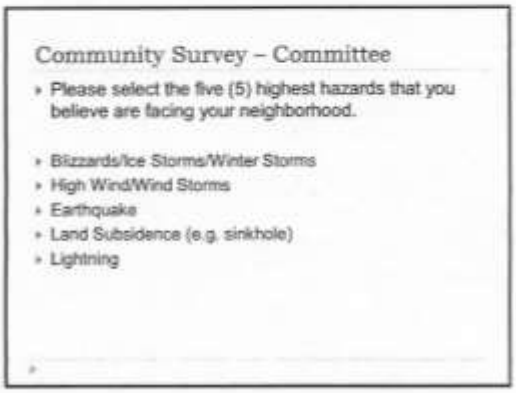

Community Survey – Committee
What is your age?
0% 2% 3%
Under 18
18-25
26-35
36-45
46-55
56-65
65 and Older

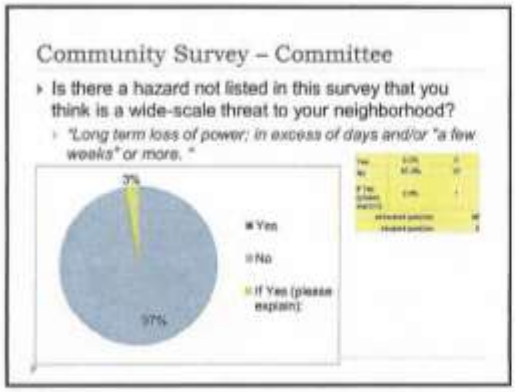

Community Survey – Committee
What is your current marital status?
Single
Married

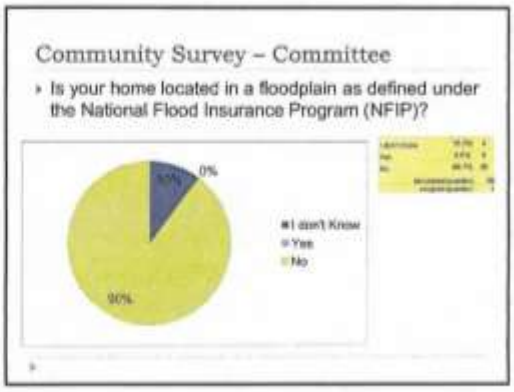

Community Survey – Committee
Have you ever experienced or been impacted by a disaster (a sudden event bringing severe damage, loss, or destruction?
Yes
No

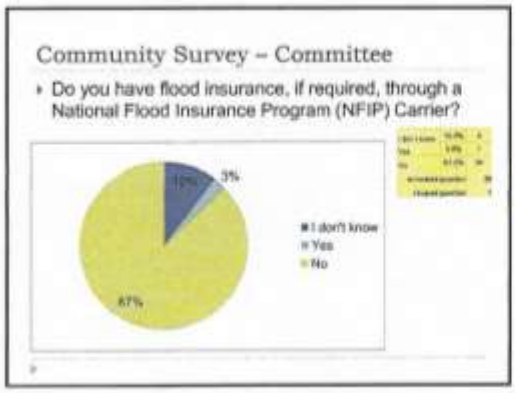

Community Survey – Committee
Have you ever experienced or been impacted by a disaster (a sudden event bringing severe damage, loss, or destruction?
Comments:
"Wind damage to property (buildings)"
"Cyclones when living in Australia"
"Typhoon - 1969 (experienced in the Philippines)"
"Tornado"
"teton dam disaster"
"When I lived in Kimberly, a dust storm caused several wrecks at the Layne Pump corner."
"A canal above my home broke and flooded house"
"Loss of power for 3 days"
"I lived in Boston Massachusetts from 1989-1995 and went through many hurricanes including Bob and Andrew"
"Many in my lifetime, not just in Buhl. In Buhl, however, high winds and heavy rains have caused damage to my house and/or yards in the past. I have attempted to adjust so that the impact of these frequent events is not as great."
"Retired emergency responder from Los Gatos, CA."
"Earth quake 2 times"

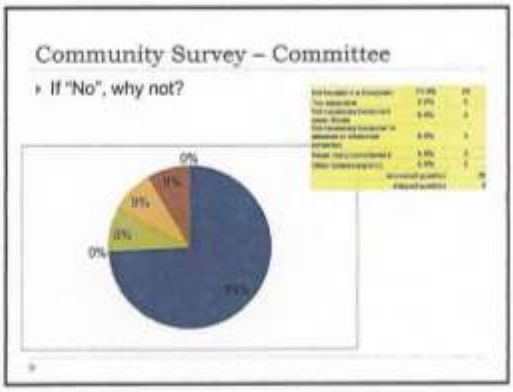

Community Survey – Committee
How concerned are you about the possibility of our community being impacted by a disaster?
25%
Concerned
Somewhat Concerned
Not Concerned
52%

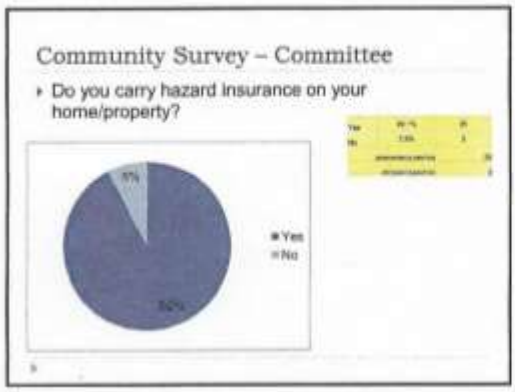

Community Survey – Committee
Please select the five (5) highest hazards that you believe are facing your neighborhood.
Blizzards/Ice Storms/Winter Storms
High Wind/Wind Storms
Earthquake
Land Subsidence (e.g. sinkhole)
Lightning

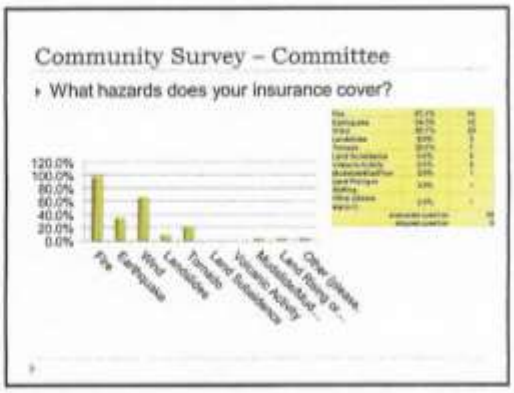

Community Survey – Committee
Is there a hazard not listed in this survey that you think is a wide-scale threat to your neighborhood?
"Long term loss of power; in excess of days and/or "a few weeks" or more. "
3%
97%
Yes
No
If Yes (please explain):

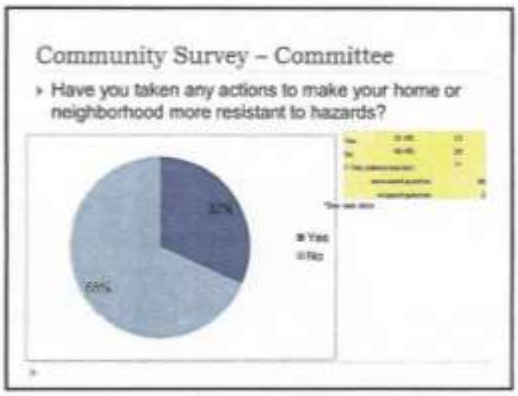

Community Survey – Committee
Is your home located in a floodplain as defined under the National Flood Insurance Program (NFIP)?
0%
90%
I don't Know
Yes
No

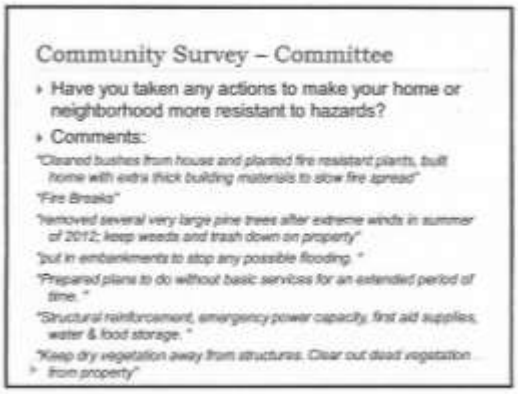

Community Survey – Committee
Do you have flood insurance, if required, through a National Flood Insurance Program (NFIP) Carrier?
3%
67%
I don't know
Yes
No

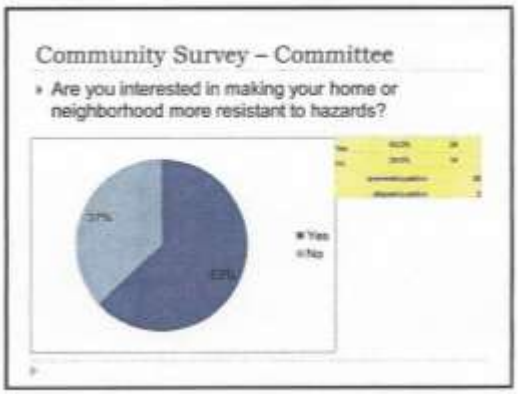

Community Survey – Committee
If "No", why not?
0%
0%

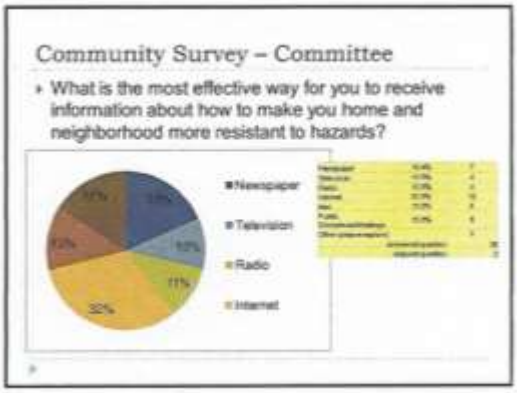

Community Survey – Committee
Do you carry hazard insurance on your home/property?
Yes
No

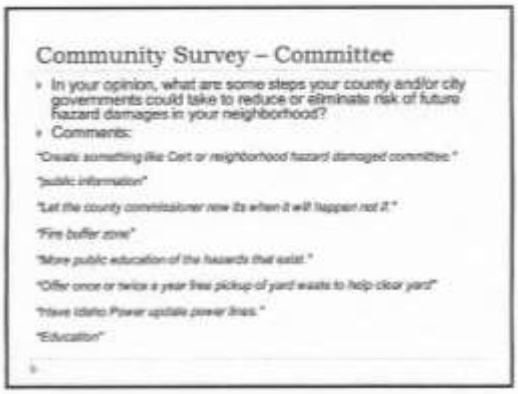

Community Survey – Committee
What hazards does your insurance cover?
120.0%
100.0%
80.0%
60.0%
40.0%
20.0%
0.0%
Fire
Earthquake
Wind
Landslide
Tornado
Land Subsidence
Volcanic Activity
Mudslide/Mud...
Land Rising or...
Other (please...


Community Survey – Committee
Have you taken any actions to make your home or neighborhood more resistant to hazards?
Yes
No


Community Survey – Committee
Have you taken any actions to make your home or neighborhood more resistant to hazards?
Comments:
"Cleaned bushes from house and planted fire resistant plants, built home with extra thick building materials to slow fire spread"
"Fire Breaks"
"removed several very large pine trees after extreme winds in summer of 2012; keep weeds and trash down on property"
"put in embankments to stop any possible flooding. "
"Prepared plans to do without basic services for an extended period of time. "
"Structural reinforcement, emergency power capacity, first aid supplies, water & food storage. "
"Keep dry vegetation away from structures. Clear out dead vegetation from property"


Community Survey – Committee
Are you interested in making your home or neighborhood more resistant to hazards?
Yes
No


Community Survey – Committee
What is the most effective way for you to receive information about how to make you home and neighborhood more resistant to hazards?
Newspaper
Television
Radio
Internet
11%
32%


Community Survey – Committee
In your opinion, what are some steps your county and/or city governments could take to reduce or eliminate risk of future hazard damages in your neighborhood?
Comments:
"Create something like Cert or neighborhood hazard damaged committee."
"public information"
"Let the county commissioner new its when it will happen not if."
"Fire buffer zone"
"More public education of the hazards that exist."
"Offer once or twice a year free pickup of yard waste to help clear yard"
"Have Idaho Power update power lines."
"Education"

Community Survey – Committee
In your opinion, what are some steps your county and/or city governments could take to reduce or eliminate risk of future hazard damages in your neighborhood?
Comments Continued:
"committees, (such as LEPC), and local governments get information to public through newspaper"
"I don't know that we can eliminate the threats identified but we can certainly prepare more effectively for them."
"Help the public to be more aware of Jackie Frey's work through the county. The First Baptist Church is interested in becoming involved."
"Most hazards are natural, so little can be done to eliminate."
"Workshops"
"go to the risk management meetings"

Community Survey – Committee

- In your opinion, what are some steps your county and/or city governments could take to reduce or eliminate risk of future hazard damages in your neighborhood?
- Comments Continued:

"Continued evaluation of the current engineering of our streets, drainages, and other infrastructures to see what impact these types of events have on our community. Then, if there are known areas of weakness or prior failures, take measures to correct those things for the future."

"Make provision to operate autonomously, with assumption all neighboring communities are similarly damaged."

"Regular communications - variety of media"

"They have done enough emergency planning"

"Being proactive in grants applications for mitigation measures, information to the public.

Community Survey – Committee

- Are there any suggestions that you have for projects that your county and/or city government could do to reduce the risk and/or damage caused by a hazard?
- Comments:

"public info"

"Make people aware and to prepare without causing a panic. We are very complacent."

"More property owner awareness."

"effective management, not just posturing"

"Education"

"Twin Falls needs to do the Map Your Neighborhood program and have CERT teams trained and available."

Community Survey – Committee

- Are there any suggestions that you have for projects that your county and/or city government could do to reduce the risk and/or damage caused by a hazard?
- Comments Continued:

"Traffic"

"Provide an emergency operations center with independent power, water, medical, security and communications capacity."

"Be sure to take a common-sense approach"

"Strengthen fire prevention and "firewise" zones around buildings - public and private."

"Be Prepared and stay informed"

"Not major ones. Our city seems to be in tune with improvements to assist in this process."

"No. Most concerns are natural disasters."

Community Survey – Committee

- Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?
- Comments:

"equipment and improvement of disaster equipment"

"We have to many homes that are not prepared for wild fire. We need more education in this area."

"Knowing where the shelters are and knowing about help signs/no help needed signs in the windows of homes and businesses."

"City needs a system for notify community of concerns"

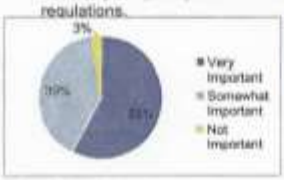
"Continued better education of the public."

"Fall-back "positions" for short and/or long term loss of local police, fire and medical infrastructure."

"Avoid hype over issues that are unlikely"

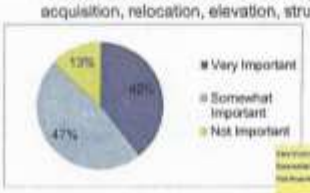
Community Survey – Committee

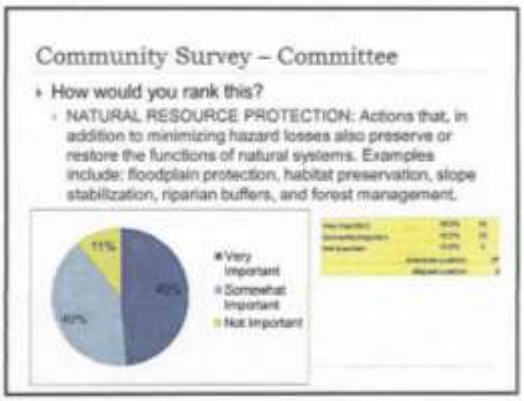
- How would you rank this?
  - PREVENTION: Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

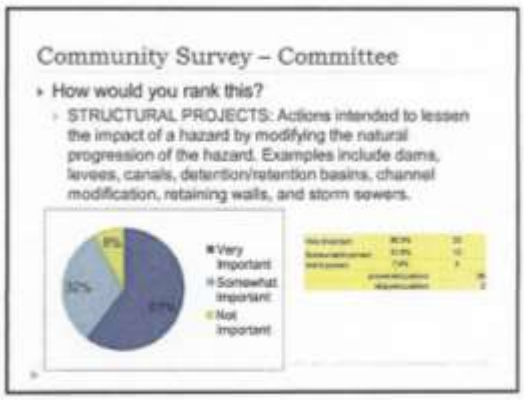


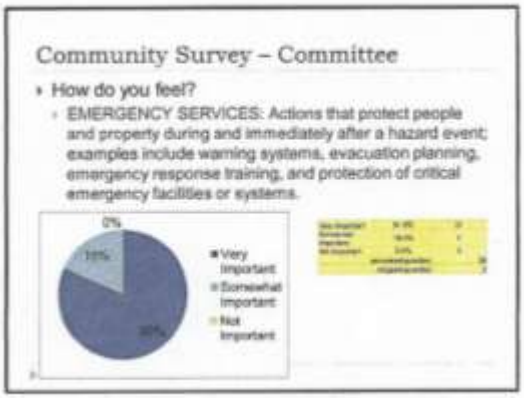
Community Survey – Committee

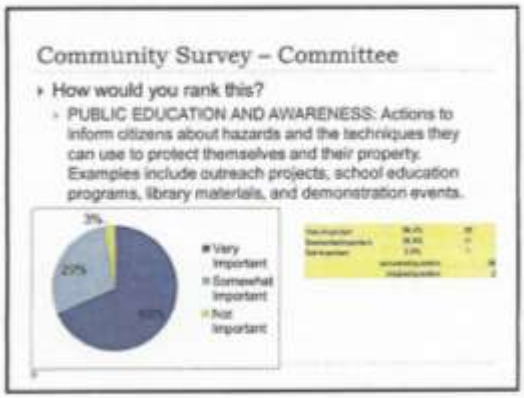
- How would you rank this?
  - PROPERTY PROTECTION: Actions involve modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and











Ranking Comparison 2007 to 2012

2007	2012
Prevention 33%	Prevention 58%
Property Protection 33%	Property Protection 40%
Structural Project 48%	Structural Project 60.%5
Natural Resource Protection 33%	Natural Resource Protection 49%
Emergency Services 81%	Emergency Services 82%
Public Education and Awareness 81%	Public Education and Awareness 68%

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES January 9, 2013

Attendance:

Jackie Frey	Gary W. Davis	Trish Heat
Georgia Ford	Cathi Leeming	Nate Sylvester
Terry Kramer	Tim Miller	Brian Cunningham
Nick Wood	Jason Desler	Chuck Garner
Roger Hinton	Dan Olmstead	Ted Wasko
Eddie Patterson	Carl Voigt	Randy Sabin
Melva Heinrich	Jennifer Rowe	

Presentation:

Jackie introduced Randy Sabin, Chobani Security Supervisor, who addressed the Emergency Action/Evacuation Plans for the facility. Jackie gave an update on the All Hazard Mitigation Plan and encouraged everyone to take or invite others to do the online survey which addresses the "perception of hazards" in the County at: https://www.surveymonkey.com/s/TwinFallsSurvey. This information will help improve coordination of risk reduction activities in the County.

The following items were addressed by Randy:

- The plan addresses chemical, fire, medical, weather issues, explosions and earthquake
- There are three assembly areas for the employees in case of an incident: the north end which is the milk receiving area, the temporary trailers in the front of the facility, and at the cold shipping area in the back of the plant
- Two main entrances for employees and trucks
- The role of the IC at the facility would be managed by Valerie Waterland or Randy until relieved by a higher trained authority
- Supervisors act as evacuation coordinators, are responsible for head counts, and report to the EHS manager or security supervisor
- The Alarm Notification System is managed through the Fire Control Panel; a second panel will be installed in the future
- The area that stores hazardous materials: Acids, Anhydrous Ammonia is in a detached area
- Chobani is working with the local first responding agencies, at this time Rock Creek Fire has done a walk-through of the facility; Magic Valley Ambulance and Twin Falls Fire are being scheduled
- The plans to construct a permanent lobby will begin the end of January

Jackie introduced the second presenter, Trish Heath, RN, BSN, Emergency Management at St. Luke's Magic Valley. Trish addressed the NOBLE Training that she attended in Aniston, Alabama.

The following items were addressed by Trish:

- In September and December 2012, 17 individuals from SL Magic Valley, SL Jerome, SL Wood River, and the South Central Public Health Department attended hands on disaster

training at the FEMA training center in Anniston, Alabama. Trainings provided the healthcare emergency receiver with an understanding of the relationship between a Hospital Incident Command System (HICS), a scene Incident Command System (ICS), and county Emergency Operations Centers (EOC)

- 9 staff (8 from MV and 1 from WR) attended the 4 day **HERT** (Hospital Emergency Response Training for Mass Casualty Incidents) course. The course focused on chemical, biological, and radiological decontamination and patient medical treatment while in Haz Mat suits
- 8 staff (MV, Jerome, and WR) and the South Central Public Health representative attended the **HCL** (Healthcare Leadership for All-Hazards Incidents) course. The course focused on the dynamics involved in the decision making processes during an all-hazards disaster involving mass casualties
- Training is conducted at the former Noble Army Hospital, the only hospital facility dedicated to training healthcare personnel. Although not currently active, the facility could be converted into a functioning hospital within several hours. This allows for realistic training without the barrier of having "real" patients in the midst of the training
- Most of the expense of this training is free to the hospital. The Dept. of Homeland Security arranges and pays for airfare, lodging (on site), meals (on site) and ground transportation. The expense not covered is the employee's education salary

Upcoming Events/Information/Classes:

Please note that a number of classes dealing with a wide range of subject matter are being offered around the state. To review the course calendar go to www.idahoprepares.com. Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov/training

Agency Reports:

- Trish Heath, St. Luke's Magic Valley discussed the plans to include active shooter in the hospital's Emergency Management Plan. Trish also addressed the new Quick Care Medical Plaza at 775 Pole Line Road West, Suite 103. Use the Occupational Health entrance and the office will be open from 9-7 Monday thru Friday and 9-4 on Saturday and Sunday. For more information call the office at (208) 814-8375.
- Terry Kramer reported that the County will begin moving to County West on April 1st.
- Ted Wasko, Kimberly School District reported that the district had completed the update to the School Emergency Operations Plan.
- Dan Olmstead, Idaho Power reported that they have had very few issues on the electrical system with the current cold snap. The decision to open up the "Storm Room" to support call volume in the Wood River, Mini Cassia, and areas in between during severe weather is successfully being done.
- Nick Wood, Williams Pipeline addressed the facility modifications to the pipeline that were done in 2012, in 2013 they will continue to do the same. Nick stated their desire to continue to attend the LEPC meetings and work with the first responding agencies will be a priority.
- Tim Miller, Twin Falls Sheriff's Office reported that their department and Twin Falls City Police attended the "Security in Churches and Houses of Worship" training in Boise.

- Carl Voigt, Twin Falls School District, reported that they are co-sponsoring a presentation on "Mass Slaying" with the Twin Falls Sheriff's Office and Twin Falls Police Department on February 5th, 2013 from 7-9 p.m. at the Roper Auditorium. Carl also discussed the ADHOC Committee to include the Twin Falls Police, Sheriff's Office, Emergency Management and school district staff to address the revision to their school Emergency Operations Plan.
- Jennifer Rowe, City of Kimberly reported on the December 12th, 2012 groundbreaking for the new Family Health Services; projected opening of the clinic is planned for early June. A part-time clinic is currently open at the corner of Emerald and Center Street.
- Roger Hinton, American Red Cross discussed his recent two week trip back to New Jersey to support recovery issues from Hurricane Sandy; locally there has been no activity.
- Jason Desler, Conagra/Lamb Weston, reported on the annual Ammonia Safety Training Institute First Responder IC training in February, anticipating participation by the ConAgra/Lamb Weston Twin Falls Confined Space Rescue Team in high-angle rescue training at the Southern Idaho Fire Academy also in February, and the drill on their facility Evacuation Plan occurred in late October.

Meeting Adjourned

Next Meeting

The next Twin Falls County Local Emergency Planning Committee meeting will be held on February 12th, 2013 at 1:30 in the basement conference of the Twin Falls Clinic 660 Shoshone Street East.

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES February 12th, 2013

Attendance:

Jackie Frey	Gary W. Davis	Trish Heath
Georgia Ford	Garth Mickelson	Rick Fawcett
Terry Kramer	Tim Miller	Mark Korsen
Brent Blamires	Kali Sherrell	Chuck Garner
Cathi Leeming	Jack Barnes	Larry Ford
Eddie Patterson	Carl Voigt	Kirk Tubbs
Melva Heinrich	Jennifer Rowe	Eric Zechmann
Suzy Cavenaugh	Ryan Baum	Ben Dunbar
Angie Durham	Tami Pearson	John Hathaway
Jim Maxson	Gilbert Schmidt	Zan Mugleston
Daron Brown	Lori Stewart	Shana Fawcett
Tim Reeves		

Presentation:

Jackie introduced Suzy Cavenaugh, Environmental Planning Group (EPG) presented a power point presentation on the Liquefaction study of Twin Falls County, this information will be included in the revision of the Twin Falls County All Hazard Mitigation Plan. Also, Rick Fawcett, Whisper Mountain Inc., gave a brief update on the continued work he is doing on the revision to the AHMP. Rick addressed the AHMP and how the EPG information will be included in the plan, the results, threat to the County, and areas of impact, and the inclusion of a new subsection in the plan listing Vector Bourne Disease.

Suzy's Report addressed the following:

14. The Mapping Process
15. How to Mitigate Potential Hazards
16. The estimation of how likely an earthquake would happen.
17. Categorization: Age, Soil texture, Depositional Environment
18. The ATE Classification
19. The ATE Score
20. 95% percent of the county is classed as low liquefaction, with 1% moderate, and 1% less than 1.
21. The NEHRP – National Earthquake Hazard Reduction Program
22. The NEHRP Site Classes
23. The NEHRP Site Class Maps
24. The Designating NEHRP Site Classes
25. The Topographic Sloped Based Method
26. The Site Class (threat ranking)

In closing, the potential for failure under seismic load came in low, with the greatest area of impact in the city because the soil is a stiffer; has a higher potential for damage from shaking,

but it was found that there were no active faults in the County, and the probability of damage from an earthquake event in Twin Falls County is extremely low.

Upcoming Events/Information/Classes:

Please note that a number of classes dealing with a wide range of subject matter are being offered around the State. To review the course calendar go to www.idahoprepares.com. Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov/training

Please Note: On February 26th, 2013 at 1:00 in the Wilson Theatre in Rupert the South Central Public Health District will hold a community forum which will cover how influenza and other communicable disease outbreaks affect the community. It will also address how people can protect their businesses and loved ones. Everyone is invited to attend.

Agency Reports:

- Trish Heath, St. Luke's Magic Valley reported on the following:
  1. We conducted an Active Shooter drill on 1/14/13 with TFPD participation. The drill was a very eye-opening experience. We learned our staff is very committed to being kind to people – at the risk of their own lives. Now pushing the concept of Run-Hide-Fight to our staff. This is a campaign being used by FEMA/Homeland Security for education.
  2. We conducted an Evacuation drill in our In Patient Rehab Unit. Our staff performed very well. We were able to utilize real patients as well as MRC volunteers in the evacuation process.
  3. We are sending 10 employees from all 3 local sites to Anniston, Alabama in May for HERT and HCL training.

- Jennifer Rowe, City of Kimberly reported that they have a new City Administrator/Treasurer, Larry Hall who began work yesterday.
- Tami Pearson, South Central Public Health District reported that the department is planning, training, and refining processes for the 2013 Medical Countermeasure Full Scale Exercise. May 1, 2013 will be the POD portion of the exercise. If anyone would like to come to Canyon Ridge High School between 2:00 and 4:00 p.m. to participate as a volunteer to receive "medication" it would be very much appreciated.

Meeting Adjourned

Next Meeting

The next Twin Falls County Local Emergency Planning Committee meeting will be held on March 12th, 2013 at 1:30 in the basement conference of the Twin Falls Clinic 660 Shoshone Street East. Presentation pending.

*Please note that Cali Sherrell, Weed Bureau and Rick Fawcett, Whisper Mountain Inc. will be on the agenda to do presentations in April.

Twin Falls Multi-Jurisdiction All Hazard Mitigation Plan Status Report

February 12, 2012
Rick Fawcett

Risk Assessment

Impact

How Often

Risk Ranking

	Low	Medium	High
Low			
Medium			
High			

Most Urgent

Revised Approach

Historical Occurrence - Number of historical occurrences within a community

Rating	Adjective Description	Number of Historical Occurrences (within 50 years)
1	Low	5 or few occurrences
2	Medium	6-9 occurrences
3	High	More than 10 occurrences

Probability - Likelihood of the hazard occurrence, sometimes without regard to hazard history

Rating	Likelihood	Frequency of Occurrence
1	Rare	Probability of occurrence = one chance in the next 50+ years
2	Low	Probability of occurrence = at least one chance in the next 25-50 years
3	Medium	Probability of occurrence = at least one chance in the next 10-25 years
4	High	Probability of occurrence = at least one chance in the next 1 to 10 years

Revised Approach

Vulnerability - Percentage of people and property that would be affected by the hazard event.

Rating	Magnitude	Percentage of People and Property Affected
1	Negligible	Less than 5%
2	Limited	5% to 10%
3	Critical	10% to 25%
4	Catastrophic	More than 25%

Spatial Extent - The geographic area of the community that might be impacted.

Rating	Magnitude	Percentage of jurisdiction affected
1	Negligible	Less than 10%
2	Limited	10% to 25%
3	Critical	25% to 50%
4	Catastrophic	More than 50%

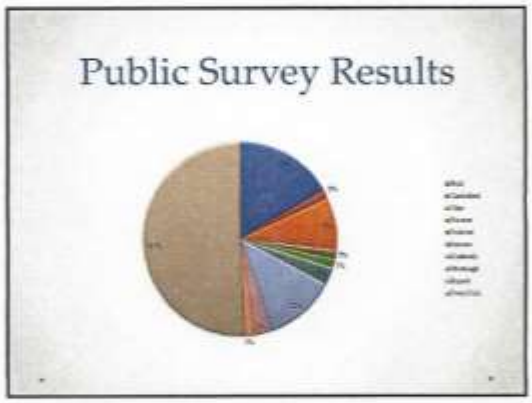
Revised Approach

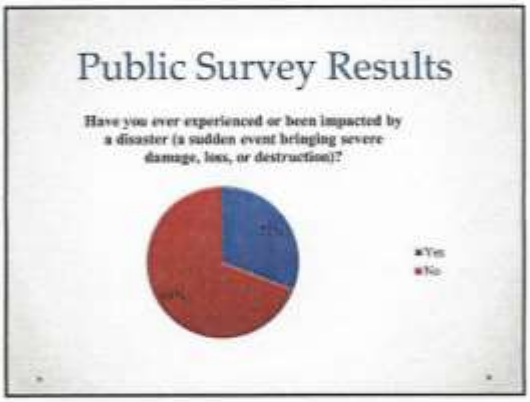
Magnitude (Severity of Impact) - Assessment of severity in terms of fatalities, injuries, property/economic losses

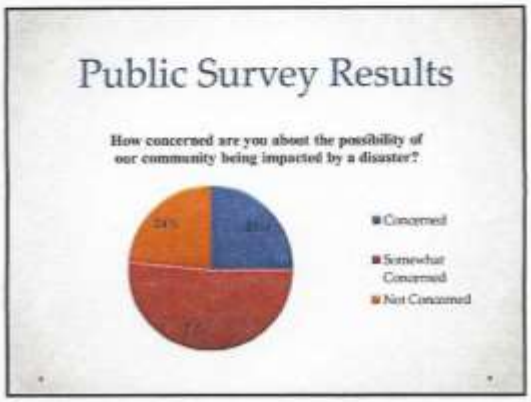
Rating	Likelihood	Characteristics
1	Negligible	Few if any injuries or illness Minor quality of life lost with little or no property damage Brief interruption of facilities/services less than 4 hrs
2	Limited	Minor injuries and illness Minor or short term property damage that does not threaten structural stability Loss of essential facilities and services for 4 to 24 hours
3	Critical	Serious injury and illness Major/ long term property damage threatens structural stability Shutdown of essential facilities and services for 24 to 72 hours
4	Catastrophic	Multiple deaths Property destroyed or damaged beyond repair Complete shutdown of essential facilities/services for 5+ days.

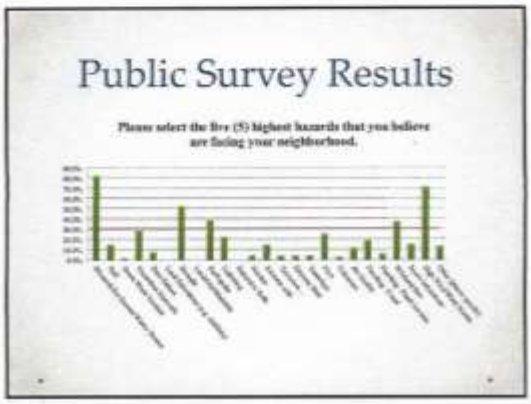
Risk Ranking Examples

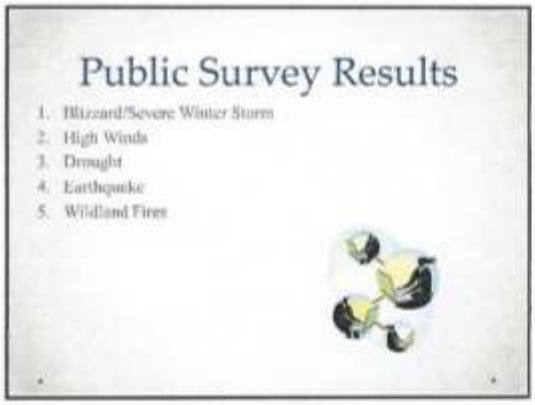
Comparison
(Worst Care Events)


Public Survey Results


Public Survey Results
Have you ever experienced or been impacted by a disaster (a sudden event bringing severe damage, loss, or destruction)?
Yes
No


Public Survey Results
How concerned are you about the possibility of our community being impacted by a disaster?
Concerned
Somewhat Concerned
Not Concerned


Public Survey Results
Please select the five (5) highest hazards that you believe are facing your neighborhood.


Public Survey Results
1. Blizzard/Severe Winter Storm
2. High Winds
3. Drought
4. Earthquake
5. Wildland Fires

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES April 9th, 2013

Attendance:

Jackie Frey	Gary W. Davis	Rick Fawcett
Georgia Ford	Ted Wasko	Shana Fawcett
Terry Kramer	Kali Sherrill	Jim Maxson
Brent Blamires	Mark Korsen	Nick Wood
Ben Dunbar	Clay Gorbett	Jenny Baumer
Kirk Tubbs	Chuck Garner	Cathi Leeming
Lori Stewart	Roger Hinton	Major Ed Patterson
Daron Brown	Tim Miller	Jim Ellington

Introductions/Presentation:

Introductions were done and Jackie introduced Kali Sherrell, Twin Falls County Weed Bureau Superviso,r and Rick Fawcett, Whisper Mountain Contracting.

Kali addressed the following items:

- The Invasive Species Boat Check Station which was opened on February 15th, 2013 to inspect boats for the Zebra and Quagga Mussel on all water craft. As of yesterday 1400 inspections statewide yeilded 4 boats contaminated with muscles; these boats were headed to Canada.
- The weed spraying program in the County; the department treats all noxious weeds on the state list found in Twin Falls County and Cali addressed some of the newest invaders to include: Water Hyacinth, Yellow Flag Iris, Hounds Tongue, White Bryony, Rush Skeleton Weed and Poison Hemlock. The Noxious Weed Control Department covers over 1.2 million acres in the County, divided into 7 project areas.
- Cali is currently working on an education trailer that will be used cooperatively in the region to educate the public on noxious weed control and fire wise plants.
- For more information on noxious weeds go to: www.twinfallscounty.org or http://www.idahoweedawareness.org

Rick addressed the following items:

- The ranking approach in the plan; the data and chart for each of the following threats were reviewed and discussed by the LEPC members: Drought, Extreme Heat, Extreme Cold, Severe Winter Storm, Hail, Tornado, Straight Line Wind, Flash Flood, Flooding Canal Failure, Earthquake, Wildfire, Burrowing Rodents, Vector Borne Disease, and Hazardous Materials.
- The highest threat to Twin Falls County is straight line wind.
- The Risk Ranking from 2008 and the changes since that time.
- The Public Risk Ranking
- The 2013 Risk Ranking
- The Project Scoring Spreadsheet

- Project Priority Ranking

Please Note: Within the next few weeks, efforts will be made to visit each of the 8 cities to have their elected officials review the draft plan and address threats in their communities.

Agency Reports:

- Mark Korsen, Buhl Fire Chief reported on their new ambulance and invited everyone to come and see it.
- Major Ed Patterson addressed the COAD-Community Organization Active in Disasters meetings which are held bi-monthly on the first Monday at 12:00 in the Twin Falls Senior Center.

Upcoming Events/Information/Classes:

Please note that a number of classes dealing with a wide range of subject matter are being offered around the State. To review the course calendar go to www.idahoprepares.com. Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov/training

FYI: Twin Falls County will be hosting a CERT Rodeo for all CERT trained volunteers on May 18th, 2013 from 9-1 at the Rock Creek Fire Department. Please contact Jackie at jfrey@co.twin-falls.id.us if you plan to attend. Neil Christensen, Allstate, will sponsor the lunch.

Meeting Adjourned

Next Meeting

The next Twin Falls County Local Emergency Planning Committee meeting will be held on May 14th, 2013 at 1:30 in the new conference room at County West 650 Addison Avenue West. To access the conference room go in the southwest entrance near the rose garden, immediately turn right and walk down the hall; you will see signs posted for the meeting.

Our guest speaker will be Jay Breidenbach, Senior Hydrologist for the Boise National Weather Service who will do a Spring Outlook.

Twin Falls Multi-Jurisdiction All Hazard Mitigation Risk Analysis

April 9, 2013
Rick Fowcett

Ranking Approach

Historical Occurrence - Number of historical occurrences within a community

Rating	Adjective Description	Number of Historical Occurrences (within 50 years)
1	Low	5 or few occurrences
2	Medium	6-9 occurrences
3	High	More than 10 occurrences

Probability - Likelihood of the hazard occurrence, sometimes without regard to hazard history

Rating	Likelihood	Frequency of Occurrence
1	Rare	Probability of occurrence = one chance in the next 50+ years
2	Low	Probability of occurrence = at least one chance in the next 25-50 years
3	Medium	Probability of occurrence = at least one chance in the next 10-25 years
4	High	Probability of occurrence = at least one chance in the next 1 to 10 years

Ranking Approach

Vulnerability - Percentage of people and property that would be affected by the hazard event

Rating	Magnitude	Percentage of People and Property Affected
1	Negligible	Less than 5%
2	Limited	5% to 10%
3	Critical	10% to 25%
4	Catastrophic	More than 25%

Spatial Extent - The geographic area of the community that might be impacted.

Rating	Magnitude	Percentage of jurisdiction affected
1	Negligible	Less than 10%
2	Limited	10% to 25%
3	Critical	25% to 50%
4	Catastrophic	More than 50%

Ranking Approach

Magnitude (Severity of Impact) - Assessment of severity in terms of fatalities, injuries, property/economic losses

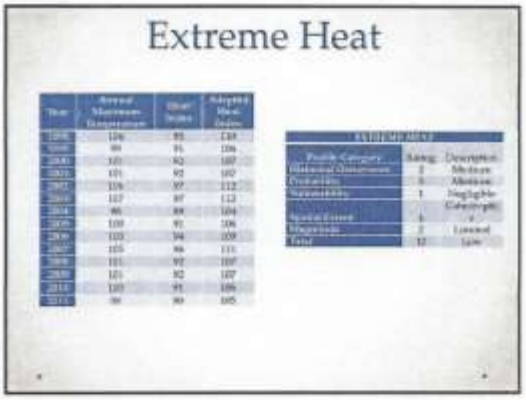
Rating	Likelihood	Characteristics
1	Negligible	Few if any injuries or illness Minor quality of life lost with little or no property damage Brief interruption of facilities/services less than 4 hrs
2	Limited	Minor injuries and illness Minor or short term property damage that does not threaten structural stability Loss of essential facilities and services for 4 to 24 hours
3	Critical	Serious injury and illness Major long term property damage, threatens structural stability Shutdown of essential facilities and services for 24 to 72 hours
4	Catastrophic	Multiple deaths Property destroyed or damaged beyond repair Complete shutdown of essential facilities/services for 3+ days

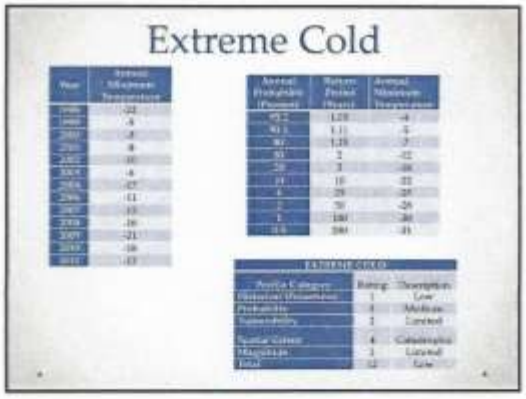
Drought

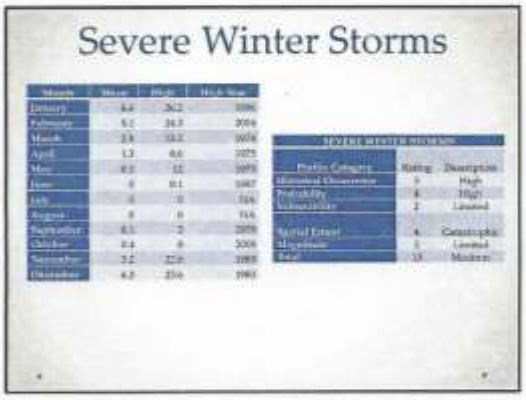
Drought

Drought Declarations
- 1979
- 1988
- 1991
- 1992
- 2001
- 2004
- 2008

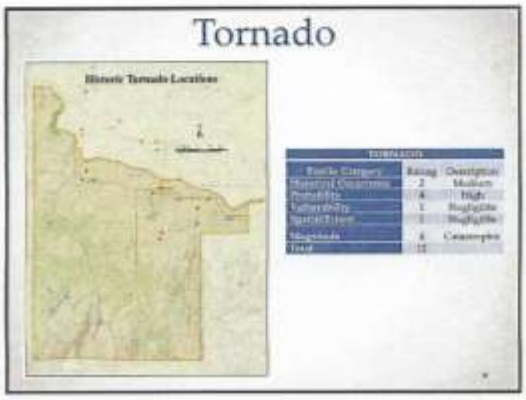
Profile Category	Rating	Description
Historical Occurrences	3	High
Probability	4	High
Vulnerability	4	Catastrophic
Spatial Extent	4	Catastrophic
Magnitude	1	Negligible
Total	16	Medium


Extreme Heat


Extreme Cold


Severe Winter Storms

Hail

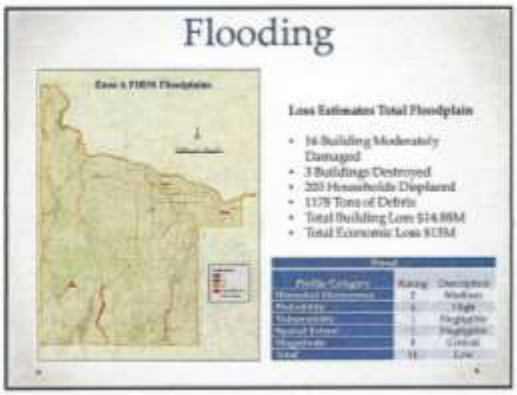

Tornado

Straight Line Wind

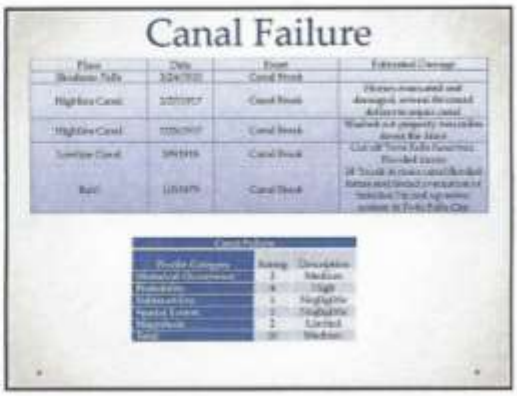
Straight Line Wind

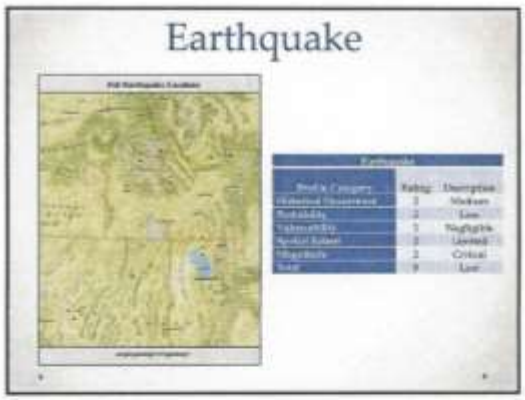
Flash Flood
Loss Estimates in High Potential Areas

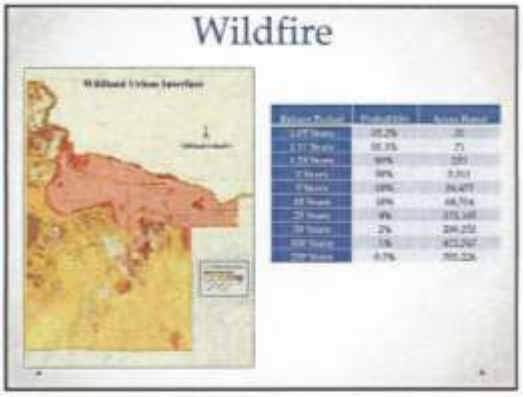
Flash Flood

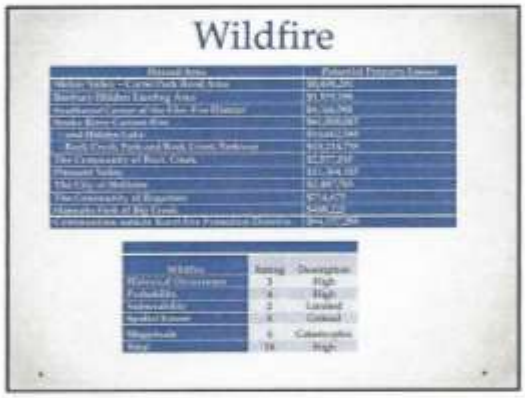

Flooding
Loss Estimates Total Floodplain
• 16 Building Moderately Damaged
• 3 Buildings Destroyed
• 203 Households Displaced
• 1178 Tons of Debris
• Total Building Loss $14.88M
• Total Economic Loss $13M

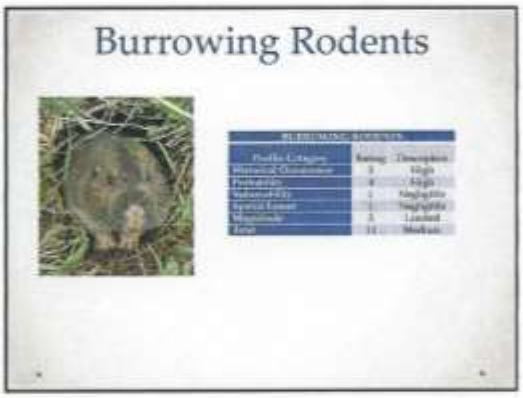
Canal Failure

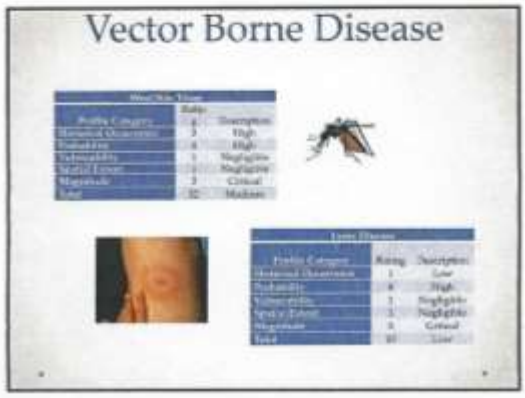

Canal Failure

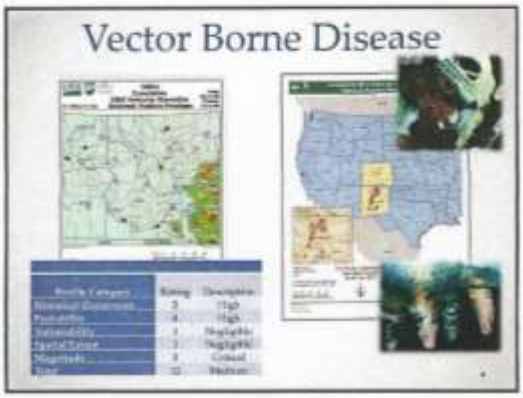

Earthquake

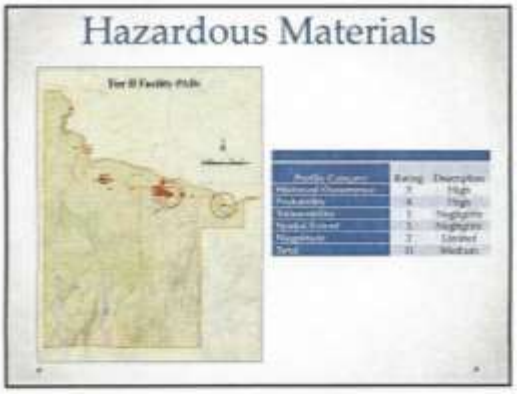

Wildfire


Wildfire

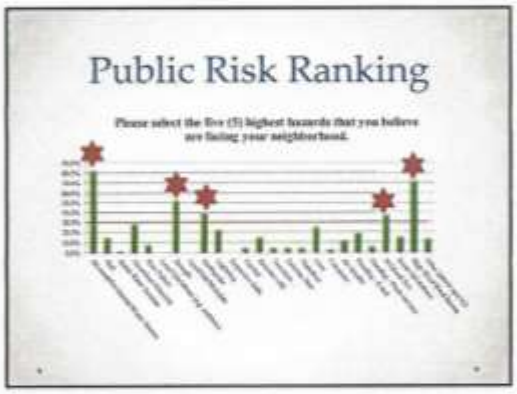

Burrowing Rodents


Vector Borne Disease

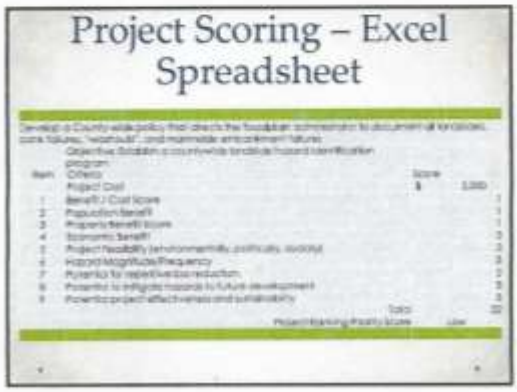

Vector Borne Disease

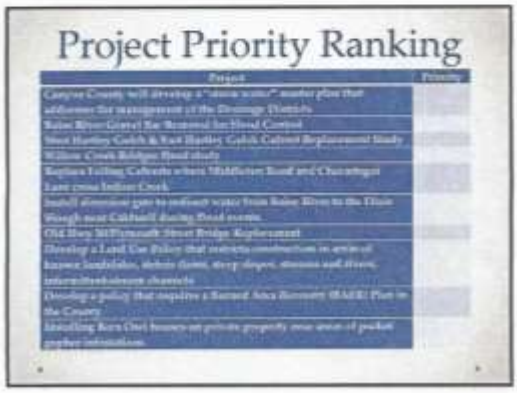

Hazardous Materials

Risk Ranking 2008


Public Risk Ranking
Please select the five (5) highest hazards that you believe are facing your neighborhood.

2013 Risk Ranking


Project Scoring – Excel Spreadsheet


Project Priority Ranking

TWIN FALLS COUNTY LOCAL EMERGENCY PLANNING COMMITTEE MEETING MINUTES May 14th, 2013

Attendance:

Jackie Frey	Gary W. Davis	Rick Fawcett
Terry Fletcher	Dean Etherington	Shana Fawcett
Terry Kramer	Eric Zechman	Jim Maxson
Rob Storm	Eric Foster	Carl Voight
Denise Bradbury	Clay Gorbett	Ben Dunbar
Jay Breidenbach	Ken High	Angie Durham
Troy Lindquist	Chuck Garner	Patricia Heath
Brian Cunningham	Dennis Chambers	

Introductions/Presentation:

Introductions were done and Jackie introduced Jay Breidenbach, Senior Hydrologist, and Troy Lindquist from the Boise National Weather Service who did a power point presentation on current water issues "Spring Outlook" and Flash Flood Safety. Also, Rick Fawcett, Whisper Mountain, Inc. did an update on the County All Hazard Mitigation Plan.

The following items were addressed by Jay:

- The current storm/weather outlook
- The moisture levels, snowpack and 7 day forecast
- The Fire Weather Forecast Zones
- NWS Decision Support Services for Wild land Fire Management Activities to include
    1. Fire Weather Planning Forecasts
    2. Fire Weather Watches
    3. Red Flag Warnings
    4. Spot Forecasts
    5. IMET Support
    6. Long Range Outlooks for summer 2013 and Potential impacts on Southern Idaho Forest and Range Land.
    7. Late Summer Flash Flood Threat
    8. Public Forecast areas
    9. Spot Forecast for Wildfires, Prescribed Fires, and Hazmat Incidents

In closing, Jay stated that we have an above normal threat of significant wild land fire in much of Central and Southwest Idaho this summer, and the severity of the fire season is correlated with the spring snow pack.

Troy reported on the following:

- Flash Flood Safety
- The YouTube video at http://ow.ly/kxbwr on flash flood safety he narrated
- For weather information go to www.weather.gov and http://www.wrh.gov/boi

- The challenges of Flood Forecasting during wildfire: warning, lead time, perception, impacts, and mapping
- "Post Wildfire Flood Forecasting Challenges"
- 2012 Idaho Fires
- 2003 Hot Creek Fire
- The Springs Fire Burn Scar north of Boise
- The NWS webpage Hydrology Report

Rick reported on the following:

- Participating Jurisdictions
- The Hazards Analyzed
- The Ranking Criteria
- The Hazard Ranking for the County
- The Ranking Changes from 2008
- The Public Perception
- The Final Steps needed to adopt the plan by resolution with the Commissioners

Agency Reports:

- Jackie reported that she is currently working with Rick Fawcett, Whisper Mountain Inc. on presentations to the 8 city councils and County Commissioners on the All Hazard Mitigation Plan.
- Denise Bradbury, Magic Valley Rehabilitation Services/Magic Valley Service Providers introduced herself and her desire to participate with the LEPC.
- Trish Heath, St. Luke's Magic Valley reported on the 10 employees from Wood River, Twin Falls and Jerome who are in Anniston, Alabama for training, the code orange policy review that the hospital will be doing with Twin Falls Fire, and the new de-con tent they will be receiving from "state over match funding" that Jackie applied for through the Bureau of Homeland security.
- Commissioner Kramer reported that Conference Room A (where the LEPC meetings will be held) in County West will be the final home for the Emergency Operations Center for the County. Terry stated the room is easy accessible, will support the wiring needed for the equipment, and that the hardware (radios, Smart Board, Tanberg, VOIP Phones, and Thin Client) will be moved out of the clinic by the middle of June.
- RACES/ARES, Dean Etherington introduced Terry Fletcher who will be the new RACES/ARES liaison for Twin Falls County. Dean also addressed work being done to posture the repeaters with access at the Jerome and Hansen Butte and the work being done with the State on the HF Radio that resides within the County.
- Angie Durham, South Central Public Health reported on the recent Full Scale Exercise held at Canyon Ridge High School to support a POD. The exercise went very well, and Angie wanted to thank Carl Voight, Canyon Ridge High School, Jim Maxson, Gary Davis, and Jackie for being evaluators. Angie also shared the department's appreciation to Chobani and Chick –fil-A for their donations of yogurt and free sandwich cards to those participating.

- Ben Dunbar, Glanbia, reported on their recent security upgrade for all facilities, and the completion of the new Corporate Building and Cheese Innovation Center planned for the middle of July.

Upcoming Events/Information/Classes:

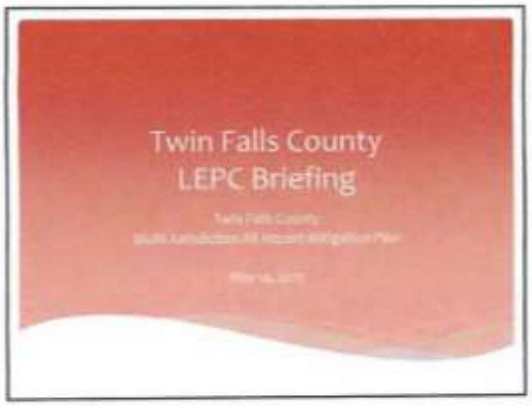
Please note that a number of classes dealing with a wide range of subject matter are being offered around the State. To review the course calendar go to www.idahoprepares.com. Also, FEMA has a number of Independent Study courses that can be taken online at: www.fema.gov/training.

FYI: Twin Falls County will be hosting a CERT Rodeo for all CERT trained volunteers on May 18th, 2013 from 9-1 at the Rock Creek Fire Department. Please contact Jackie at jfrey@co.twin-falls.id.us if you plan to attend. Neil Christensen, Allstate, will sponsor the lunch.

Meeting Adjourned

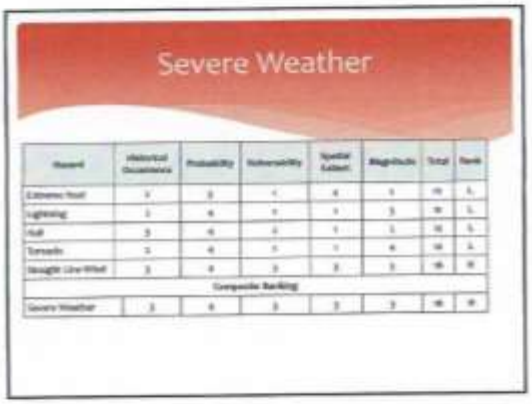
Next Meeting

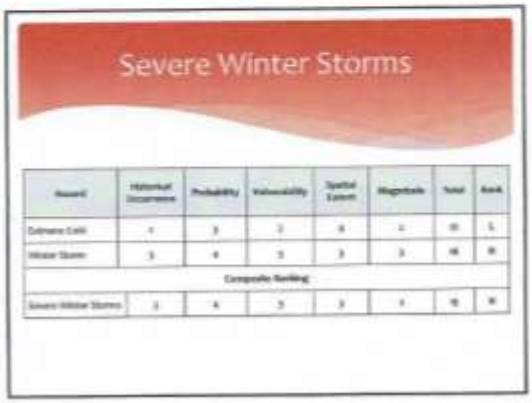
The next Twin Falls County Local Emergency Planning Committee meeting will be held on June 11th, 2013 at 1:30 in Conference Room A at County West 650 Addison Avenue West. To access the conference room go in the southwest entrance near the rose garden, walk down the hall, immediately turn right through the double doors, continue walking and the conference room is on your right; signs will be posted for the meeting. You can also come in from the northeast entrance where the revolving door is and head right. The meeting room is across from the old snack bar and gift shop.

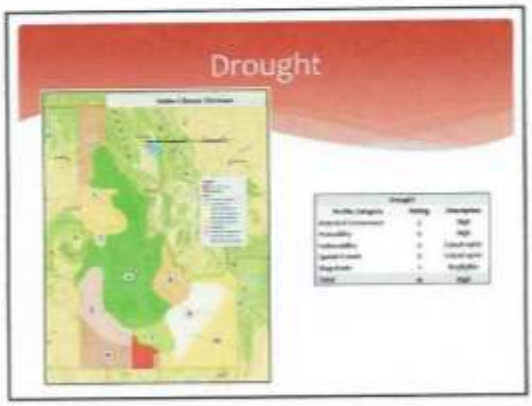

Twin Falls County
LEPC Briefing

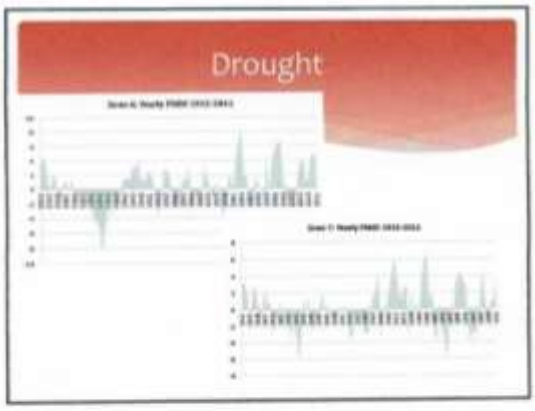
Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed


Severe Weather


Severe Winter Storms

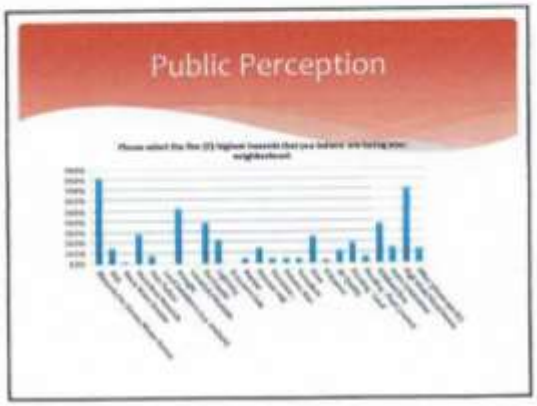

Drought


Drought

Ranking Criteria
Low
Median
High
Changed?

Hazard Ranking
Twin Falls County

Ranking Changes


Public Perception

Next Steps
Complete Elected Officials Briefing
Add and Prioritize Projects
Review Plan
Submit to BHS and FEMA for Approval
Adopt Plan by Resolution

City of Filer Elected Officials/Public Meeting

May 7, 2013

CITY OF FILER CITY COUNCIL AGENDA

THE FILER CITY COUNCIL WILL HOLD A PUBLIC HEARING & REGULAR CITY COUNCIL MEETING ON TUESDAY, MAY 7, 2013 AT 7:30 P.M. IN THE COUNCIL CHAMBERS.

1. Open the meeting and declaration of a quorum.

2. Amend the agenda, if necessary.

3. PUBLIC HEARING-to consider an Application for a Special Use Permit submitted by Tom Tillotson, to operate an automobile and truck repair shop at 908 Union Avenue, Filer, Idaho.

4. Special Use Permit Application submitted by Tom Tillotson, to operate an automobile and truck repair shop at 908 Union Avenue, Filer, Idaho.

5. Minutes Public Hearing & Regular City Council Meeting April 2, 2013 and Regular City Council Meeting April 16, 2013.

6. Treasurer's Report for the Month of March 2013 and the 2nd Quarter Ending March 21, 2013.

7. Bills for the Month of April 2013.

8. Citizens Input:

9. Correspondence:

10. Consent Agenda:

    Police Report Bud Sheridan/Tim Reeves

    Streets Report Bud Sheridan/Joe Baratti

    Fire Report Don Barkley/Joe Baratti

        a.) Fire Chief Position/Appointment

    Library Report Don Barkley

    Water Report Joe Baratti

    Sewer Report Joe Baratti

    Rec District Report

    P&Z Report Rick Dunn

11. Unfinished Business:

    a. RESOLUTION 600-a resolution establishing a pressurized irrigation flat rate.

    b. Fill vacancy on Council.

    c. Swearing in of newly appointed Council Member.

    d. Liaison appointments.

12. New Business:

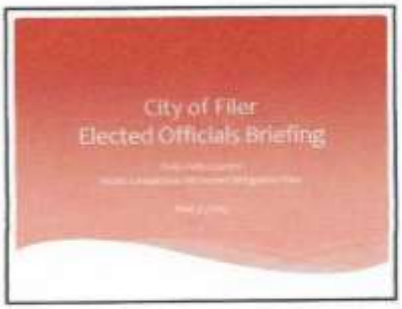
a. Jackie Frey, Twin Falls County Multi-Jurisdiction All Hazard Mitigation Plan revision.

b. Steve Tonks, Idaho State Transportation Department -future construction plans on Highway 30.

c.. Fireworks Permit Application -TNT Fireworks.

13. Adjourn the meeting.

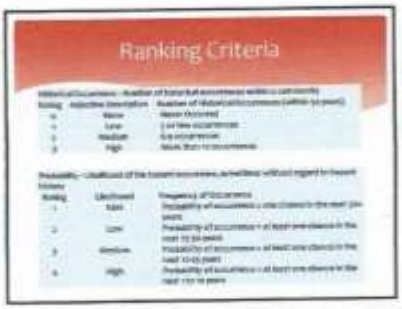
ANY PERSON NEEDING SPECIAL ACCOMMODATIONS TO PARTICIPATE IN THE ABOVE NOTICED MEETING, PLEASE CONTACT THE CITY OFFICE, 326-5000, AT LEAST TWO BUSINESS DAYS PRIOR TO THE MEETING.


City of Filer
Elected Officials Briefing

All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed


Ranking Criteria

Ranking Criteria

Ranking Criteria

Hazard Ranking
City of Filer

Next Steps
Add Projects
Review Plan
Adopt Plan by Resolution

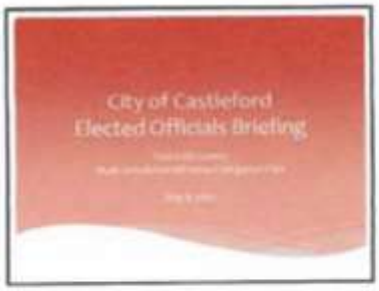
City of Castleford Elected Officials/Public Meeting
May 8, 2013

City of Castleford
City Council Meeting
May 8th, 2013
7:00 p.m.

Please note: The city council agenda format allows citizens to speak on each issue prior to the council's discussion. Speakers will be limited to 3 minutes of discussion for items not already listed on the agenda for consideration. Please turn off your electronic devices. Any person requesting to be placed on the agenda, or needing special accommodations to participate in the above noticed meeting should contact the City Clerk at City Hall, 475 Main St. or by telephone at 537-6544.

Agenda

1. Open the meeting
2. Minutes read for April 3rd 2013 Council Meeting
3. Twin Falls County Department of Emergency Services
4. Don Acheson-Riedesel Engineering
5. Rob Lanford-Rural Development
6. Kathy Uker-Region IV Development
7. Gonzalo Lopez-Mexican Food Truck Permit
8. City Clean-up Day
9. Other Business
   a. Irrigation Schedule
   b. Other?
10. Financial Statement
11. Past Dues
12. Adjourn meeting


City of Castleford
Elected Officials Briefing

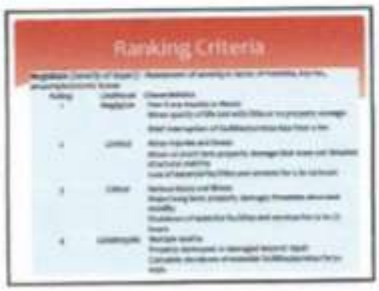
All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed

Ranking Criteria

Ranking Criteria


Ranking Criteria

Hazard Ranking
City of Castleford

Next Steps

City of Murtaugh Elected Officials/Public Meeting
May 9, 2013

AGENDA

MURTAUGH CITY COUNCIL MEETING
Murtaugh City Hall
106 4th St.
Murtaugh, ID 83344

THURSDAY, April May 9, 2013
Meeting 7:00 p.m.

1. CALL TO ORDER
   (Pledge of Allegiance led by Mrs. Kali Sherrill)

2. APPROVAL OF CONSENT CALENDAR

3. REPORTS:

   - From the Mayor
   - From Council Members
   - From Attorney Hollifield
   - From City Maintenance/Water & Sewer
   - From City Clerk

4. UNFINISHED BUSINESS

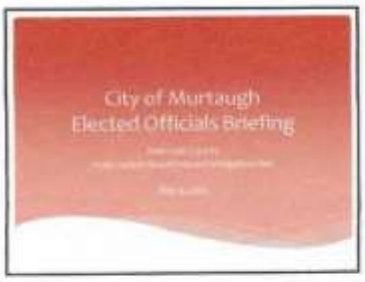
5. NEW BUSINESS

   a. "All Hazard Mitigation Plan- Risk Ranking for the City of Murtaugh" – visitor Jackie Fry
   b. Land Use Ordinance
   c. P & Z

6. PUBLIC COMMENTS-

7. EXECUTIVE SESSION

8. ADJOURNMENT


City of Murtaugh
Elected Officials Briefing

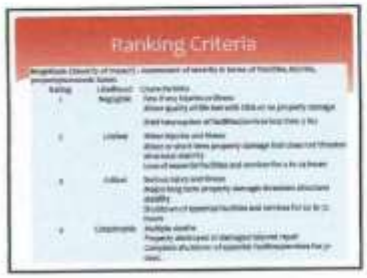
All Hazard Mitigation Plan

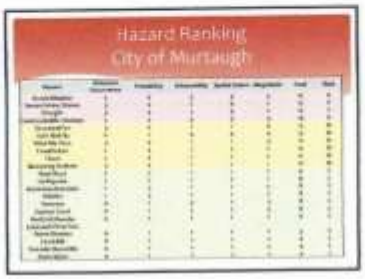
Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed

Ranking Criteria

Ranking Criteria


Ranking Criteria


Hazard Ranking
City of Murtaugh

Next Steps
Add Projects
Review Plan
Adopt Plan by Resolution

City of Hansen Elected Officials/Public Meeting

May 10, 2013

CITY OF HANSEN
COUNCIL MEETING AGENDA
May 13, 2013

Regular Meeting: 7:00pm

1. Amend Agenda

2. Consent Calendar
   A. Approve minutes from previous meetings
   B. Approve payables for May

3. Old Business
   A. Veterans Dinner
   B.

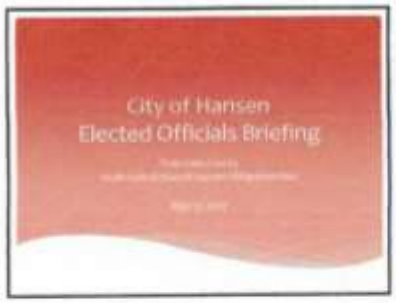
4. Reports – Staff Input – Council Items
   A. Police Department
   B. Fire Department
   C. Water/Waste Water/O.M.I.
   D. Department Reports

5. New Business
   A. T.F. County All Hazard Mitigation Plan-Risk Ranking for City of Hansen
   B. Pre-Engineering Approval
   C.

6. Public Comments

7. Executive Session if necessary as per Id. Code 67-2345

Adjourn
Next regular meeting Jun 10, 2013 at 7:00pm

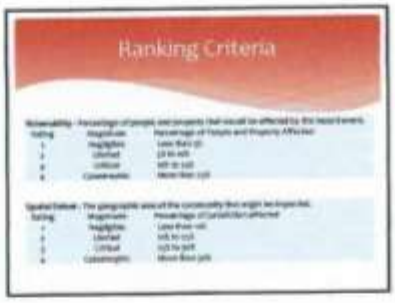

City of Hansen
Elected Officials Briefing

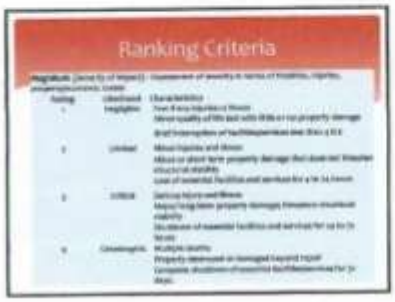
All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed

Ranking Criteria


Ranking Criteria


Ranking Criteria

Hazard Ranking
City of Hansen

Next Steps
Add Projects
Review Plan
Adopt Plan by Resolution

City of Twin Falls Elected Officials/Public Meeting
May 10, 2013

COUNCIL MEMBERS:

SHAWN BARIGAR	DON HALL *Vice Mayor*	SUZANNE HAWKINS	GREGORY LANTING *Mayor*	JIM MUNN, JR.	REBECCA MILLS SOJKA	CHRIS TALKINGTON

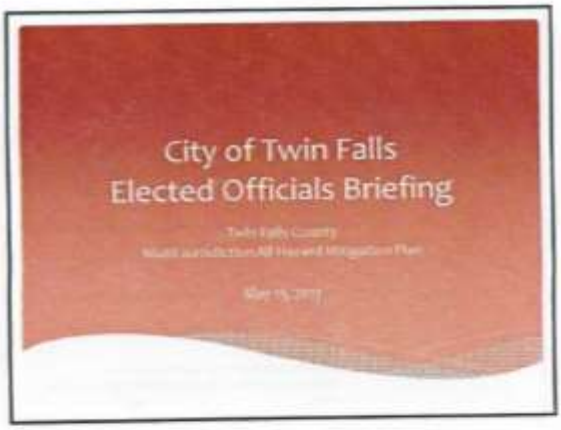
AGENDA
Meeting of the Twin Falls City Council
Monday, May 13, 2013
City Council Chambers
305 3rd Avenue East -Twin Falls, Idaho

5:00 P.M.

PLEDGE OF ALLEGIANCE TO THE FLAG
CONFIRMATION OF QUORUM
INTRODUCTION OF STAFF
CONSIDERATION OF THE AMENDMENTS TO THE AGENDA:
PROCLAMATIONS: None

AGENDA ITEMS	Purpose	By:
I. **CONSENT CALENDAR:**	Action	Staff Report
1. Consideration of a request to approve the accounts payable for May 7 – May 13, 2013.		Sharon Bryan
2. Consideration of a request from Robin Dober and the Twin Falls Tonight Committee to approve the 15th annual weekly Twin Falls Tonight Concerts commencing on June 19, 2013, and concluding August 21, 2013.		Dennis Pullin
II. **ITEMS FOR CONSIDERATION:**		
1. Presentation of a Certificate of Appreciation to Christina Bruce, President of the Twin Falls City Youth Advisory Council.	Presentation	Rebecca Mills Sojka/ Suzanne Hawkins
2. Presentation of the Multi-Jurisdiction All Hazard Mitigation Plan by Rick Fawcett, President of Whisper Mountain Professional Services.	Presentation	Jackie Frey/TFC Dept. of Emergency Services
3. Consideration of a request of Thomas and Heather Wangeman to waive the non-conforming building expansion permit process to allow an expansion of an existing non-conforming residence located at 4006 Canyon Ridge Drive.	Action	Mitchel Humble
4. Consideration of a request to use Street Impact Fee Funds to install a traffic signal at the intersection of North College Road and Fillmore Street.	Action	Jacqueline Fields
5. Public input and/or items from the City Manager and City Council.		
III. **ADVISORY BOARD REPORTS/ANNOUNCEMENTS:**		
IV. **PUBLIC HEARINGS: 6:00 P.M.**		
1. Request for a Zoning District Change and Zoning Map Amendment from R-2 to NCO PUD for 4.71 (+/-) acres to allow a planned mixed use development consisting of a combination of neighborhood commercial uses, including a financial institution facility, on property located at the northwest corner of Eastland Drive North and Addison Avenue East, TOMERYL, LLC/Tom & Cheryl Arledge c/o Scott Allen/The Land group. (app.2563)	Public Hearing	Mitchel Humble
V. **ADJOURNMENT:** Executive Session 67-2345(1) (c) To conduct deliberations concerning labor negotiations or to acquire an interest in real property which is not owned by a public agency.		

Any person(s) needing special accommodations to participate in the above noticed meeting should contact Leila Sanchez at (208) 735-7287 at least two working days before the meeting.

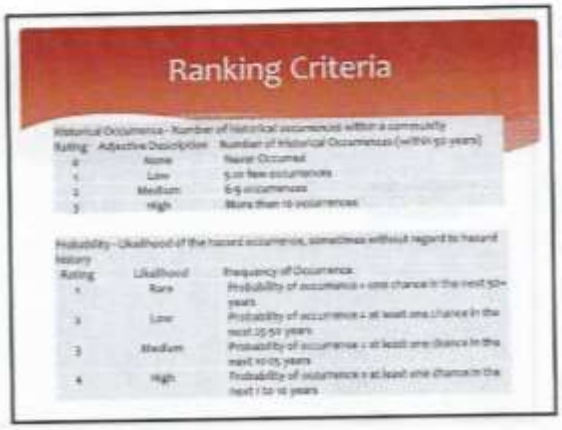

City of Twin Falls
Elected Officials Briefing

All Hazard Mitigation Plan
Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazardous event. Hazard mitigation results in long-term, cost-effective, and environmentally-conscious reduction of hazard vulnerability. The goal of hazard mitigation is to save lives and reduce property damage. This, in turn, can reduce the enormous cost of disasters to property owners and all levels of government. In addition, hazard mitigation can protect critical community facilities, reduce exposure to risk, and minimize community disruption.

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed
Natural Hazards
Weather
Severe Weather
Extreme Heat
Lightning
Hail
Straight Line Wind
Tornado
Severe Winter Storm
Extreme Cold
Drought
Flooding
Flash Flood
River Flooding
Dam Failure
Canal Failure
Geologic
Earthquake
Landslide/Mudslide
Other
Wildfire
Biological
Burrowing Rodents
Vector Borne Diseases
Human Borne Diseases
(Pandemic)
Technological (Man-made) Hazards
Structural Fire
Nuclear Event
Hazardous Material Event
Riot/Demonstrations/Civil Disorder
Terrorism

Earthquake
NEHRP Site Classification
Soil Liquefaction Susceptibility Map


Ranking Criteria
Historical Occurrence - Number of historical occurrences within a community
Rating Adjective Description Number of Historical Occurrences (within 50 years)
0 None Never Occurred
1 Low 5 or few occurrences
2 Medium 6-9 occurrences
3 High More than 10 occurrences
Probability - Likelihood of the hazard occurrence, sometimes without regard to hazard history
Rating Likelihood Frequency of Occurrence
1 Rare Probability of occurrence = one chance in the next 50+ years
2 Low Probability of occurrence = at least one chance in the next 25-50 years
3 Medium Probability of occurrence = at least one chance in the next 10-25 years
4 High Probability of occurrence = at least one chance in the next 1 to 10 years

Ranking Criteria

Vulnerability - Percentage of people and property that would be affected by the hazard event.

Rating	Magnitude	Percentage of People and Property Affected
1	Negligible	Less than 5%
2	Limited	5% to 10%
3	Critical	10% to 15%
4	Catastrophic	More than 25%

Spatial Extent - The geographic area of the community that might be impacted.

Rating	Magnitude	Percentage of Jurisdiction Affected
1	Negligible	Less than 10%
2	Limited	10% to 25%
3	Critical	25% to 50%
4	Catastrophic	More than 50%

Ranking Criteria

Magnitude (Severity of impact) - Assessment of severity in terms of fatalities, injuries, property/economic losses

Rating	Likelihood	Characteristics
1	Negligible	Few if any injuries or illness Minor quality of life lost with little or no property damage Brief interruption of facilities/services less than 4 hrs
2	Limited	Minor injuries and illness Minor or short term property damage that does not threaten structural stability Loss of essential facilities and services for 4 to 24 hours
3	Critical	Serious injury and illness Major/long term property damage; threatens structural stability Shutdown of essential facilities and services for 24 to 72 hours
4	Catastrophic	Multiple deaths Property destroyed or damaged beyond repair Complete shutdown of essential facilities/services for 3+ days.

Hazard Ranking City of Twin Falls

Hazard	Historical Occurrence	Probability	Vulnerability	Spatial Extent	Magnitude	Total	Rank
Severe Weather	3	4	2	3	3	15	11
Severe Winter Storms	3	4	2	3	3	15	11
Communicable Diseases	3	3	3	3	3	15	11
Drought	3	4	1	4	1	13	18
Structural Fire	3	4	1	1	4	13	18
Wildland Fire	3	1	4	4	4	16	10
Wind/Hailstorm	3	4	1	1	3	13	18
Hazardous Materials	3	3	3	1	3	13	18
Terrorism	3	1	4	3	4	15	11
Burrowing Rodents	3	4	1	1	3	11	20
Flood	3	4	1	1	3	11	20
Flash Flood	3	4	1	1	3	11	20
Canal Failure	3	4	1	3	3	14	1
Nuclear Event	3	1	3	1	4	12	5
Wildfire	1	4	3	1	1	10	5
Mental Disorder	1	1	3	1	3	10	5
Landslide	1	4	1	1	1	10	5
Rat Hepatitis	3	1	1	3	3	10	5
Lyme and Other Tick-Borne Diseases	3	1	1	1	3	10	5
Vector Borne Diseases	3	1	1	1	1	8	5
Dam Failure	3	1	1	1	1	8	5

Mitigation Projects City of Twin Falls

Goal	Objective	Project	Responsible Entity	Planning Horizon/Status
City of Twin Falls will reduce the potential damage to property from Landslides by adopting codes and standards for construction in landslide prone areas.		Harden the Twin Falls City Water Supply line running out of the Snake River Canyon	Twin Falls City Public Works	Ongoing (Engineered Intercept, cost) 2014 – Complete BCA and submit HMA or Block Grant 2014 – Implement Protection
		Harden the Twin Falls City Sewer line going down the canyon and into the Snake River Canyon	Twin Falls City Public Works	Ongoing (Engineered Intercept, cost) 2014 – Complete BCA and submit HMA or Block Grant 2014 – Implement Protection
City of Twin Falls will tightly control building on the Snake River Canyon Rim.	Protect Structures along Canyon Rim.	Develop an ordinance that restricts building on the Snake River Canyon Rim.	P & Z Commission	NOW – Approve 2014 – Seek Funding from County to develop ordinance. 2015 – Adopt Ordinance.

Next Steps

- Add Projects
- Review Plan
- Adopt Plan by Resolution

City of Hollister Elected Officials/Public Meeting

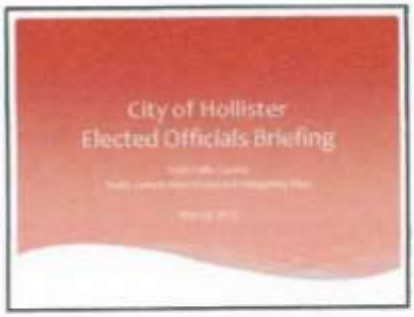
May 14, 2013

CITY OF HOLLISTER

MAY 14, 2013
HOLLISTER CITY HALL, 7:00 P.M.

Agenda

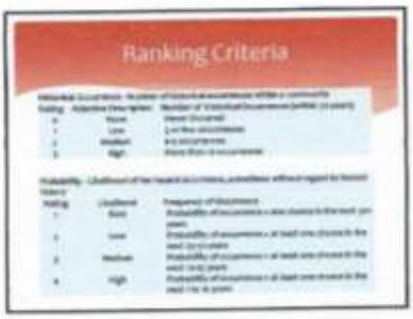
I. PLEDGE OF ALLEGIANCE
II. Call to Order
III. Roll Call
IV. Approval of last Meetings APRIL 9, 2013 minutes, read by council
V. Treasurers report
VI. OLD BUSINESS
VII. REPORT on automatic water lines For Park
VIII. NEW BUSINESS
IX. Jackie Frey, T.F. CTY Local Emergency com.
X. 7:30 p.m. TF all hazard medication Plan coming to meet risk ranking for City of Hollister
XI. PUBLIC COMMENTS
XII. JOHNNY HORIZION DAY MAY 4TH
XIII. ADJOURNMENT
XIV. POSTED april 22, 2013


City of Hollister
Elected Officials Briefing

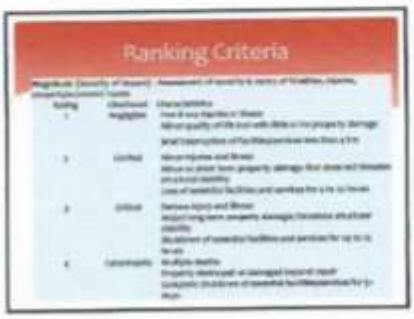
All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed


Ranking Criteria

Ranking Criteria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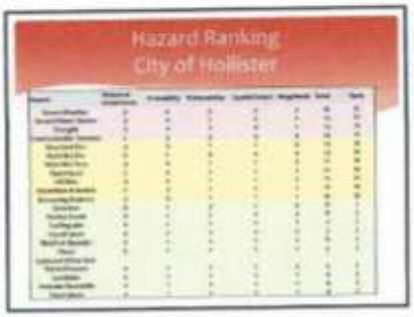

Hazard Ranking
City of Hollister

Next Steps
Add Projects
Review Plan
Adopt Plan by Resolution

Twin Falls County Board of County Commissioners/Public Meeting
May 14, 2013

L. GEORGE URIE
Commissioner
Third District

TERRY RAY KRAMER
Chairman
First District

TWIN FALLS COUNTY
BOARD OF COMMISSIONERS
630 ADDISON AVE. WEST
P.O. BOX 126
TWIN FALLS, ID 83303-0126
(208) 736-4068
(208) 736-4176 FAX
(800) 377-3529 Idaho Relay (TTY)

LEON MILLS
Vice-Chairman
Second District

KRISTINA GLASCOCK
Clerk
(208) 736-4004

COMMISSIONERS' AGENDA

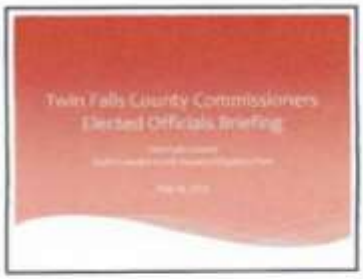
Meetings Held in Commissioners Meeting Room, Second Floor, County West
630 Addison Ave. West, Twin Falls, Idaho, Unless Otherwise Noted

Commissioners generally meet daily between 8:30 a.m. and 4:30 p.m. Items discussed may include but are not limited to: Meeting with department heads, employees, other elected officials, and concerned citizens.

Any Person(s) Needing Special Accommodations to Participate in Public Meetings
Should Contact Shannon Carter at 736-4068, Three to Five Working Days Before the Meeting

Tuesday May 14, 2013 ***Amended Agenda***

9:00 a.m.	Commissioners to meet in executive session at 9:00 pursuant to Idaho Code §67-2345(D).
	Commissioners to consider county assistance applications.
10:00 a.m.	Commissioners to consider the consent calendar: items that may be considered include status sheets, employee requisitions, tax cancellations and alcohol licenses.
	Commissioners to meet with Jackie Frey, Emergency Services Director and Rick Fawcett, Whisper Mountain to review the All Hazard Mitigation Plan. ***
1:30 p.m.	Commissioner Kramer to attend an LEPC meeting.
2:00 p.m.	Commissioner Urie to attend a Solid Waste meeting with the City of Twin Falls.

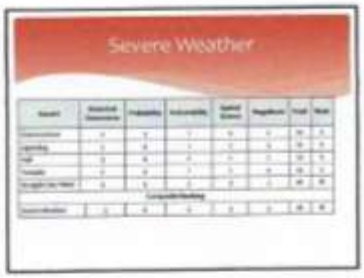

Twin Falls County Commissioners
Elected Officials Briefing

All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed

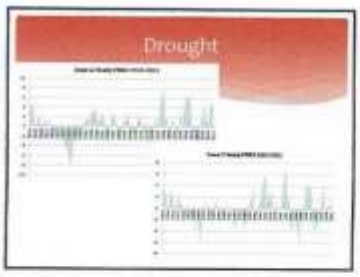
Severe Weather


Severe Weather

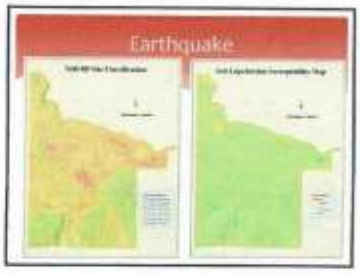
Severe Winter Storms

Drought

Drought


Drought

Flooding


Earthquake

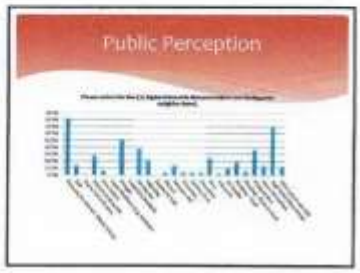
Ranking Criteria

Ranking Criteria

Ranking Criteria

Hazard Ranking
Twin Falls County

Ranking Changes


Public Perception

Next Steps

City of Kimberly Elected Officials/Public Meeting

May 28, 2013

CITY OF KIMBERLY

CITY COUNCIL
MAY 28, 2013 MEETING AGENDA
6:00PM

242 Hwy 30 E., Kimberly, ID 83341

City Council meetings are televised, videotaped and/or recorded.

CALL TO ORDER & PLEDGE OF ALLEGIANCE
WELCOME – PLEASE TURN OFF CELL PHONES – THANK YOU.
ROLL CALL OF CITY COUNCIL MEMBERS
CEREMONIES, APPOINTMENTS, ANNOUNCEMENTS, PRESENTATIONS

AMENDMENTS TO THE AGENDA
DECLARATION OF CONFLICT

1. CONSENT CALENDAR -

A. **Approve Minutes for May 14, 2013**
B. **Approve accounts payable May 9, 2013 – May 24, 2013**

2. PUBLIC HEARINGS -

3. CITIZEN ISSUES – PUBLIC INPUT –

4. UNFINISHED / OLD BUSINESS –

A. Authorize City Administrator for Change Order Approvals on Family Health Services Construction
B. Public Works - Equipment Purchase / Lease Recommendation

5. NEW BUSINESS –

A. Summer School Lunches – Luke Schroeder
B. Magic Mountain Relay presentation
C. Presentation by Rick Fawcett, Whisper Mountain, Inc. – Twin Falls Co. All Hazard Mitigation Plan – Risk Ranking for the City of Kimberly

6. ORDINANCES AND RESOLUTIONS –

7. ADMINISTRATIVE / STAFF REPORTS -

A. City Administrator – Larry Hall
1) Investment Report

2) City Clerk Interviews
3) Public Meeting – Family Health Services Project June 11, 2013 – City Hall
4) Downtown Revitalization Public Meeting – June 25, 2013
5) Comprehensive Plan Public Hearing and anticipated Adoption – June 25, 2013

B. Deputy City Clerk
C. Public Works Department
D. Planning & Zoning
E. Police Department
1) Status of Applications for Police Chief Position
G. City Engineer –
H. City Attorney –

8. COUNCIL COMMENTS -

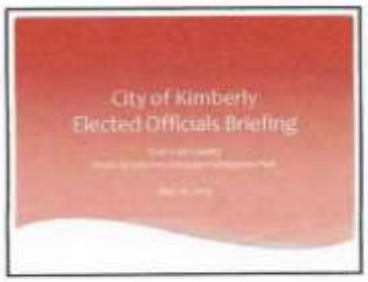
9. MAYOR COMMENTS –

10. EXECUTIVE SESSION –

ADJOURNMENT

Questions concerning items appearing on this Agenda or requests for accommodation of special needs to participate in the meeting should be addressed to the Office of the City Clerk, 242 Hwy 30 E., Kimberly, Idaho 83341 or call 208-423-4151.

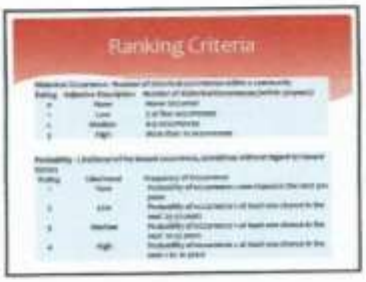
Burke Richman	Connie Sowka	Tracy Armstrong	Jim Eisenhower	Kip Thompson
Council President	Councilwoman	Mayor	Councilman	Councilman

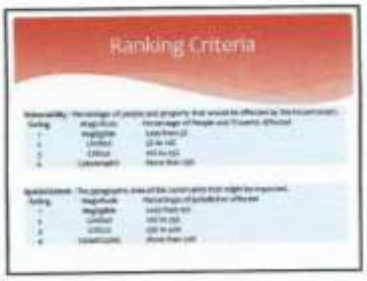

City of Kimberly
Elected Officials Briefing

All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed


Ranking Criteria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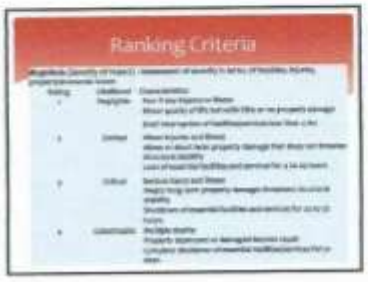
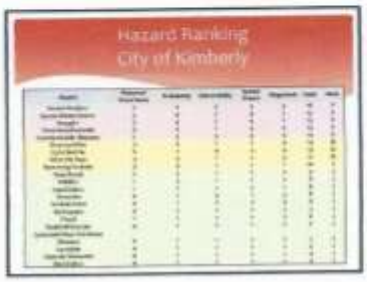
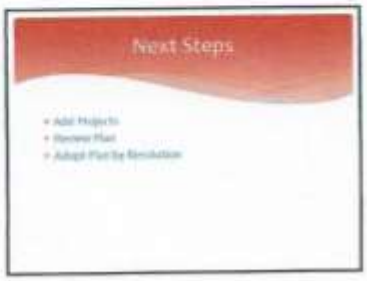

Ranking Criteria


Hazard Ranking
City of Kimberly


Next Steps
Add Projects
Review Plan
Adopt Plan by Resolution

City of Buhl Elected Officials/Public Meeting

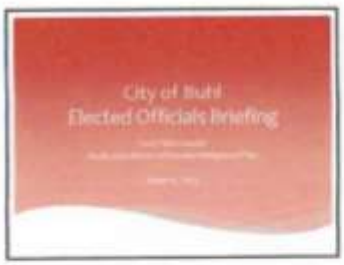
June 10, 2013

City of Buhl Council Meeting

June 10, 2013
7:00 p.m.
Meeting called by: Mayor and City Council

Meeting will be held in the Council Chambers at 203 Broadway Ave N, Buhl, Idaho

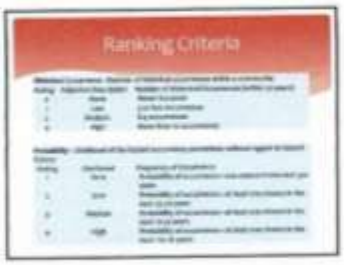
REGULAR SESSION COUNCIL MEETING		
CONFIRMATION OF QUORUM		Elizabeth Barker
OLD BUSINESS	Minutes of May 27, 2013	Karen Drown
	Monthly Claims for Payment	Elizabeth Barker
	Monthly Reports	Department Heads
	Clerk/Treasurer Report	Elizabeth Barker
	Monthly Report	City Engineer
NEW BUSINESS	AHMP Revision Letter 2013	Jackie Frey Rick Fawcett
	Wuebbenhorst Property	Council Members
	Fairchild Right-of-Way	Council Members
	Insurance Discussion	Elizabeth Barker
	Write Off Accounts	Elizabeth Barker
COUNCIL CONCERNS		
CITIZEN CONCERNS		
EXECUTIVE SESSION	Pursuant to provisions of Idaho Code 67-2345, subsection1.c	
MEETING ADJOURNED		


City of Buhl
Elected Officials Briefing

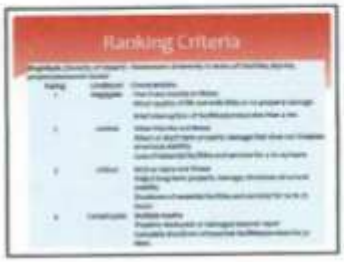
All Hazard Mitigation Plan

Multi-Jurisdiction
Participating Jurisdictions

Hazards Analyzed


Ranking Criteria

Ranking Criteria


Ranking Criteria

Hazard Ranking
City of Buhl

Next Steps

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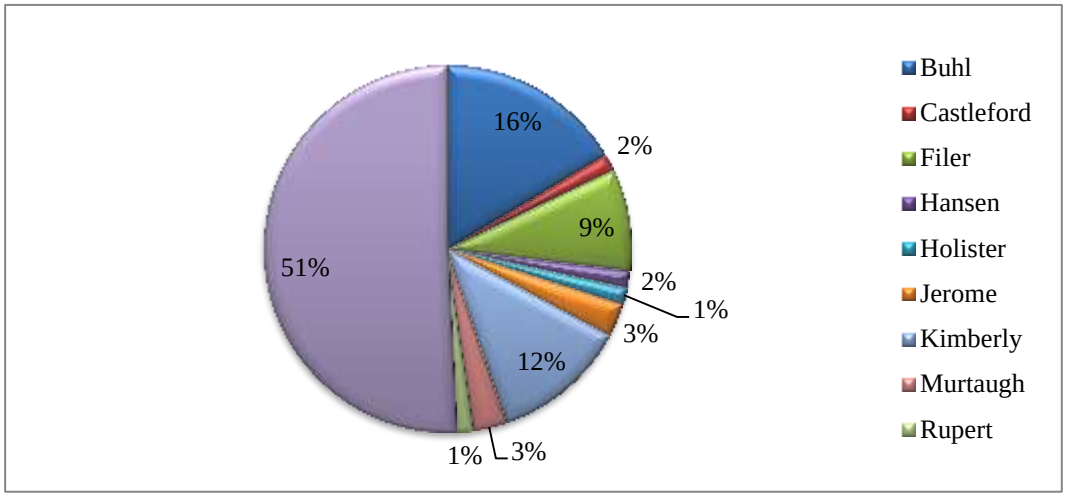
Attachment 2 Community Survey

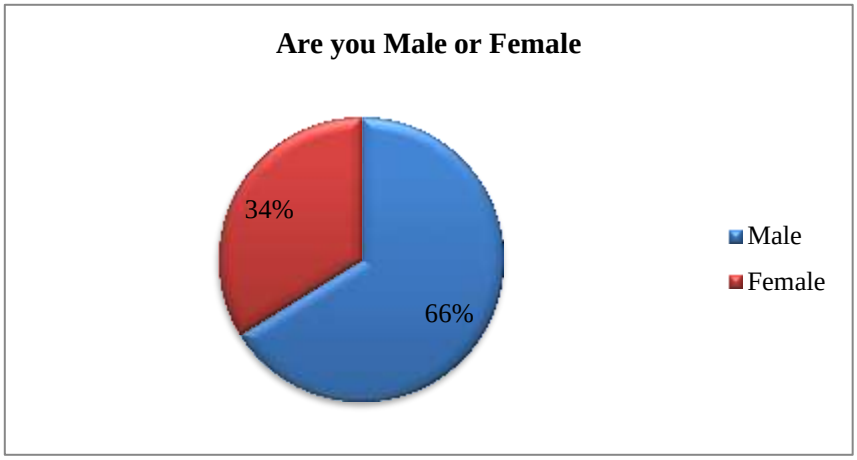
Community Survey Results **– Note: All Comments are entered without Editing!**

Question 1: What town do you live in or near?

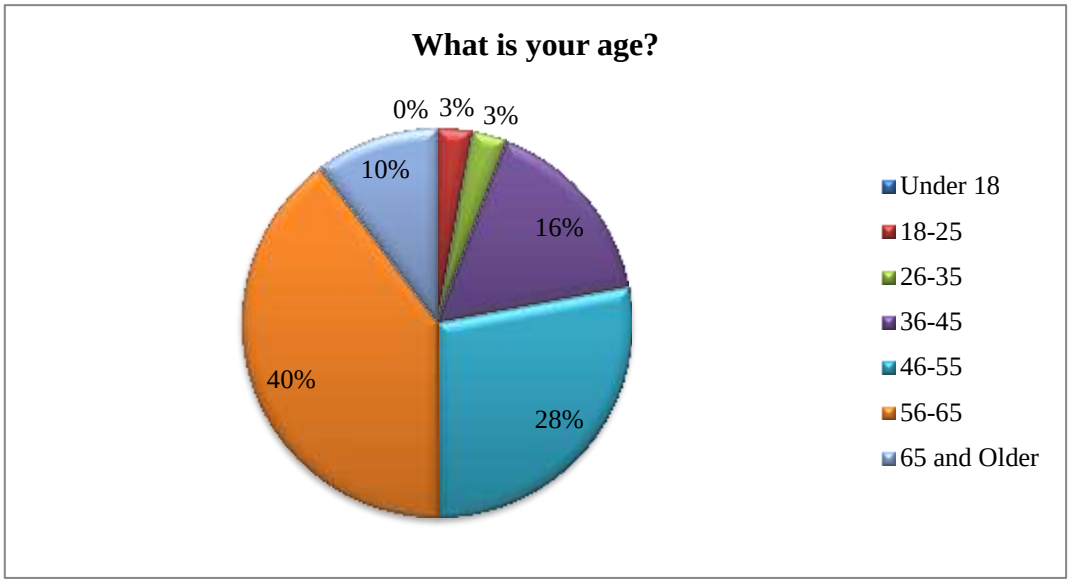
Location		
Buhl	**16%**	**11**
Castleford	1%	1
Filer	9%	6
Hansen	1%	1
Hollister	1%	1
Jerome	3%	2
Kimberly	12%	8
Murtaugh	3%	2
Rupert	1%	1
Twin Falls	44%	17
answered question		**68**
skipped question		**2**



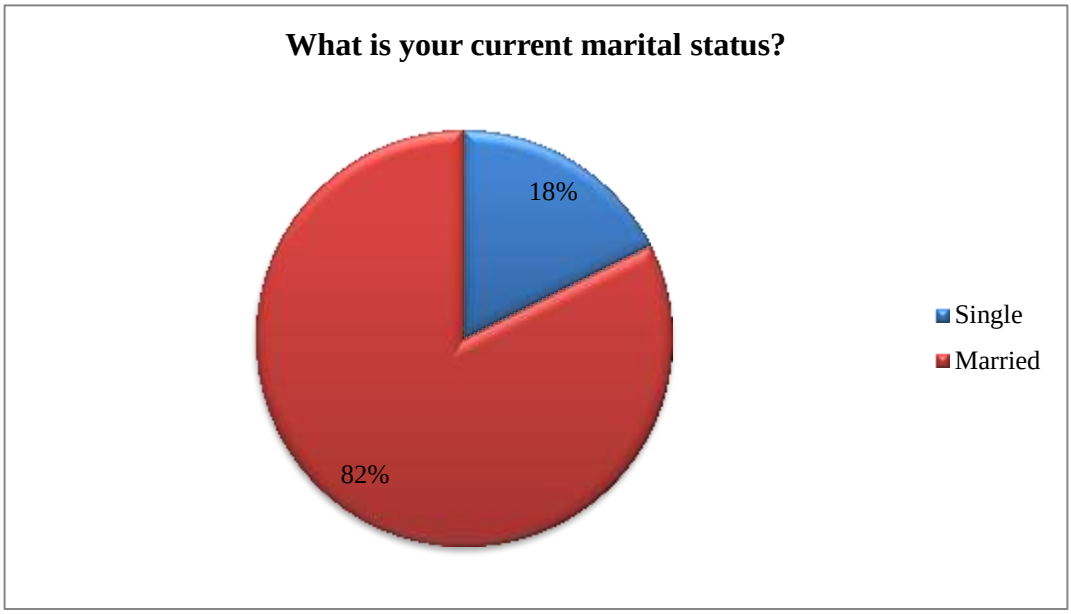
Question 2:



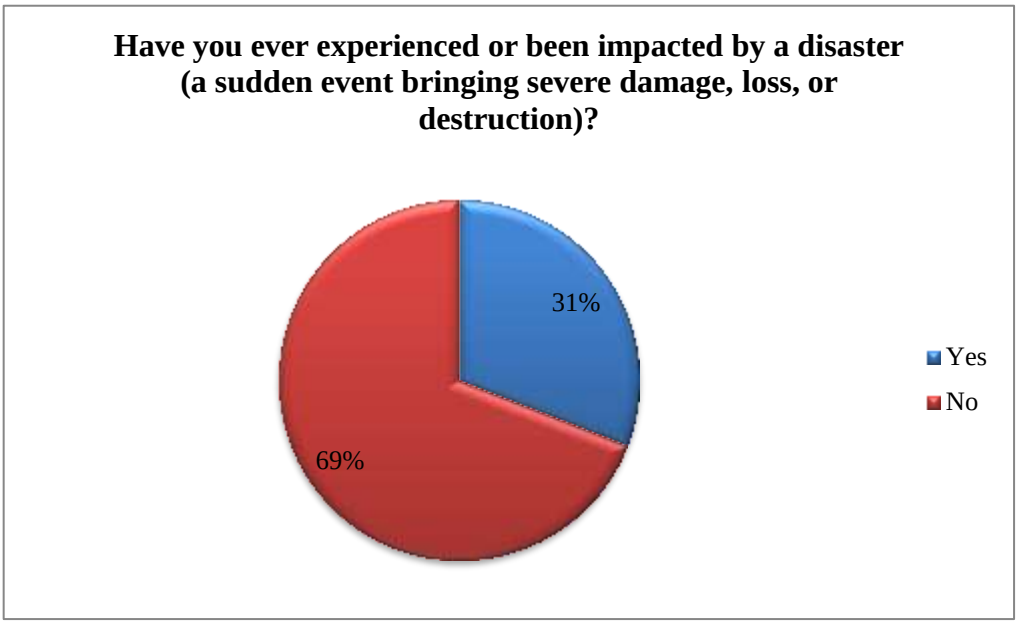
Question 3:



Question 4:

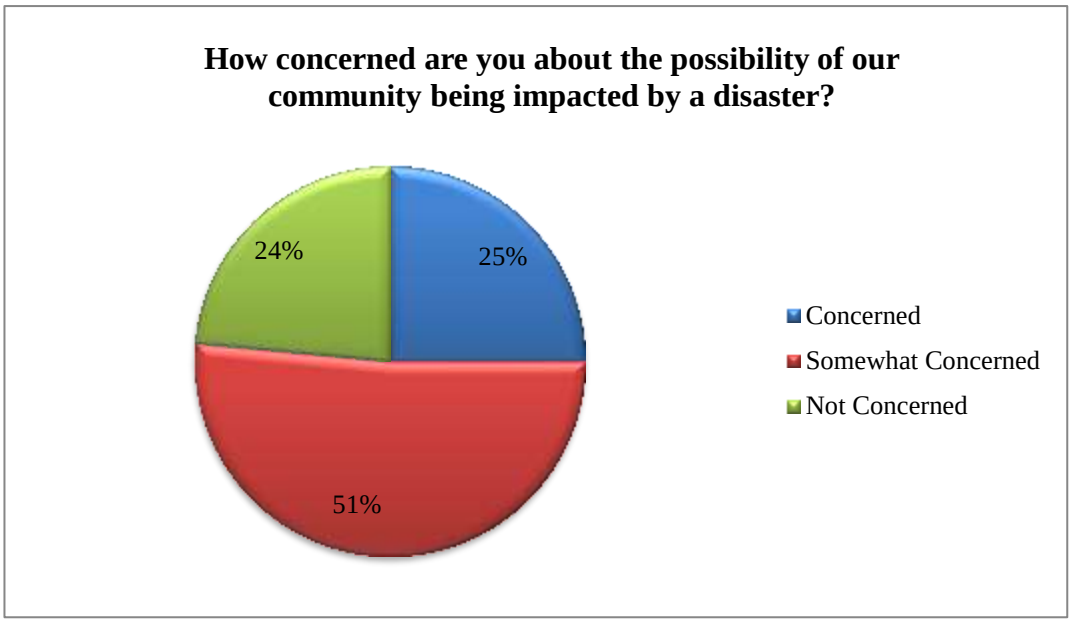


Question 5:



- Severe flooding in Portland, Oregon when the Willamette and Coumbia Rivers overflowed their banks in 1996(I think that was the year)
- wind/hail storms on several farms, wild fires by our cabin and near a farm, droughts and power outages effecting irrigation water.
- earthquake, flood
- Wind, flood
- Snowfall, turned to ice, trees fell onto power lines, lost power for 8 days in December.
- earthquake in so cal
- Wind damage to property (buildings)
- Cyclones when living in Australia
- Typhonn - 1969 (experienced in the Philippines)
- Tornado
- teton dam disaster
- When I lived in Kimberly, a dust storm caused several wrecks at the Layne Pump corner.
- A canal above my home broke and flooded house
- Lose of power for 3 days
- I lived in Boston Massachusetts from 1989-1995 and went through many hurricanes including Bob and Andrew
- Many in my lifetime, not just in Buhl. In Buhl, however, high winds and heavy rains have caused damage to my house and/or yards in the past. I have attempted to adjust so that the impact of these frequent events is not as great.
- Retired emergency responder from Los Gatos, CA.
- Earth quake 2 times
- Severe windstorm damaged house and outbuildings of the residence we lived in.

Question 6:

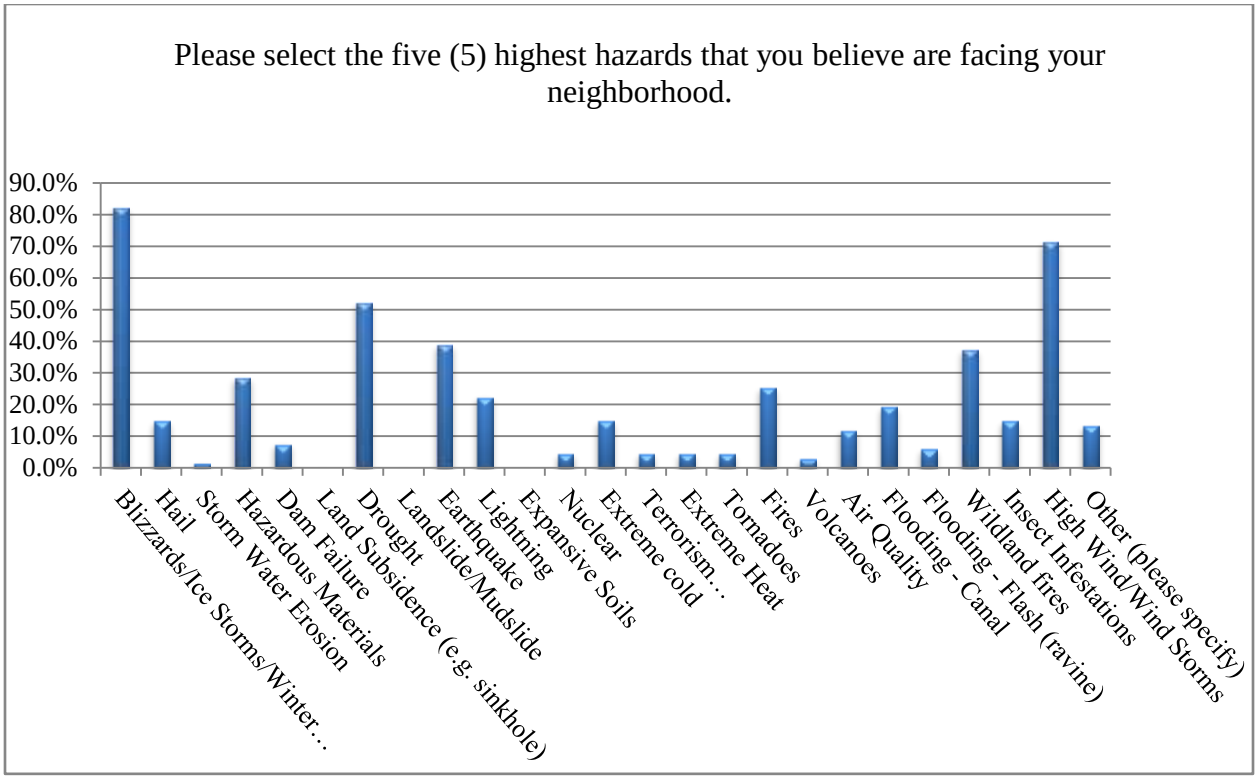


Question 7:

Others Please Specify:

- Groundwater contamination. Those dairies fled California to come here where there was no regulation on their waste going into the ground. It is only a matter of time.
- Aerial spray drift/fogging/herbicides
  Martial Law/seizure of property
- Loss of electricity
- Pandemics
- Rodent damage
- Economic collapse
- flooding - weather associated (not canal or flash flood)
- Long term loss of power due to geomagnetically induced current surge from a solar storm.
- LACK OF ELECTRICITY

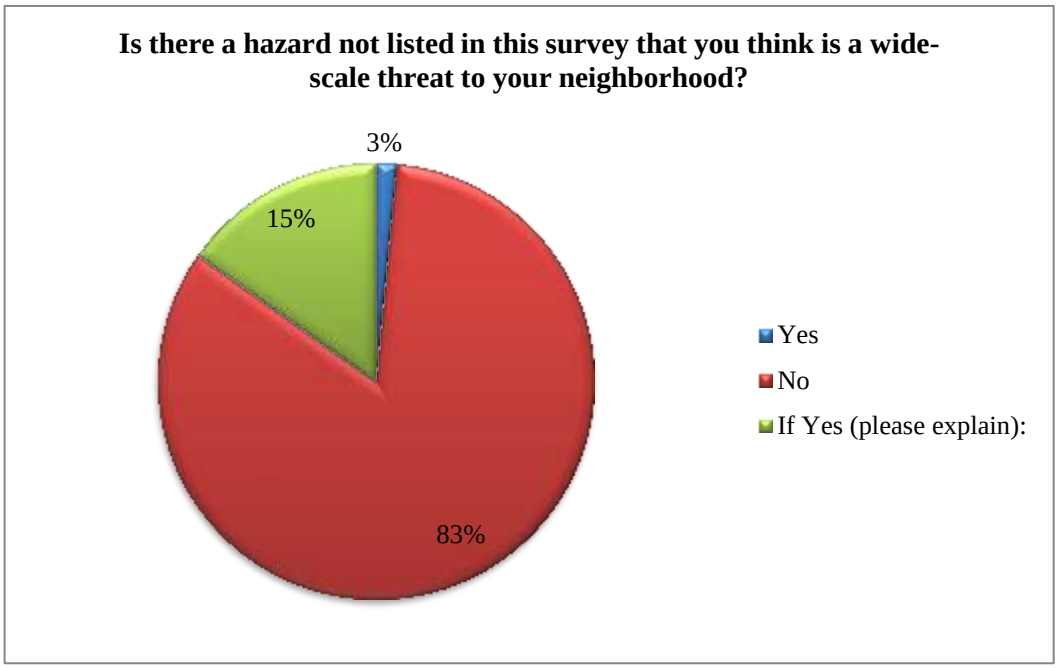
Question 7:



Top 5 Responses:

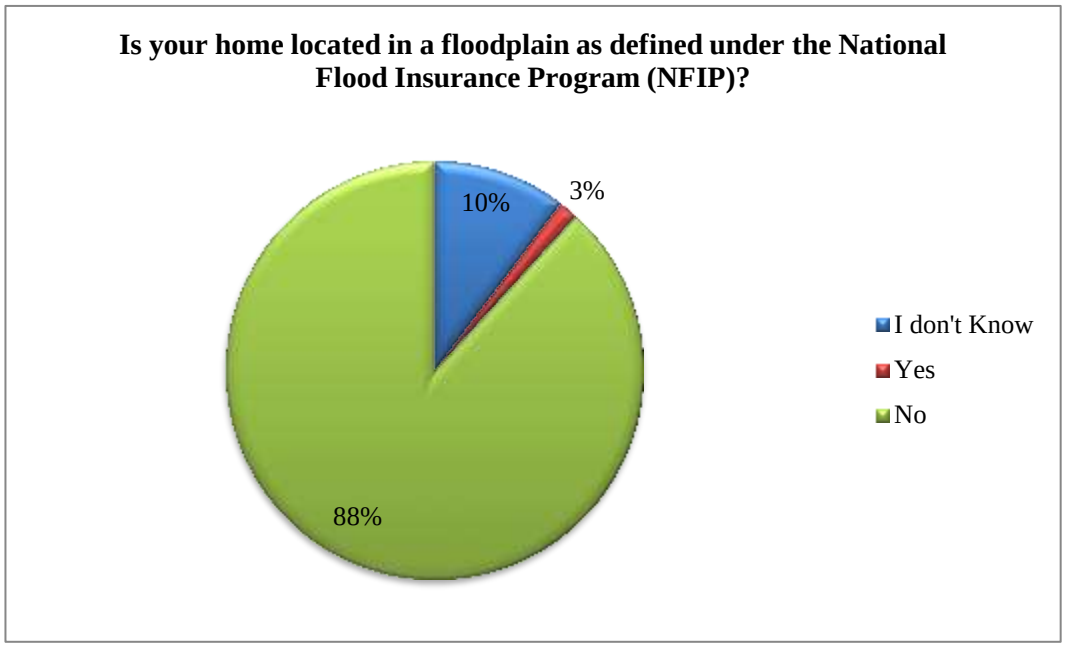
1. Blizzards/Ice Storms/Winter Storms
2. High Wind/Wind Storms
3. Drought
4. Earthquake
5. Wildland fires

Question 8:



- Too Many regulations We cannot protect ourselves from evwerything Commen sense would go a long way to protect us from everything on List
- Loss of power/electricity
- The above hazard conditions should be handled by local people or the process could become a disaster.
- Economic collapse
- Pandemic
- An economic collapse due to the irresponsible and non-forward looking policies of our contry and the world could result in a catastrophic failure of many of the support systems that we rely on.
- Civil Strife, train de-railment, civil service disruption or contamination (power/potable water), active shooter/workplace violence, explosion, foreign substance (may be listed under "Terrorism" already), pandemic/epidemic.
- Water quality and resources - aquifer
- this is an area issue but not really in my neighborhood
- Long term loss of power; in excess of days and/or "a few weeks" or more.

Question 9:



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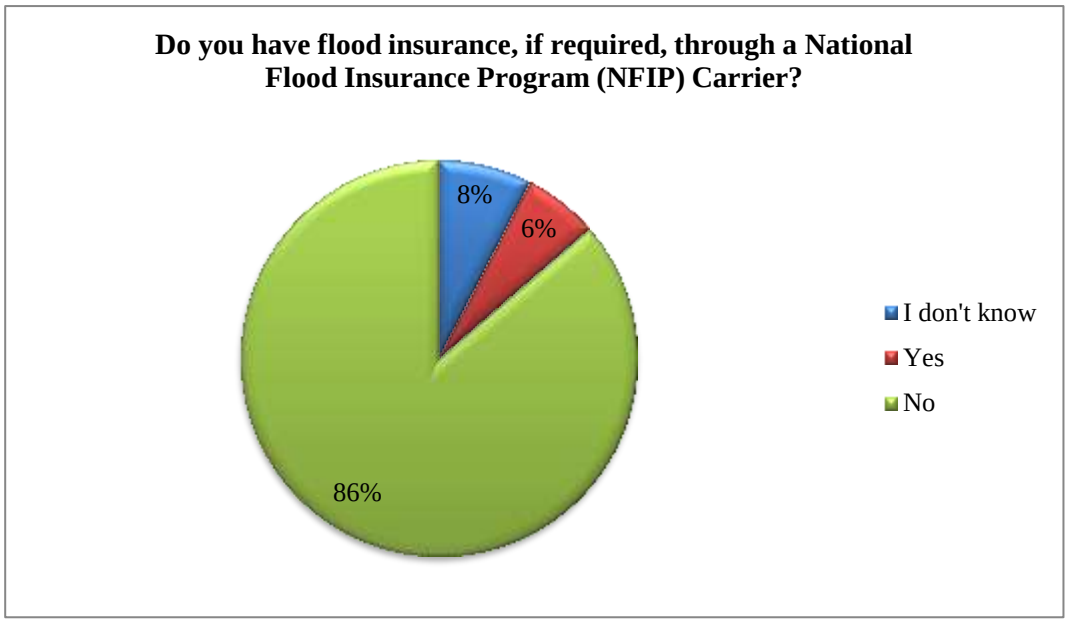

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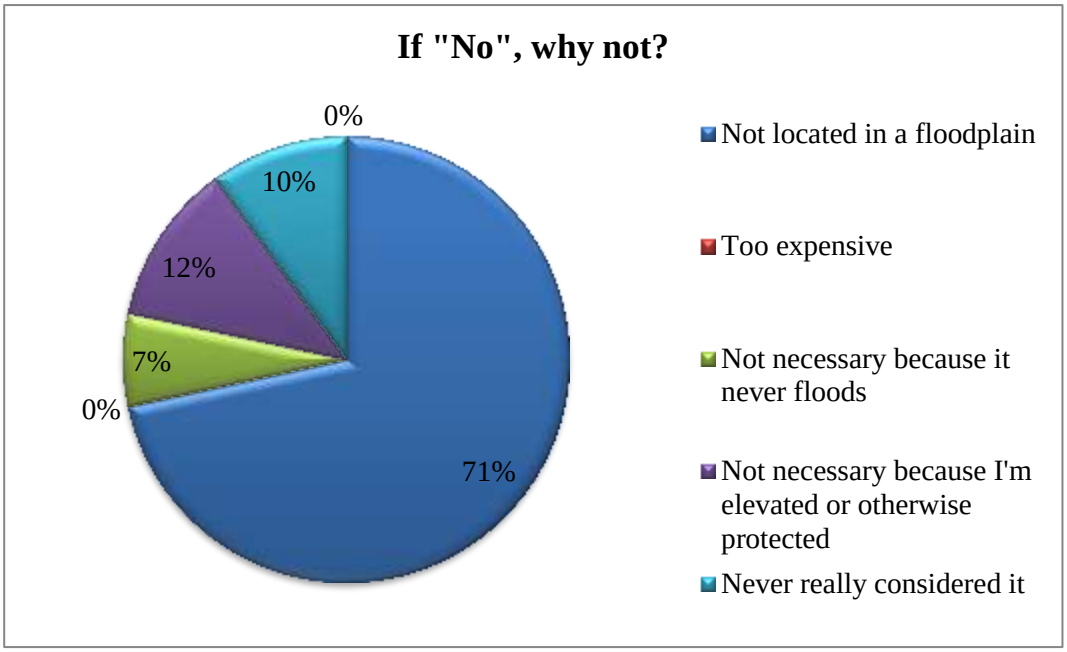

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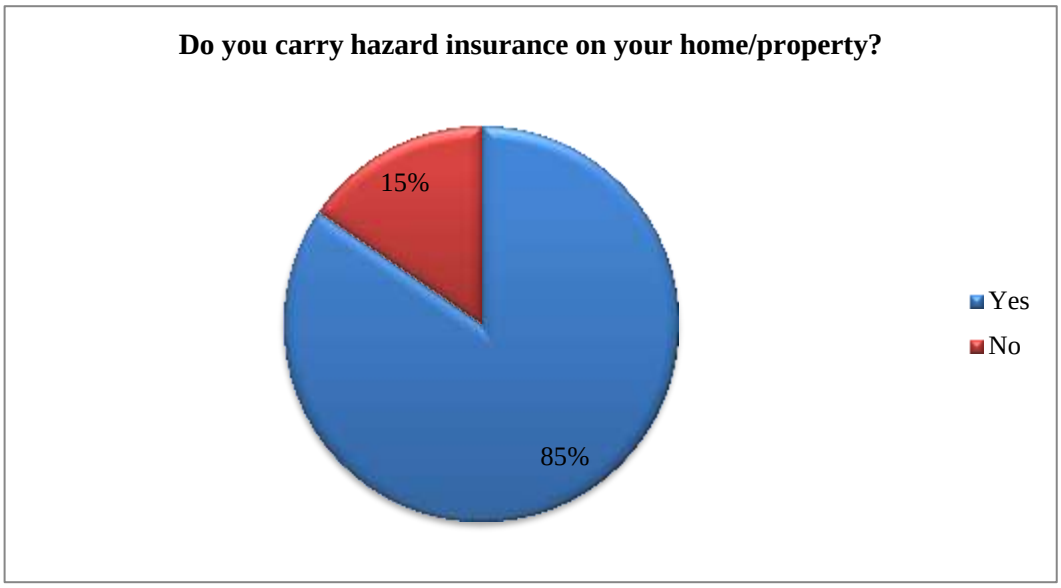

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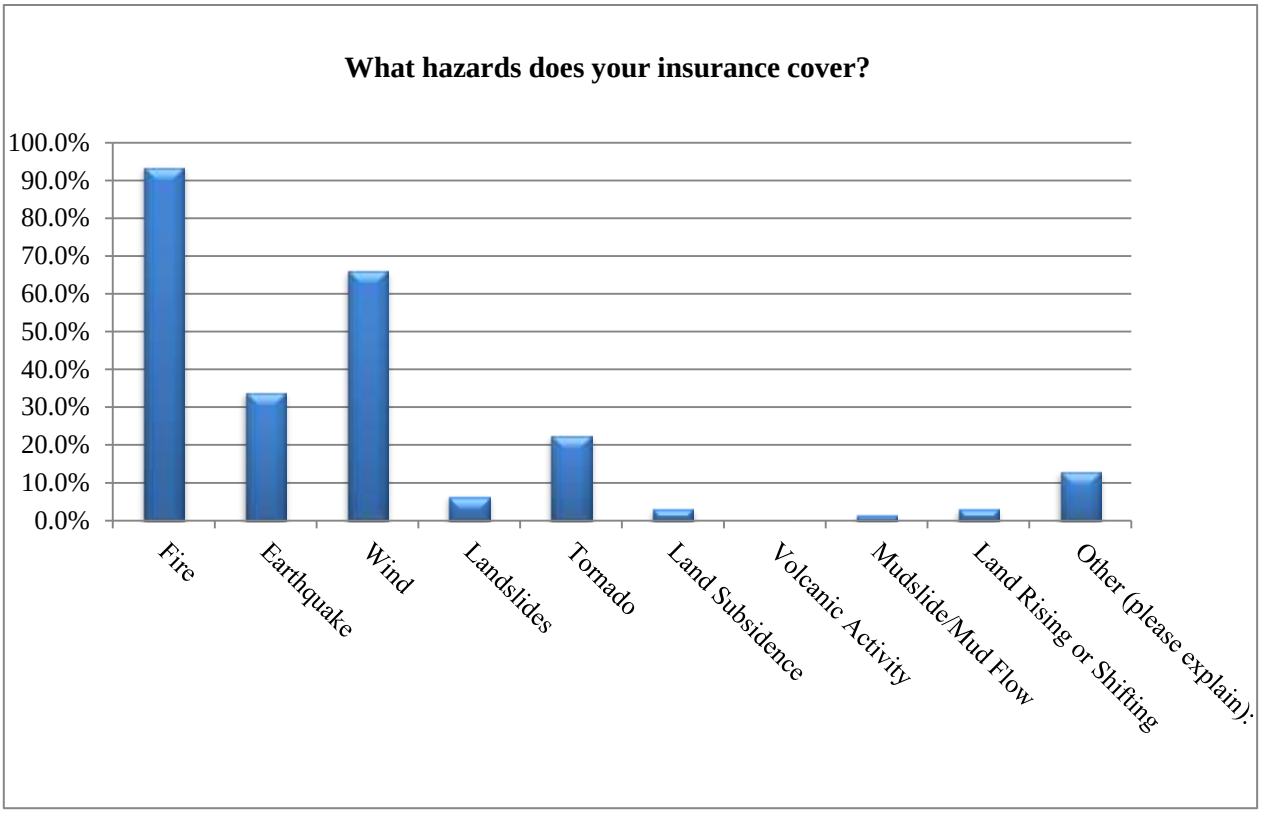
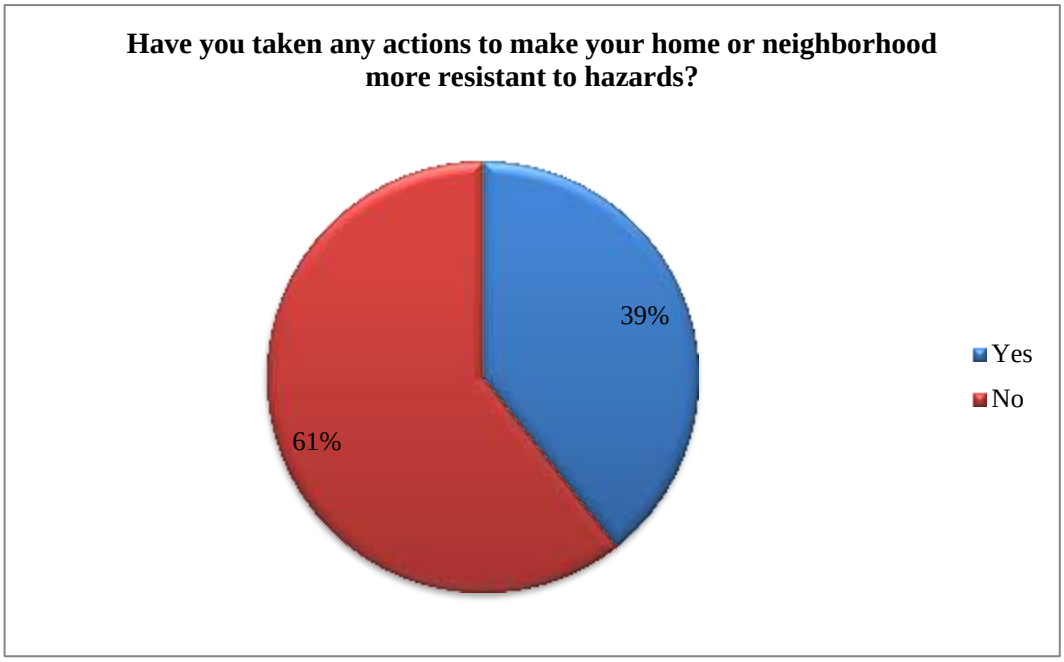


Others Please Explain:

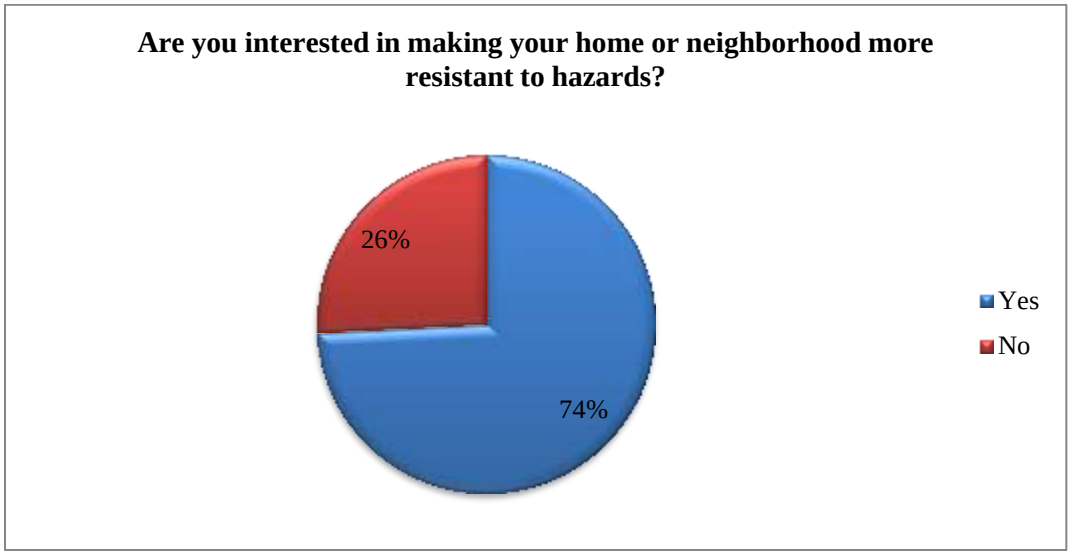
- Freezing of plumbing system due to extreme cold
- I dont know but I am going to check into it.
- I need to ask my insurance agent on that one, I am not sure
- omit
- not sure which others
- I am unsure of the other items covered.
- don't remember
- lightning strike

Question 14:



- Cut down some huge trees that the wind could topple onto my home.
- Maintain fire prevention on borders (mowing, windbreaks, metal or asphalt roof, fire resistant siding) improve irrigation systems to be able to compensate for droughts.
- Signage
- Gathered emergency preparedness supplies.
- Trimmed trees to prevent wind damage to suurounding structures and created defendable green space around home.
- Cut down several large diseased trees
- Trim weeds
- Removed some trees due to high wind
- Berms for overflow of irrigation water.
- New home/construction following previaling city building codes and permits. Summer months keep vegetation from become dormant/dry and cut down to reduce fire hazard potential. Sump pump in basement if it ever leaked. Housekeeping around property to reduce rodents, insects, and visibly inspect property for damage or structural/foundation issues.
- Helped develop EOP plan at place of employment
- Cleared bushes from house and planted fire resistant plants, built home with extra thick building materials to slow fire spread
- Fire Breaks
- removed several very large pine trees after extreme winds in summer of 2012; keep weeds and trash down on property
- put in embankments to stop any possible flooding.
- Prepared plans to do without basic sercives for an extended period of time.
- Structural reinforcement, emergency power capactity, first aid supplies, water & food storage.
- Keep dry vegetation away from structures
- Clear out dead vegetation from property

Question 15:



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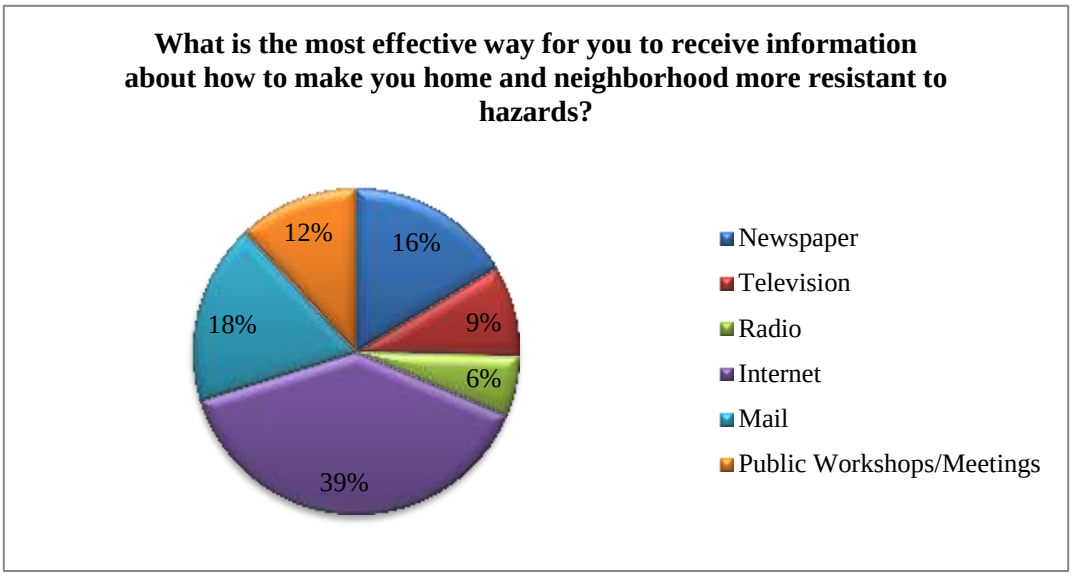


Question 17: In your opinion, what are some steps your county and/or city governments could take to reduce or eliminate risk of future hazard damages in your neighborhood?

- Improve the Salmon Tract Fire Protection District so that they will be able to respond quicker to fires.
- Monitor spraying of pesticides
- education. People just don't understand whats in "their backyard"
- Wild Lands planning
- Keep the public informed!
- Educate the citizens about what they can do FOR THEMSELVES to lower risk. Don't make this a government job. Just educate people and let them choose if they want to mitigate risk or assume responsibility for what happens to them. Its a free country, after all!
- mow canal banks more often-control weeds
- Maintain a trained fire crew, use organic methods to control mosquitoes and other pests, closely regulate

the applications of lagoon/waste water from dairies especially through pivots.

- Quit spraying poisons/carcinogens
- Utilized the "Map Your Neighborhood" program more effectively
- Fuels reduction to prevent wildfires.
- Publications, TV spots
- Eliminate vehicular traffic on canals especially ones that have diversion gates to smaller canals.
- proper management and design of infrastructure so that, in the event of a disaster, there is a better chance that impacts will be minimized
- Continue to make fuel, power, and water affordable in order to support the communities efforts to help themselves.
- Keep local people alerted of area concerns and what to do for yourself or who to contact for help.
- facilitate a reliable power (electric) supply, revise acceptable stormwater management devices so that it can be shown that they are maintained
- none
- Create something like Cert or neigborhood hazard damaged committee.
- public information
- Let the county commissioner now its when it will happen not if.
- Fire buffer zone
- More public education of the hazards that exist.
- Offer once or twice a year free pickup of yard waste to help clear yard
- Have Idaho Power update power lines.
- not much
- Education
- ?
- none
- nothing
- committees, (such as LEPC), and local governments get information to public through newspaper
- Pray More!
- I don't know that we can illiminate the threats identified but we can certainly prepare more effectively for them.
- Help the public to be more aware of Jackie Frey's work through the county. The First Baptist Church is interested in becoming involved.
- MOST HAZARDS ARE NATURAL, SO LITTLE CAN BE DONE TO ELIMINATE
- Workshops
- Education
- go to the risk management meetings
- Continued evaluation of the current engineering of our streets, drainages, and other infrastructures to see what impact these types of events have on our community. Then, if there are known areas of weakness or prior failures, take measures to correct those things for the future.
- Make provision to operate autonomously; with assumption all neighboring communities are similarly damaged.
- Regular communications - variety of media
- They have done enough emergency planning
- Being proactive in grants applications for mitigation resources, information to the public, encouraging everybody to be prepared by being knowledgable and good role models.
- they do good to let us know

- Don't know

Question 18: Are there any suggestions that you have for projects that your county and/or city government could do to reduce the risk and/or damage caused by a hazard?

- Educate the general public to the groups and government facilities and agencies that are available to help citizens in the event of any type of emergency situation and how these entities can be reached.
- none
- I don't know at the moment
- educate the public on just how much groundwater a dairy uses, (it is staggering), how that impacts us in a drought, how much waste goes into the ground, how they feel about that, and what we can do about it. Reduce risk of drought, AND groundwater contamination...two birds with one stone!
- more community involvement for education of depositing waste around homes and alleys
- I'm not really sure where the weakness is that needs to be addressed.
- Less government
- Require the removal of popular trees over 40 years old and near power lines.
- Reverse 911 to warn citizens of hazards.
- Bury overhead power lines.
- stormwater flow attenuation in areas that could be impacted by flash flooding
- Consider design/installation of an additional bridge that spans the Snake other than IB Perrine for Twin Falls?
- Identify by likelihood of occurence in area. People assume things they don't see are handled. If they are aware they can keep their eyes open for hazard control and make suggestions based on that knowledge.
- none
- no
- public info
- Make people aware and to prepare without causing a panic. We are very complacent. Um
- no
- More property owner awareness.
- effective management, not just posturing
- Education
- no
- no
- no
- Twin Falls needs to do the Map Your Neighborhood program and have CERT teams trained and available.
- no
- NO, MOST CONCERNS ARE NATURAL DISASTER
- No
- Traffic
- no
- Not major ones. Our city seems to be in tune with improvements to assist in this process.
- Provide an emergency operations center with independant power, water, medical, security and communications capacity.
- Be sure to take a common-sense approach
- None
- Strengthen fire prevention and "firewise" zones around buildings - public and private.

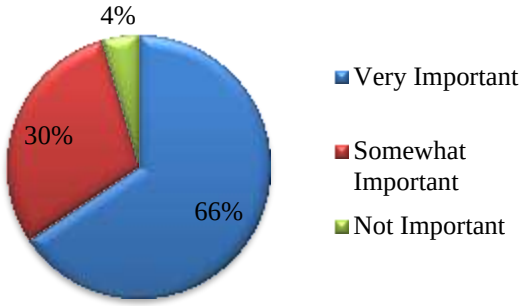
- no
- Be Prepared and stay informed

Question 19: Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

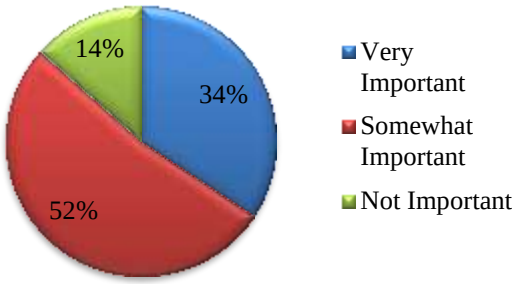
- I think the biggest risk we face is the loss of electrical power in the event of a major winter storm. Most communities and especially rural homes would be completely helpless if we were to loose power like the some areas do when major winter storms occur.
- No
- NO
- There are alot of Senior Citizens in this town and I would be concerned for their safety.
- Educate the public on what they can do to be prepared. Not to mitigate a disaster, but how to RESPOND in the event of one. Preparation: 72 hour emergency kit and drinking water stored. Response: How to keep yourself safe. We already did a community training a couple of years ago for neighborhoods on staying safe in the event of a disaster, so maybe a refresher for those interested.
- have a clear knowledge of a reporting place in case of a disaster for pertaining sectors
- not sure
- NA
- The INEL nuclear contamination threat to our drinking water aquifer is huge. Tighter regulation and enforcing previous removal of contaminants is absolutely needed.
- I think we need to have more community hazard prevention training.
- County Government has grown too big in this area, Government is not responsible to solve all issues.
- Short informative commercials and what the city/county desires as a response would be good training and provoke prevention.
- towns need more water supply storage
- no
- equipment and improvement of disaster equipment
- Unk.
- no
- nope
- None
- no
- no
- no
- We have to many homes that are not prepared for wild fire. We need more education in this area.
- Knowing where the shelters are and knowing about help signs/no help needed signs in the windows of homes and businesses.
- CITY NEEDS A SYSTEM FOR NOTIFY COMMUNITY OF CONCERNS
- No
- no
- Continued better education of the public.
- Fall-back "positions" for short and/or long term loss of local police, fire and medical infrastructure.
- Avoid hype over issues that are unlikely
- None
- no
- All mentioned, I hope

Question 20:

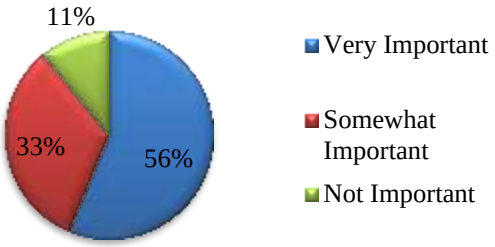
PREVENTION:



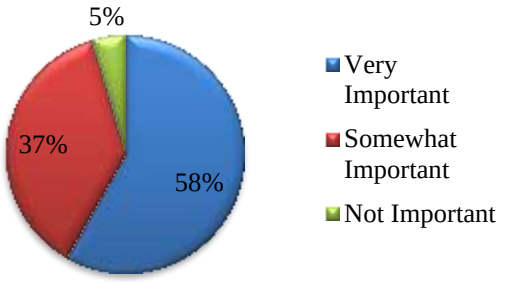
PROPERTY PROTECTION:



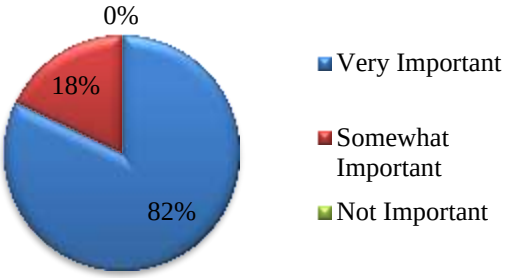
NATURAL RESOURCES PROTECTION:



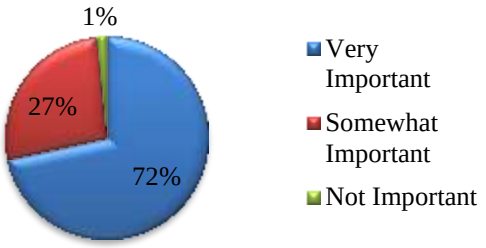
STRUCTURAL PROJECTS:



EMERGENCY SERVICES:



PUBLIC EDUCATION AND AWARENESS:



Attachment 3 Earthquake Hazard Reduction Studies and Mapping

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LIQUEFACTION SUSCEPTIBILITY MAPPING OF TWIN FALLS COUNTY, IDAHO

Executive Summary

By

Ryan E. Baum and Suzy Cavanagh, P.G.

February 2013

Environmental Planning Group, LLC
910 Main Street, Suite 260
Boise, Idaho 83702
208.258.2060
www.epgaz.com

Liquefaction is a phenomenon where cohesionless soils, such as water-saturated sand and silts, rapidly lose their strength and take on the characteristics of a liquid during the intense shaking of an earthquake. Hazardous conditions caused by liquefaction often include damage and destruction to infrastructure such as building foundations, bridges, roads, and railways. A liquefaction susceptibility map provides an estimate of how likely soil will liquefy as a result of an earthquake. It classifies the relative hazard in terms of high, moderate, or low liquefaction susceptibility, but cannot be used to predict the severity of ground destruction resulting from liquefaction. Ground destruction depends primarily on local site conditions and can only be assessed from site-specific, detailed geotechnical investigations. However, mapping where liquefaction is most likely to occur is an important initial step in mitigating these hazards.

The liquefaction susceptibility map for Twin Falls County was produced using standard methodology that categorizes liquefaction susceptibility based on geological age, soil texture, and depositional environment. The map shows that liquefaction susceptibility is relatively low throughout the county. Approximately 95% of the county was estimated as low risk to liquefaction susceptibility. Environmental conditions needed for liquefaction to occur are not present in these areas; they are unlikely to contain cohesionless sediments and are not subject to water saturation under normal conditions. All major urban areas located within the county fell within this class.

Approximately one percent of the county was estimated to have moderate liquefaction susceptibility. Liquefaction could occur in these areas because they may contain cohesionless sediments with the potential for water saturation. These areas consisted primarily of sandy/loamy, alluvium or marine deposits located in: (1) the northwestern corner of the county between Tuana Gulch and Deep Creek extending south to Blue Gulch; (2) isolated zones along the Snake River; and (3) the region south of Murtaugh Lake, extending to the Goose Creek Mountains.

Less than one percent of the county was estimated to have high liquefaction susceptibility. Liquefaction is likely to occur in these areas due to the presence of hydric soils that are subject to seasonal saturation and likely to contain cohesionless sediments. Hydric soils are typically located adjacent to wetlands, on floodplains or plateaus, and valleys associated with major rivers or secondary streams. High risk areas in Twin Falls County were identified as hydric soils found: (1) along the Snake River; (2) along Cedar Creek from the outlet of Cedar Creek Reservoir to Mauldin Springs; (3) near the confluence of House Creek and Little House Creek; and (4) along the stretch of Salmon Falls Creek extending from Salmon Falls Creek reservoir to the Idaho-Nevada state line.

The liquefaction susceptibility map presented in this report is intended to be used as a general guide to outlining areas with the potential for liquefaction. Because the county-wide map was developed using regional scale geological, soils, and hydrological data, it cannot be used to make final determinations of liquefaction susceptibility at any specific locality. More detailed site-specific geotechnical investigations are required to further evaluate actual ground conditions for proposed building sites.

LIQUEFACTION SUSCEPTIBILITY MAPPING OF TWIN FALLS COUNTY, IDAHO

by

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February 2013

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910 Main Street, Suite 260
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INTRODUCTION

Liquefaction is a phenomenon where cohesionless soils, such as water-saturated sand and silts, rapidly lose their strength and take on the characteristics of a liquid during the intense shaking of an earthquake. Hazardous conditions caused by liquefaction often include damage and destruction to infrastructure such as building foundations, bridges, roads, and railways. Areas saturated with water that contain artificial fills and loose, sandy deposits, can have the highest susceptibility to liquefaction. These areas often occur adjacent to rivers, streams, and lakes, even in a semi-arid region like southern Idaho (Phillips et al. 2010). Liquefaction susceptibility may also be increased in irrigated areas by saturating soils. As a result, mapping where liquefaction is most likely to occur is an important initial step in mitigating these hazards.

A liquefaction susceptibility map provides an estimate of how likely soil will liquefy as a result of an earthquake. It classifies the relative hazard in terms of high, moderate, or low liquefaction susceptibility, but cannot be used to predict the severity of ground destruction resulting from liquefaction (Palmer et al. 2004). Ground destruction depends primarily on local site conditions and can only be assessed from site-specific, detailed geotechnical investigations. Liquefaction susceptibility mapping is performed at a larger scale and relies on two key criteria: (1) the propensity of soil to liquefy during an earthquake is heavily influenced by geological factors related to age, texture, and depositional environment; and (2) the availability of large-scale geology and soils geographic information system (GIS) datasets used to classify these geological factors.

METHODOLOGY

Age-Texture-Environment (ATE) Classification

The liquefaction susceptibility map for Twin Falls County was produced using standard methodology that categorizes liquefaction susceptibility based on geological age, texture (soil grain size), and depositional environment (FEMA 2009, Table 4-10, p. 4-22; Youd and Perkins 1978). These three geological factors were correlated to mapped geological deposits and soils using similar methods outlined by Palmer et al. (2004) and Phillips et al. (2010). Geological age and depositional environment were classified using a 1:500,000-scale map of surficial geological units (Ludington et al. 2007), which is the only current geological spatial dataset available for Twin Falls County. Texture was classified using the completed 1:24,000-scale soil survey geographic (SSURGO) database (USDA, NRCS 2012). A portion of the SSURGO database for southeastern Twin Falls County (South Idaho Forests Soil Survey Region) was incomplete and not utilized for this study (USDA, NRCS 2011). Geology and soils data were also combined with existing hydrography (USGS 1999), groundwater depths determined from water well information (IDWR 2012), and depth to bedrock determined from soil survey data (USDA, NRCS 2012).

ATE classification was performed by assigning rank scores (ranging from 0 to 5) with equal weight to each of the geological factors, based upon their descriptions and overall contribution to liquefaction susceptibility. Scores from each classification were then summed to give a combined ATE score that was used to determine liquefaction susceptibility classes (Table 1). Class categories of liquefaction susceptibility comprises: Class 3 (high), Class 2 (moderate), Class 1 (low), and Class 0 (no liquefaction susceptibility).

Specific criteria for each of the geological factors were evaluated when assigning ATE scores, based on existing literature, published data, and knowledge of geological units and soil types. Geological age can affect the compaction and cementation of soil, which directly influences shear strength and

liquefaction susceptibility (Palmer et al. 2004). Younger sediment deposits are more surficial, generally unconsolidated, and consequently more likely to lose shear strength and liquefy during earthquakes, so these sediments were given higher age classification scores (Table 2). Soils consisting of sandy, loamy textures were given high texture classification scores based on the principal that liquefaction generally occurs in soils composed primarily of sand-sized grains (Palmer et al. 2004). An unknown texture classification was assigned to the incomplete South Idaho Forests portion of Twin Falls County (USDA, NRCS 2011), because soil texture information was unavailable. Because liquefaction does not occur in bedrock, only unconsolidated units were given texture classification scores (Table 3). Depositional environments identified as alluvium that consisted of alluvial fans, lake or marine deposits, or stratified glacial sediments, which are generally younger, smaller grained, and unconsolidated, were given higher scores than older, larger grained sediments or bedrock (Table 4). Areas with water such as streams, rivers, lakes, reservoirs, and other waterbodies were identified by combining National Hydrography Dataset (NHD) flowline, area, and waterbody layers (USGS 1999) with water map units from the SSURGO database for Twin Falls County (USDA, NRCS 2012). These areas were designated as water in the liquefaction susceptibility classification and were not given a classification score.

Depth to Groundwater

Liquefaction susceptibility is greatly increased in areas subject to high water tables where the potential for water saturated soils are most prominent (Phillips et al. 2010). Areas with high water tables in Twin Falls County were determined by examining: (1) the distribution of hydric soils identified using the SSURGO database (USDA, NRCS 2012); and (2) depth to groundwater. Hydric soils consist of soils formed under conditions of seasonal saturation, flooding or ponding, and are often located adjacent to wetlands, on floodplains or plateaus, and valleys associated with major rivers or secondary streams.

Depth to groundwater was determined from static water level data for domestic water wells in Twin Falls County (IDWR 2012). Well water depths were interpolated from 3,557 well locations using ArcMap Spatial Analyst (Esri ArcGIS Desktop 10.0) to create a depth to groundwater surface. The modeled groundwater surface was used as a general guide in the analysis. Depth to groundwater surface was not used in the classification because water tables in Twin Falls County can experience large seasonal fluctuation due to spring runoff and irrigation, which make them difficult to model. In addition, multiyear droughts and wet cycles can also confound precise measurement of water table levels (Phillips et al. 2010). As a result, the analysis of liquefaction susceptibility is based on the overall ATE classification and the distribution of hydric soils throughout Twin Falls County.

EXPLANATION OF LIQUEFACTION SUSCEPTIBILITY CLASSES

Class 3

High Liquefaction Susceptibility: Areas underlain by hydric soils that are subject to seasonal saturation and likely to contain cohesionless sediments. This designation was based on combined ATE scores greater than or equal to 12. The Class 3 category was not present in Twin Falls County based on the ATE classification, but was identified in the study area using hydric soils obtained from the SSURGO database (USDA, NRCS 2012).

Class 2

Moderate Liquefaction Susceptibility: Areas that may contain cohesionless sediments with the potential for saturation. They are underlain by Holocene to late Pleistocene sediments that consist of

coarse alluvium, sandy/loamy outwash or marine deposits. Hydric soils are not present in this class and many alluvial fan deposits are too compacted or coarse-grained to liquefy even when saturated (Phillips et al. 2010). This class was designated based on combined ATE scores of 10-11.

Class 1

Low Liquefaction Susceptibility: Areas that are unlikely to contain cohesionless sediments and are not subject to saturation under normal conditions – They are underlain by early Pleistocene, Tertiary, and Pre-Tertiary sediments consisting of fine alluvium, limestone, or tholeiite. This class was designated based on combined ATE score of 9-1.

Class 0

No Liquefaction Susceptibility: Areas consisting only of bedrock and do not contain unconsolidated deposits – Liquefaction does not occur in bedrock, so only areas of unconsolidated material were assigned a liquefaction susceptibility classification. All bedrock areas were assigned a combined ATE scores of 0, regardless of the age and depositional environment classification score assigned.

Water

Rivers, major streams, canals, lakes, ponds, and reservoirs identified from the NHD layers (USGS 2012) and water map units from the SSURGO database for Twin Falls County (USDA 2012).

MAP LIMITATIONS AND DISCLAIMER

The liquefaction susceptibility map presented in this report is intended to be used at a scale of 1:100,000 as a general guide to outlining areas with the potential for liquefaction. Because this map was developed using regional scale geological, soils, and hydrological data, it cannot be used to make final determinations of liquefaction susceptibility at any specific locality. More detailed site-specific geotechnical investigations are required to further evaluate actual ground conditions for proposed building sites. Users should not apply this map at more detailed scales.

This map is provided *as is* without warranty of any kind, expressed or implied, including but not limited to the implied warranties for a particular use. The authors and Environmental Planning Group, LLC, will not be liable to the user of this map for any activity involving the map related to: (1) loss of profits, saving or any other consequential damages; (2) the suitability of this map for a particular purpose; or (3) use of the map or results obtained from the use of this map.

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ACKNOWLEDGEMENTS

Funded by a Federal Emergency Management Agency Pre-Disaster Mitigation Grant provided through the Idaho Bureau of Homeland Security Task Order # ID-2011-018. We thank Rick L. Fawcett, DA at Whisper Mountain Professional Services, Inc. and Jackie Frey at Twin Falls Emergency Services.

TABLES

Table 1. Age-Texture-Environment (ATE) scores and classification of liquefaction susceptibility for geological units in Twin Falls County.

Unit[1]	Description[1]	Age[2]	Texture[3]	Environment[4]	A	T	E	ATE Total	Class
Qa	alluvium, alluvial terrace	Q	b	al	1	0	3	0	None (Bedrock)
Qa	alluvium, alluvial terrace	Q	c	al	1	3	3	7	Low
Qa	alluvium, alluvial terrace	Q	f, u	al	1	2	3	6	Low
Qa	alluvium, alluvial terrace	Q	l, s	al	1	5	3	9	Low
Qd	alluvium, alluvial fan	Q	c	af	1	3	4	8	Low
Qd	alluvium, alluvial fan	Q	l	af	1	5	4	10	Moderate
Qg	alluvium, glacial drift	Q	b	al	1	0	3	0	None (Bedrock)
Qg	alluvium, glacial drift	Q	c	al	1	3	3	7	Low
Qg	alluvium, glacial drift	Q	l, s	al	1	5	3	9	Low
Qp?g	stratified glacial sediment, alluvium	P	b	al	2	0	4	0	None (Bedrock)
Qp?g	stratified glacial sediment, alluvium	P	c	al	2	3	4	9	Low
Qp?g	stratified glacial sediment, alluvium	P	f	al	2	2	4	8	Low
Qp?g	stratified glacial sediment, alluvium	P	l, s	al	2	5	4	11	Moderate
Qplg	alluvium, gravel	P	b	al	2	0	2	0	None (Bedrock)
Qplg	alluvium, gravel	P	c	al	2	3	2	7	Low
Qplg	alluvium, gravel	P	f	al	2	2	2	6	Low
Qplg	alluvium, gravel	P	l, s	al	2	5	2	9	Low
Qpmd	lake or marine deposit (non-glacial), alluvium	mP	b	la	2	0	4	0	None (Bedrock)
Qpmd	lake or marine deposit (non-glacial), alluvium	mP	c	la	2	3	4	9	Low
Qpmd	lake or marine deposit (non-glacial), alluvium	mP	f	la	2	2	4	8	Low
Qpmd	lake or marine deposit (non-glacial), alluvium	mP	l, s	la	2	5	4	11	Moderate
Qpmd	lake or marine deposit (non-glacial), alluvium	mP	u	la	2	2	4	8	Low
Qpt	till, outwash	yP	b	al	3	0	3	0	None (Bedrock)
Qpt	till, outwash	yP	c	al	3	3	3	9	Low
Qpt	till, outwash	yP	f	al	3	2	3	8	Low
Qpt	till, outwash	yP	l, s	al	3	5	3	11	Moderate
Qpu?b	tholeiite, lava flow	yP	b	v	3	0	0	0	None (Bedrock)
Qpu?b	tholeiite, lava flow	yP	c	v	3	3	0	6	Low
Qpu?b	tholeiite, lava flow	yP	f	v	3	2	0	5	Low
Qpu?b	tholeiite, lava flow	yP	l, s	v	3	5	0	8	Low
Qpu1b	tholeiite, lava flow	yP	b	v	3	0	0	0	None (Bedrock)

Table 1. Age-Texture-Environment (ATE) scores and classification of liquefaction susceptibility for geological units in Twin Falls County.

Unit[1]	Description[1]	Age[2]	Texture[3]	Environment[4]	A	T	E	ATE Total	Class
Qpu1b	tholeiite, lava flow	yP	c	v	3	3	0	6	Low
Qpu1b	tholeiite, lava flow	yP	l	v	3	5	0	8	Low
Qpug	outwash, alluvium	yP	b	al	3	0	3	0	None (Bedrock)
Qpug	outwash, alluvium	yP	c	al	3	3	3	9	Low
Qpug	outwash, alluvium	yP	f, u	al	3	2	3	8	Low
Qpug	outwash, alluvium	yP	l, s	al	3	5	3	11	Moderate
QTb	tholeiite, lava flow	oP	b	v	2	0	0	0	None (Bedrock)
QTb	tholeiite, lava flow	oP	c	v	2	3	0	5	Low
QTb	tholeiite, lava flow	oP	f, u	v	2	2	0	4	Low
QTb	tholeiite, lava flow	oP	l, s	v	2	5	0	7	Low
QTs	lake or marine deposit (non-glacial), alluvium	oP	b	la	2	0	4	0	None (Bedrock)
QTs	lake or marine deposit (non-glacial), alluvium	oP	c	la	2	3	4	9	Low
QTs	lake or marine deposit (non-glacial), alluvium	oP	f, u	la	2	2	4	8	Low
QTs	lake or marine deposit (non-glacial), alluvium	oP	l, s	la	2	5	4	11	Moderate
PPNs	limestone, sandstone	pT	u	m	0	2	0	2	Low
PZu	limestone, arenite	pT	f	m	0	2	0	2	Low
PZu	limestone, arenite	pT	l	m	0	5	0	5	Low
Tpb	basalt, lava flow	T	b	v	0	0	0	0	None (Bedrock)
Tpb	basalt, lava flow	T	c	v	0	3	0	3	Low
Tpb	basalt, lava flow	T	f, u	v	0	2	0	2	Low
Tpb	basalt, lava flow	T	l, s	v	0	5	0	5	Low
Tpf	rhyolite, latite	T	b	v	0	0	0	0	None (Bedrock)
Tpf	rhyolite, latite	T	c	v	0	3	0	3	Low
Tpf	rhyolite, latite	T	f, u	v	0	2	0	2	Low
Tpf	rhyolite, latite	T	l, s	v	0	5	0	5	Low

[1] Unit and Description from geologic maps (Ludington et al. 2007).

[2] See Table 2 for explanation of age symbols.

[3] See Table 3 for explanation of texture symbols.

[4] See Table 4 for explanation of depositional environment symbols.

Table 2. Age classification of geological units for Twin Falls County.

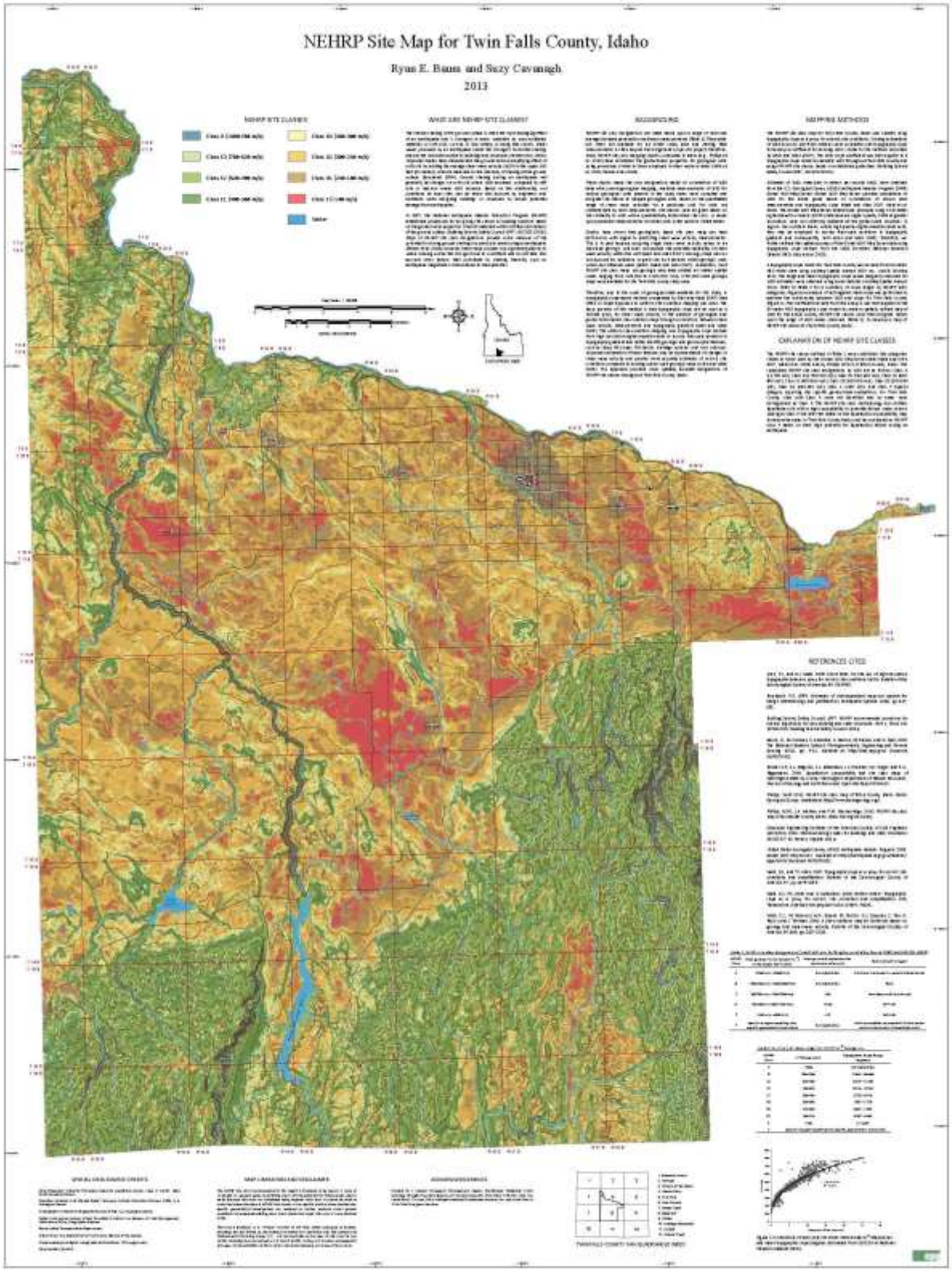
Symbol	Age	Unit Age Description	Age Grouping	Score
H	0 Ma - 0.01 Ma	Holocene	Holocene	5
mP	0.13 Ma - 0.78 Ma	Middle Pleistocene	Middle Pleistocene	2
oP	0.78 Ma - 2.6 Ma	Early Pleistocene	Older Pleistocene	2
oP	1.8 Ma - 3.6 Ma	Early Pleistocene and Late Pliocene	Older Pleistocene	2
P	0.01 Ma - 2.6 Ma	Pleistocene	Pleistocene, undivided	2
pT	252 Ma - 359 Ma	Late Paleozoic	PreTertiary (Mesozoic-Paleozoic)	0
pT	279 Ma - 315 Ma	Early Permian to Early Pennsylvanian	PreTertiary (Mesozoic-Paleozoic)	0
Q	0 Ma - 2.6 Ma	Quaternary	Quaternary	1
T	2.6 Ma - 5.3 Ma	Pliocene	Tertiary (mostly Pliocene-Miocene)	0
T	5.3 Ma - 23 Ma	Miocene	Tertiary (mostly Pliocene-Miocene)	0
yP	0.01 Ma - 0.13 Ma	Late Pleistocene	Younger Pleistocene	3

Table 3. Texture classification of soil map units for Twin Falls County.

Symbol	Description	Score
b	bedrock	0
c	coarse, predominantly gravel, sand or loamy over sand	3
f	fine, predominantly silt and clay	2
l	loamy	5
s	sandy	5
u	unknown	2

Table 4. Depositional environment classification of geological units for Twin Falls County.

Symbol	Unit	Environment	Description	Score
af	Qd	alluvium	alluvial fan	4
al	Qplg	alluvium	gravel	2
al	Qpug	outwash	alluvium	3
al	Qpt	till	outwash	3
al	Qa	alluvium	alluvial terrace	3
al	Qg	alluvium	glacial drift	3
al	Qp?g	stratified glacial sediment	alluvium	4
la	QTs	lake or marine deposit (non-glacial)	alluvium	4
la	Qpmd	lake or marine deposit (non-glacial)	alluvium	4
m	PPNs	limestone	sandstone	0
m	PZu	limestone	arenite	0
v	QTb	tholeiite	lava flow	0
v	Qpu?b	tholeiite	lava flow	0
v	Qpu1b	tholeiite	lava flow	0
v	Tpf	rhyolite	latite	0
v	Tpb	basalt	lava flow	0
w	OW	water	water	0


NEHRP Site Map for Twin Falls County, Idaho
Ryan E. Bunn and Suzy Cavanagh
2013

NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM SITE CLASS MAPPING

OF TWIN FALLS COUNTY, IDAHO

Executive Summary

By

Ryan E. Baum and Suzy Cavanagh, P.G.

February 2013

Environmental Planning Group, LLC
910 Main Street, Suite 260
Boise, Idaho 83702
208.258.2060
www.epgaz.com

The intense shaking of the ground surface is often the most damaging effect of an earthquake and is strongest in areas underlain by unconsolidated materials or soft soils. Shear waves produced by an earthquake create the strongest horizontal shaking and are the most destructive to buildings and structures. Studies have characterized the ground-motion amplifying effect of soft soils by relating the average shear wave velocity (V_s^{30}) in the upper 100 feet (30 meters) of earth materials to the intensity of shaking at the ground surface. In 1997, the National Earthquake Hazards Reduction Program (NEHRP) established procedures for assigning site classes to building locations based on the geotechnical properties of earth materials within 100 feet of the ground surface. Maps of NEHRP site class designations provide some measure of the potential for strong ground shaking in a particular area during an earthquake.

The NEHRP site class map for Twin Falls County, Idaho was created using topographic slope as a proxy for seismic site conditions. Existing measurements of V_s^{30} were correlated with topographic slope to develop a coefficient for estimating V_s^{30} throughout Twin Falls County and assigning NEHRP site classes. Using NEHRP procedures, site class designations were assigned based on a range of V_s^{30} (m/s) as follows: Class A (>1,500 m/s), Class B (1,500-760 m/s), Class C3 (760-620 m/s), Class C2 (620-490 m/s), Class C1 (490-360 m/s), Class D3 (360-300 m/s), Class D2 (300-240 m/s), Class D1 (240-180 m/s), Class E (<180 m/s), and Class F (special category requiring site specific geotechnical evaluation). Class A is not used in the western United States. Class B consists of rock. Classes C1-C3 consist of very dense soil or soft rock and Classes D1-D3 consist of stiff soil. Class E consists of soft soil. The strength of ground shaking increases as surface materials become less dense and softer. The potential for failure under seismic load is the lowest for areas designated as Class A and the highest for areas designated as Class F.

The percentage of total area for NEHRP site classes mapped in Twin Falls County were as follows: Class B (2%), Class C3 (5%), Class C2 (9%), Class C1 (16%), Class D3 (13%), Class D2 (22%), Class D1 (17%), Class E (6%). NEHRP mapping of Twin Falls County did not identify any areas as Class A (used only in the Eastern United States). The county consists primarily of stiff soils (Class D1-D3) and very dense soil or soft rock (Class C1-C3) which have much less potential for failure under seismic loads. For Twin Falls County, areas designated as Class E could be considered as having some potential for failure under seismic load, especially if soils are considerably soft. In general, very few areas throughout the county were designated as Class E. As a result, the potential for specific areas to experience the strongest ground shaking, known to occur in soft soils during an earthquake, would be minimal throughout the county. Class F was not assigned because it requires detailed geotechnical evaluation. The NEHRP site class methodology defines liquefiable soils with a high susceptibility to potential failure under seismic loading as Class F. We refer the reader to the liquefaction susceptibility map to determine areas in Twin Falls County that could be considered as NEHRP Class F based on their high potential for failure under seismic loading.

The NEHRP site class map is intended to be used as a general guide to outline areas with the potential for failure under seismic loads. Because this map was developed using regional scale data, it cannot be used to make final determinations of NEHRP site classes at any specific locality. More detailed site-specific geotechnical investigations are required to further evaluate actual ground conditions for proposed building sites.

NATIONAL EARTHQUAKE HAZARDS REDUCTION PROGRAM SITE CLASS MAPPPING OF TWIN FALLS COUNTY, IDAHO

by

Ryan E. Baum and Suzy Cavanagh, P.G.

February 2013

Environmental Planning Group, LLC
910 Main Street, Suite 260
Boise, Idaho 83702
208.258.2060
www.epgaz.com

INTRODUCTION

The intense shaking of the ground surface is often the most damaging effect of an earthquake and is strongest in areas underlain by unconsolidated materials or soft soils, such as in river valleys or along lake shores. Shear waves produced by an earthquake create the strongest horizontal shaking and are the most destructive to buildings and structures (Palmer et al. 2004). Empirical studies have characterized the ground-motion amplifying effect of soft soils by relating the average shear wave velocity (V_s^{30}) in the upper 100 feet (30 meters) of earth materials to the intensity of shaking at the ground surface (Borcherdt 1994). Ground shaking during an earthquake will generally be stronger on soft soils where V_s^{30} decrease, compared to stiff soils or bedrock where V_s^{30} increase. Based on this relationship, soil conditions at local sites can be taken into account by engineers and architects when designing buildings or structures to reduce potential damage from earthquakes.

In 1997, the National Earthquake Hazards Reduction Program (NEHRP) established procedures for assigning site classes to building locations based on the geotechnical properties of earth materials within 100 feet (30 meters) of the ground surface (Building Seismic Safety Council 1997; ASCE/SEI 2010). Maps of NEHRP site class designations provide some measure of the potential for strong ground shaking in a particular area during an earthquake (Palmer et al. 2004); however, these maps provide only a general guide as to where shaking will be the strongest due to soil effects and do not take into account other factors that contribute to shaking intensity, such as earthquake magnitude or the distance to the epicenter.

NEHRP site class designations are made based upon a range of V_s^{30} and average standard penetration resistance measurements (Table 1). These data are often not available for an entire study area and making field measurements is often beyond the budget and scope of a project; therefore, many NEHRP site class mapping studies conducted in Idaho (e.g., Phillips et al. 2010) have estimated the geotechnical properties for geological units using procedures similar to those employed in other western states (Wills et al. 2000; Palmer et al. 2004).

These studies made site class designations based on correlations of V_s^{30} data with current geological mapping. Available measurements of V_s^{30} for various geological units present in the study areas were compiled and assigned site classes to mapped geological units, based on the quantitated range of shear wave velocities for a particular unit. For units not characterized by V_s^{30} measurements, site classes were assigned based on the similarity to units with a quantitatively determined site class, or based upon published measurements of similar units in the western United States.

Studies have shown that geologically based site class maps can have deficiencies with regard to predicting shear wave velocity measurements. This is in part because assigning single shear wave velocity values to an individual geologic unit does not capture the potential variability of shear wave velocity within the unit (Wald and Allen 2007). Geology maps also do not account for variations in grain size (soil texture) within geologic units which can influence wave speeds (Wald and Allen 2007). In addition, most NEHRP site class maps use geologic map data created at smaller spatial scales ranging

from 1:24,000 to 1:100,000. Only 1:500,000 scale geologic maps were available for the Twin Falls county study area.

Therefore, due to the scale of geological data available for this study, a topographic slope-based method comparable to Allen and Wald (2007) that offers a simple approach to uniform site-condition mapping was used. The basic premise of this method is that topographic slope can be used as a reliable proxy for shear wave velocity in the absence of geological and geotechnical based site-condition maps through correlations between shear wave velocity measurements and topographic gradient (Allen and Wald 2009). The uniform site-condition mapping uses topographic slope derived from high resolution digital elevation data to resolve fine-scale variation in topographic gradient and better identify geologic and geomorphic features, such as steep hill slopes, flat basins, drainage systems, and rock outcrops. Improved delineation of these features may be representative of changes in shear wave velocity and provide more accurate estimates of seismic site conditions compared to existing coarse-scale geologic maps (Allen and Wald 2009). This approach provided more spatially accurate designations of NEHRP site classes throughout Twin Falls County, Idaho.

METHODOLOGY

The NEHRP site class map for Twin Falls County, Idaho was created using topographic slope as a proxy for seismic site conditions. Existing estimations of V_s^{30} down to 100 ft (30 meters) were correlated with topographic slope to develop a coefficient for deriving V_s^{30}, similar to the methods described by Wald and Allen (2007). The V_s^{30} slope coefficient was then applied to a topographic slope model to calculate V_s^{30} throughout Twin Falls County and assign NEHRP site classes based on established guidelines (Building Seismic Safety Council 1997, ASCE/SEI 2010).

Estimates of V_s^{30}, measured in meters per second (m/s), were obtained from the U.S. Geological Survey (USGS) Earthquake Hazards Program (2009) Global V_s^{30} Map Server. Global V_s^{30} Map Server provides calculations of V_s^{30} for the entire globe based on correlations of known V_s^{30} measurements and topographic slope (Wald and Allen 2007, Wald et al. 2004). The Global V_s^{30} Map Server dataset was produced using 1-kilometer digital elevation models (DEMs) data because higher quality DEMs at greater resolutions were not uniformly available at the global scale. However, in regions like southern Idaho, where high quality digital elevation data exist, they may be employed to resolve finer-scale variations in topographic gradient, and consequently, V_s^{30} (Allen and Wald 2009). Therefore, we further refined the spatial accuracy of the Global V_s^{30} Map Server data using topographic slope derived from the USGS 30-meter National Elevation Dataset (NED; Gesch et al. 2002).

A topographic slope model for Twin Falls County was derived from 30-meter NED raster data using ArcMap Spatial Analyst (ESRI Inc., ArcGIS Desktop 10.0). The range and mean topographic slope values (degrees) observed for V_s^{30} estimates were obtained using zonal statistics (ArcMap Spatial Analyst Tools). Refer to Table 2 for a summary of slope ranges by NEHRP V_s^{30} categories. Regression analysis of V_s^{30} against mean slope was performed to examine the relationship between V_s^{30} and slope for Twin Falls County (Figure 1). The coefficient derived from this analysis was then applied to the 30-meter NED topographic slope model to create a spatially refined map of V_s^{30} for the entire county. NEHRP site

classes were then assigned, based upon the range of V_s^{30} values observed (Table 2), to develop a map of NEHRP site classes for Twin Falls County, Idaho.

EXPLANATION OF NEHRP SITE CLASSES

The NEHRP site classes defined in Table 1 were subdivided into categories similar to those used by the Global V_s^{30} Map Server data (Wald and Allen 2007, Wald et al. 2004) and by Phillips (2011) in Teton County, Idaho. The subdivided NEHRP site class designations by V_s^{30} are as follows: Class A (>1,500 m/s), Class B (1,500-760 m/s), Class C3 (760-620 m/s), Class C2 (620-490 m/s), Class C1 (490-360 m/s), Class D3 (360-300 m/s), Class D2 (300-240 m/s), Class D1 (240-180 m/s), Class E (<180 m/s), and Class F (special category requiring site specific geotechnical evaluation). For Twin Falls County, sites with Class A were not identified and no areas were distinguished as Class F. The NEHRP site class methodology also defines liquefiable soils with a high susceptibility to potential failure under seismic loading as Class F. We refer the reader to the liquefaction susceptibility map to determine areas in Twin Falls County that could be considered as NEHRP Class F based on their high potential for liquefaction failure during an earthquake.

MAP LIMITATIONS AND DISCLAIMER

The NEHRP site class map presented in this report is intended to be used at a scale of 1:100,000 as a general guide to outlining areas with the potential for failure under seismic loads. Because this map was developed using regional scale data, it cannot be used to make final determinations of NEHRP site classes at any specific locality. More detailed site-specific geotechnical investigations are required to further evaluate actual ground conditions for proposed building sites. Users should not apply this map at more detailed scales.

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TABLES

Table 1. NEHRP site class designations (modified from Building Seismic Safety Council 1997 and ASCE/SEI 2010).

NEHRP Class	Average Shear Wave Velocity (V_s^{30}) in the Upper 100 ft (30 m)	Average Standard Penetration Resistance (blows/ft)	Rock and Soil Category
A	>1,500 m/s (>5000 ft/s)	Not applicable	Hard rock; not used in western United States
B	760-1,500 m/s (2,500-5,000 ft/s)	Not applicable	Rock
C	360-760 m/s (1,200-2,500 ft/s)	>50	Very dense soil or soft rock
D	180-360 m/s (600-1,200 ft/s)	15-50	Stiff soil
E	<180 m/s (<600 ft/s)	<15	Soft soil
F	Special category requiring site-specific geotechnical evaluation	Not applicable	Soils susceptible to potential failure under seismic load such as liquefiable soils

Table 2. Summary of slope ranges for subdivided NEHRP V_s^{30} Categories.

NEHRP Class	V_s^{30} Range (m/s)	Topographic Slope Range (degrees)
A	>1,500	Not applicable
B	760-1,500	21.601 - 60.808
C3	620-760	12.294 - 21.601
C2	490-620	6.410 - 12.294
C1	360-490	2.733 - 6.410
D3	300-360	1.651 - 2.733
D2	240-300	0.891 - 1.651
D1	180-240	0.397 - 0.891
E	<180	0 - 0.397
F	Special category requiring site-specific geotechnical evaluation	

FIGURES

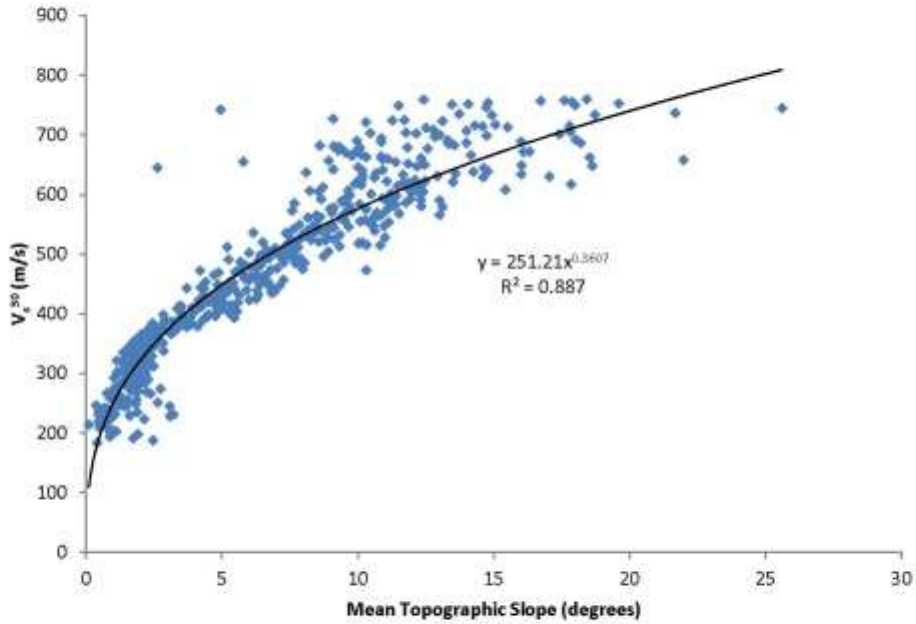

Figure 1. Correlations of V_s^{30} (m/s) from the USGS Global V_s^{30} Map Server and mean topographic slope (degrees) derived from USGS 30-m National Elevation Dataset.