



City of Glenwood Springs

Addendum to the Garfield County Natural Hazards Mitigation Plan

2012

Table of Contents

Section 1: Planning Process	1
Overview	1
How was the Addendum developed?	1
Adoption	3
Section 2: Community Profile	4
Geography and climate	4
Population and demographics	4
Employment and economics	5
Housing	5
Land use, development, and transportation	6
Critical facilities and infrastructure	7
Historic and cultural resources	7
Administrative structure	7
Community organizations & programs	8
Section 3: Risk Assessment	9
Wildfire	9
Flood	9
Landslide and debris flow	11
Earthquake	11
Severe weather	12
Hazardous materials	12
Section 4: Mitigation Action Items	13
Multi Hazard	13
Flood	13
Severe weather	13

Attachments

- Attachment 1: Action item Forms
- Attachment 2: Risk Assessment Map
- Attachment 3: Critical Infrastructure Map

Section 1: Planning Process

Overview

The City of Glenwood Springs developed this addendum to the Garfield County multi-jurisdictional Natural Hazards Mitigation Plan in an effort to increase the community's resilience to natural hazards. The addendum focuses on the natural hazards that could affect Glenwood Springs, which include wildfire, flood, landslide and debris flow, earthquake, severe weather. The addendum also addresses hazardous materials spills, which are possible secondary hazards resulting from wildfires, landslides, and transport accidents that can affect drinking water and wildlife habitat.

This addendum has the following attachments:

- Attachment 1 provides detailed action items for risk reduction
- Attachment 2 provides a map which is the output of a risk assessment discussion early in the process of plan development
- Attachment 3 provides critical infrastructure maps, generated by Garfield County Geographic Information Systems (GIS) staff, using best available digital data

It is impossible to predict exactly when disasters may occur, or the extent to which they will affect the town. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from natural hazards.

The addendum provides a set of actions that aim to reduce the risks posed by natural hazards through education and outreach programs, the development of partnerships, and the implementation of preventative activities through existing plans and planning mechanisms including:

- City of Glenwood Municipal Code adopting the International Fire Code, Chapter Four,
- City of Glenwood Springs Flood and mudslide Action Plan, 1995,
- and the City Manager's Office.

The actions described in the addendum are intended to be implemented through existing plans and programs within the town.

How was the Addendum developed?

The City of Glenwood Springs developed this addendum in a collaborative process that Garfield County initiated in April of 2011. At that time, the County Risk Assessment had been completed in draft form, using data that covered many of the County's jurisdictions and all of its unincorporated areas. The County had initiated the process of developing its action items. The County organized an initial outreach meeting, held in April of 2011, and invited all towns and cities, fire districts, school districts, and other overlapping districts. State of Colorado Division of Emergency

Management (DEM) and Federal Emergency Management Agency (FEMA) representatives described the mitigation planning process and plan requirements. The City of Glenwood Springs opted to create an addendum to the County Plan after that meeting.

The County then organized an intensive workshop for the jurisdictions developing addendums (including Glenwood Springs) and invited a broad range of participation from City staff. The purpose of the workshop, which was held on June 27, 2011, was to identify areas in the jurisdictions where risk was greater than that identified in the County Risk Assessment, and to begin to develop action items. One of the maps that was the output of this workshop and focused on community-level risk is included in this plan addendum as Attachment 2. Participants from Glenwood Springs included:

- Rick Turner, Streets Department Superintendent
- Gary Tillotson, Acting Fire Chief

The agenda for the workshop follows:

Agenda item	Topic	Time
Presentation / Intro	<ul style="list-style-type: none"> • What is a multi-jurisdictional plan; requirements from FEMA • County Risk Assessment and Community profile • Questions / Discussion 	9:00 – 10:00
Breakout #1, by jurisdiction	<ul style="list-style-type: none"> • Addendum document: overview and discussion • How is risk in your jurisdiction greater than the risk in the County? 	10:00 – 11:30
Breakout #2, by jurisdiction	<ul style="list-style-type: none"> • Action item development: What steps will we take to reduce risk? 	12:30 to 2:00
Presentation	<ul style="list-style-type: none"> • Plan adoption requirements • Plan maintenance and update process • Outreach at jurisdictional level • Next steps • Discussion / questions 	2:00 to 3:00

Following the workshop, the City of Glenwood Springs further developed its action items in consultation with ECONorthwest, County staff, and internal meetings.

The following plans, reports, and studies were reviewed in the development of this addendum:

- Public outreach survey of Garfield County residents
- Garfield County Risk Assessment
- Census and other demographic and economic data
- Garfield County Community Wildfire Protection Plan

Citizens of Glenwood Springs contributed to the development of this plan as follows:

- During plan development:
 - Garfield County developed an on-line survey, which was advertised on its website, and via email in multiple list servs. Additionally, Glenwood Springs posted notification of the County survey on the

City Website. Through these distribution methods, 106 people took the survey. 26 of these respondents lived in Area 1 (the area in which Glenwood Springs is located), 38 worked in the Area, and 40 claimed that Area 1 was the area with which they were most familiar (i.e. spend most of their time). Of those 40 respondents who associate most directly with Area 1, nearly 86% of them (29 people) agreed that the County's Risk Assessment of Area 1 was "accurate" or "very accurate".

- Additionally, the meeting where the City Council formally declared it's participation in the planning process was a public meeting. The NHMP agenda item was included in the public notice of the meeting.
- In the fall of 2011, Glenwood Springs also published a public notification of the NHMP Planning Process on the City's website. This notice was posted for approximately 6 weeks. Contact information was provided for submitting questions or comments.
- The public was also given an opportunity to comment on the draft addendum document, as follows:
 - The final draft addendum document was posted on the City's website, and also on the County website, which clearly included a phone number and email address for provision of comments. The City received X comments, which were [addressed, incorporated into document, etc.]
 - A work session was held with the Board of County Commissioners to review the draft County NHMP including the Rifle Addendum and to take public comment on March 13, 2012.
 - The public was provided an opportunity to comment when the plan was adopted via resolution, in a public meeting, on [DATE].Plan Maintenance and Implementation

The City of Glenwood Springs is adopting the plan maintenance and implementation process outlined in the County Natural Hazard Mitigation Plan.

Adoption

This section will be filled out at a later date, following adoption

FEMA approved the County Plan on [DATE.]

The City of Glenwood Springs adopted this addendum to the Garfield County Natural Hazard Mitigation Plan via resolution on [date].

Section 2: Community Profile

The following section describes Glenwood Springs from a number of perspectives in order to help define and understand Glenwood Springs' sensitivity and resilience to natural hazards. Sensitivity factors can be defined as those assets and characteristics that may be impacted by natural hazards, (e.g., special populations, economic factors, and historic and cultural resources). Resilience factors can be defined as the ability to manage risk and adapt to hazard event impacts (e.g., governmental structure, agency missions and directives, and plans, policies, and programs). The information in this section represents a snapshot in time of the current sensitivity and resilience factors when the plan was developed. The information documented below, along with the risk assessments in Section 3 below, should be used as the local level rationale for the risk reduction actions identified in the plan.

Geography and climate

Glenwood Springs is located in Garfield County in northwestern Colorado. Glenwood Springs is about 4.8 square miles. The City is located in the mountains, and as such has relatively wide ranging temperatures, from an average temperature in the 80's in the summer, to an average in the 30s in the winter.

Population and demographics

Glenwood Spring's population grew from about 7,736 people in 2000 to 9,614 people in 2010, an increase of more than 3,000 people at an average annual growth rate of 2.2%. Glenwood Spring's population grew slightly slower than the County, accounting for 18% of County population in 2000 and 17% in 2010.¹

The most vulnerable components of the population in a disaster are women, children, minorities, and the poor. In comparison to the County, Glenwood Spring's population was:²

- **Older than the County.** The median age of Glenwood Spring's population was 37.8 years old in 2009, compared with the County average of 34.2 years old. Glenwood Spring's population grew older since 2000, when the median age was about 36.2 years. Glenwood Springs had a smaller proportion of people under 20 years old (21%) than the County (30%). Glenwood Springs had a larger proportion of people over 60 years old (17%) than the County (13%).
- **More ethnically diverse.** Since 2000, Glenwood Springs grew more ethnically diverse. In 2000, 14% of Glenwood Springs' population was Hispanic (1,100 people). By 2009, about 18% of Glenwood Springs' population was Hispanic (1,600 people). Hispanic population grew slower in Glenwood Springs than in the County, where Hispanic population increased from 17% to 24% of the population between 2000 and 2009.

¹ Colorado Division of Local Government, State Demography Office

² Based on data from U.S. Census, 2000 and U.S. Census American Community Survey 2005-2009

- **More likely to be in poverty than the County.** The poverty rate in Glenwood Springs (12.0% of people living below the federal poverty line) was higher than the County's poverty rate (8.1%) in 2009.

Employment and economics

The City's economic base is a mixture of tourism and commercial uses. Unemployment in the current recession has been relatively high; very little new development has taken place. Consideration of Glenwood Springs' economy is important in recovery planning. In comparison to Garfield County, Glenwood Springs' economy had:³

- **Similar mix of industries.** Glenwood Springs' major employment sectors, accounting for 10% or more of employment each, were: Retail Trade, Construction, Leisure Activities (e.g., Accommodations, Food Service, or Entertainment), Health Care and Social Assistance, Professional Services, and Government.
- **Lower household income.** Glenwood Springs' median household income in 2009 (about \$51,900) was about \$12,900 lower than the County (about \$64,800).
- **Fewer long-distance commuters.** Forty-five percent of Glenwood Springs workers commuted for fewer than 15 minutes, compared with about one-third of workers in Garfield County. About one-third of workers in Glenwood Springs commute lasted 30 minutes or more, compared to 40% of the County workers. This is an indicator of the importance of the transportation infrastructure within the City and the connection to County infrastructure for the local economy.

Housing

Understanding the characteristics of Glenwood Springs' housing stock is important to recovery planning. Housing that is in poor condition is more likely to be at-risk in recovery than housing in good condition. Some indicators of condition include housing tenure and housing age, with older renter-occupied housing is more likely to be in poor condition than newer owner-occupied housing. In comparison to Garfield County, Glenwood Springs' housing stock was:⁴

- **More renter-occupied.** About 41% of Glenwood Springs' housing was renter-occupied, compared with one-thirds of housing in Garfield County. About 60% of housing in Glenwood Springs was owner-occupied, compared with about two-thirds of housing in Garfield County.
- **Older.** The median year build of Glenwood Springs' housing stock was 1974, compared with 1984 in Garfield County. Although Glenwood Springs had a larger share of housing built prior to 1970 than the County (40% compared to 22%), nearly one-quarter of Glenwood Springs' housing was built since 1990, compared with the County average of 40%.
- **More multifamily.** Although the predominant housing type in the City is single-family detached, Glenwood Springs had a larger share of multifamily housing with five or more units per structure (23%) than the County average (12%). About half of

³ Based on data from U.S. Census American Community Survey 2005-2009

⁴ Based on data from U.S. Census American Community Survey 2005-2009

housing in Glenwood Springs was single-family detached, compared with 60% on the County's housing. Glenwood Springs had a smaller share of mobile and manufactured housing (7%) compared to the County (13%).

Land use, development, and transportation

Several regional transportation routes bisect the City. I-70, which is also a hazardous materials transportation route, a rail line, and several State highways. A network of recreational trails also surrounds the City.

Glenwood Springs adopted its latest Long Range Transportation Plan in 2003. That plan incorporates three transit agencies: Ride Glenwood Springs (local transit service), the Roaring Fork Transportation Authority (RFTA) (regional transit service), and the Traveler, a demand-responsive transit service for the elderly and disabled provided by Colorado Mountain College.

The Long Range Transportation Plan describes transportation several funding sources available to the City of Glenwood Springs: Transportation Management Tax Fund, the Bus Tax Fund and the RFTA tax. The Plan also describes the existing system components, including streets and bridges, bicycle and pedestrian, aviation, rail, transit, parking and the transportation demand management program.

The Long Range Transportation Plan can be found on the City's website.

In 2011, the City also completed and adopted an update to the Comprehensive Code. Through the plan update process, the community identified a vision statement and primary development goals:

- Vision Statement:
 - The City of Glenwood Springs desires to maintain its small town character and preserve its cultural and natural resources by implementing a proactive plan to achieve directed and balanced development, social and economic diversity and address its transportation needs.
- Community Goals
 - The Community Goals of the 2011 Glenwood Springs Comprehensive Plan are:
 - Promote long-term, sustainable, diverse economic development
 - Maintain Glenwood Springs as the regional tourism, retail, commercial and governmental center of Garfield County
 - Preserve the small town character while maintaining the livability of Glenwood Springs and increasing the vibrancy and commercial success of the Downtown
 - Address transportation needs and provide multiple convenient travel choices
 - Direct development to locations and building forms that are cost-effective to serve
 - Provide housing for the entire community
 - Support social diversity
 - Preserve cultural resources
 - Preserve natural resources

The Comprehensive plan update also identified several challenges facing the community now and in the future:

- Competition in the Role as a Regional Commercial Center of the County
- Vitality
- Significant but Uncertain Impacts From Increased Energy Exploration/Development in Garfield County
- The Lack of Affordable Housing for its Workforce, Both Rental and For-Sale Housing
- Increased Traffic and Congestion on Grand Avenue
- Retaining Community Character
- To Grow or Not To Grow

The 2011 Comprehensive Plan update document can be found on the City's website.

Critical facilities and infrastructure

The Garfield County NHMP identifies the vulnerability of and risk incurred by critical facilities and infrastructure throughout the County, especially by Study Area. In the County NHMP, Area 1 includes Glenwood Springs.

The maps included in Appendix 3 show the best available critical facility and infrastructure data. Additionally, the City has recently built a new wastewater treatment plant.

Historic and cultural resources

Downtown Glenwood Springs is an important retail center and tourist destination with significant historical and cultural importance. The Spa of the Rocky Mountains and the hot springs pool are important to the local economy and are also significant cultural and historical resource. Doc Holiday's grave located within Linwood Cemetery is a common tourist destination for people visiting the area. Glenwood also has many trails and amenities that add to the tourist industry.

Administrative structure

Garfield County is guided by a 7 member City Council and 13 departments:

- Information Services
- Finance
- Community Development
- Fire Department
- Parks and Recreation
- Public Works
- City Clerk
- Human Resources
- Legal Department
- Broadband
- Electric Department
- Police Department
- Municipal Court

Community organizations & programs

Several community organizations and programs in Glenwood Springs that could assist in implementing mitigation measures:

- Kiwanis Club
- Roaring Fork Conservative
- Rotary Club
- Chamber of Commerce
- Homeowners Associations
- Neighborhood Watch Groups

Additionally, the City has established several Boards and Commissions to guide decision making and implementation of its programs and services:

- Downtown Development Authority
- Financial Advisory Board
- Volunteer Firefighter Pension Board
- Historic preservation Commission
- Parks and Recreation Commission
- Planning and Zoning Commission
- River Commission
- Transportation Commission
- Tourism Promotion Board
- Victims and Witnesses Assistance and Law Enforcement Board

Section 3: Risk Assessment

This section expands on Garfield County's Natural Hazards Mitigation Plan by addressing Glenwood Spring's unique risks to the following hazards:

- Wildfire
- Flood
- Landslide and debris flow
- Earthquake
- Severe Weather
- Hazardous Materials (as a secondary hazard to the natural hazards outlined above)

Wildfire

In general, the County's Risk Assessment adequately describes the risk from wildfires within the areas surrounding the City of Glenwood Springs, given the data currently available. However, the County is also in the process of updating its Community Wildfire Protection Plan (CWPP), and more accurate and detailed risk assessment data will be available in the early years of implementing this natural hazard mitigation addendum. The City of Glenwood Springs will work with the County and the surrounding rural fire protection districts to evaluate and understand the implications of the CWPP to the City's wildfire risk and action items.

With this mitigation plan addendum, the City wishes to acknowledge the following geographic areas and related vulnerabilities in which local risk is greater than the risk described in the County's risk assessment, and in which additional actions are warranted to reduce the risk to life and property:

- The greatest potential for wildfire spreading from the wildland urban interface into the City limits is throughout the City. Glenwood has a unique topography merging steep hillsides adjacent to the City boundary. Wildfire from any one of these slopes would have a negative impact to the residents and businesses adjacent to the hillside slopes. The City's water plant on Red Mountain may be vulnerable to wildfire.

Flood

The City has identified the following geographic areas and related vulnerabilities in which local flood risk is greater than the risk described in the County's risk assessment, and in which additional actions are warranted to reduce the risk to life and property from flooding. The bullets below are ordered according to their importance to the community (highest priority infrastructure is listed first):

- The Three Mile Creek culvert at southern end of the City. The culvert under Midland Road at Three Mile Creek could experience flooding

that could lead to washout of the road, removing an important transportation and evacuation route for both City and County residents.

- The Mitchell Creek floodplain at the northwestern corner of the City is prone to flooding; this flooding has the potential to block important transportation corridors on Donegan Rd, as well as impacting population and private property.
- The east side debris basins. In the early 70's, the City experienced debris flows from the surrounding hillsides impacting numerous residence and City infrastructure. To help reduce the impact of these debris flows, debris basins were constructed above the properties in this area of town.
- A mobile home park located on the Roaring Fork River is prone to flooding.
- The main water supply for the City is piped over the Colorado River. While this line was recently raised, it remains critical infrastructure that should be monitored.
- The 7th St interchange, near the confluence of the Colorado River and the Roaring Fork, is subject to flooding.
- Veltus Park is subject to flooding; the handicapped fishing ramp was closed for several weeks during the floods in June of 2011.

Mitigation success:

The City of Glenwood Springs is not new to risk reduction activities, though this is its first adopted and FEMA-approved mitigation plan. Following are some of the recent mitigation actions that the City has taken:

- Raised the water main line, which transfers water over the Colorado River
- Constructed drainage basins on the east side of town
- Build debris collection basins above the alluvial fan on Midland Road and the Meadows
- The 27th St. bridge has had scouring repairs completed to its pillars, per Colorado Department of Transportation recommendations

The National Flood Insurance Program (NFIP)

The Flood Insurance and Mitigation Administration, a component of the Federal Emergency

Management Agency (FEMA), manages the National Flood Insurance Program (NFIP). The three components of the NFIP are:

- Flood Insurance;
- Floodplain Management; and
- Flood Hazard Mapping

Glenwood Springs participates in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Preliminary Flood Insurance Study (FIS) Flood Insurance and Rate Maps (FIRM) are effective as of October, 15, 1985. There are no repetitive loss properties in the City of Glenwood Springs.

City of Glenwood Springs – NFIP Participation Information				
Category	Data		Category	Data
Date Joined NFIP	07/16/1979		Number of Policies in force	38
CRS class/discount	N/A		Insurance in Force	\$9,291,300
CAV date			Number of Paid Losses	4
CAC date			Total Losses Paid	\$26,590.03
Date of Current FIRM	10/15/1985		Substantial Damage claims since 1978	0

Notes: CAC = Community Assistance Contact; CAV = Community Assistance Visit; CRS = Community Rating System; FIRM = Flood Insurance Rate Map; NFIP = National Flood Insurance Program

Landslide and debris flow

The following geographic areas and related vulnerabilities experience local landslide and debris flow risk that is greater than the risk described in the County’s risk assessment. Additional actions are warranted to reduce the risk to life and property from landslides and debris flows in these areas:

- The Meadows area, which was recently developed with new commercial development, is located on an alluvial fan at the base of a steep slope that is subject to rock slides and land slides. Debris basins were built to reduce the vulnerability, but continuing to maintain and monitor this area is important.
- Debris flows are possible on the all portions of the City; debris basins have been built on the eastern portion of the City but it is not known if these basins are sized adequately or for what criteria. There is continued rock fall and smaller debris flows on the western portion of town which has no protection. This is an ongoing issue that continues to be monitored.

Earthquake

The Garfield County Natural Hazard Mitigation Plan adequately describes the causes and characteristics, hazard history, and impacts of earthquakes in the City of Glenwood Springs. In general, the risk is low in Garfield County for this type of event. However, some buildings in the Historic Downtown area are constructed with unreinforced masonry, and could be subject to damage in an earthquake.

There is no known history of geologic activity in the area of the hot springs. However, it is geologic activity that feeds and heats the water to the hot springs thereby making it vulnerable.

Severe weather

The Garfield County Natural Hazard Mitigation Plan adequately describes the causes and characteristics, hazard history, and impacts of severe weather in the City of Glenwood Springs. In general, severe weather events are frequent occurrences in the County that residents are aware of and prepared for. Existing programs target risk reduction and education related to severe weather.

Hazardous materials

The Garfield County risk assessment describes hazardous materials spills as possible secondary hazard events resulting from landslides or debris flows / rock falls, wildfires, or earthquakes that impact storage areas. Additionally, several hazardous materials transfer routes (most notably I-70 and the rail line) bisect the County; spills or accidents along these lines, which also run near the Colorado River, could result in contamination of the source of drinking water for many communities in the County.

In Glenwood Springs, the railroad tracks run adjacent to the historic downtown area; spills there from accidents could result in economic loss and impact the health and safety of residents and retail patrons in this area. The City's drinking water source is No Name Creek, a tributary of the Colorado River. As a result, spills upstream on the Colorado would not affect the Town's drinking water source, but would affect wildlife habitat and recreational resources.

Section 4: Mitigation Action Items

Short and long-term action items identified through the planning process are an important part of the mitigation plan. Action items are detailed recommendations for activities that local departments, citizens and others could engage in to reduce risk.

Multi Hazard

- Continue to evaluate and improve bridges in Glenwood Springs in collaboration with CDOT and County.
- Review comprehensive plan and development codes for opportunities to more effectively reduce risks to new development.
- Continue to encourage citizens to prepare and maintain 72-hour kits.
- Assess the resilience of the wastewater treatment plant and water intake pond and develop improvements accordingly as part of the capital facilities plans for water and wastewater infrastructure.

Flood

- Continue compliance with the National Flood Insurance Program (NFIP) through the enforcement of local floodplain ordinances.
- Update the town's Flood Insurance Rate Maps (FIRMs) if funding becomes available.
- Replace the culvert at Three Mile Creek
- Work with State Division of Wildlife to develop a plan for removing dead trees from the Mitchell Creek area to reduce debris that blocks the creek and results in flooding.

Severe weather

- Continue to educate the public about the role of proper tree pruning and stability in preventing damage during windstorms.
- Collaborate with the County to educate citizens about ways to weatherize their homes, as well as safe emergency heating equipment

Summary of Multi-Jurisdictional NHMP Action Items

Proposed Action Title	Coordinating Organization	Internal Partners	External Partners	Timeline	1) Reduce the loss of life and personal injuries from natural hazard events.	2) Reduce damage to County assets	3) Reduce County costs of disaster response and recovery.	4) Minimize economic losses.	5) Reduce damage to personal property.
<i>City of Glenwood Springs</i>									
Continue to evaluate and improve bridges in Glenwood Springs in collaboration with CDOT and County.	City of Glenwood Springs Engineering	Public Works, City Manager	CDOT / Garfield County	Ongoing	X	X			
Review comprehensive plan and development codes for opportunities to more effectively reduce risks to new development.	City Manager and Director of Community Developer	Fire Department, Police Department, Public Works		Short Term	X				X
Continue to encourage citizens to prepare and maintain 72-hour kits.				Ongoing					
Assess the resilience of the wastewater treatment plant and water intake pond and develop improvements accordingly as part of the capital facilities plans for water and wastewater infrastructure.	City of Rifle Utility Director	City Engineer, Planning Dept, and City Council	Colorado Department of Public Health and Environment	Short Term	X	X			
Continue compliance with the National Flood Insurance Program (NFIP) through the enforcement of local floodplain ordinances.	Community Development	Public Works Engineering	Homebuilders, Contractors, Property Owners	Ongoing	X				X
Update the town's Flood Insurance Rate Maps (FIRMs) if funding becomes available.	Community Development Director	City Manager and Public Works		Long Term				X	X
Replace the culvert at Three Mile Creek	City of Glenwood Springs Engineering	Fire Department, Police Department		Short Term	X	X			
Work with State Division of Wildlife to develop a plan for removing dead trees from the Mitchell Creek area to reduce debris that blocks the creek and results in flooding.	City of Glenwood, Streets Divisions, Department of Public Works, Rick Turner.		Garfield County; State Division of Wildlife, Army Corps of Engineers	Short Term		X	X		
Continue to educate the public about the role of proper tree pruning and stability in preventing damage during windstorms.	City of Glenwood Parks Department	Public Works	Contractors	Ongoing				X	X
Collaborate with the County to educate citizens about ways to weatherize their homes, as well as safe emergency heating equipment			County, Clean Energy Economy for the Region (CLEER, a volunteer group)	Short Term	X		X		X

Attachment 1:

City of Glenwood Springs Action Item Worksheets

Short and long-term action items identified through the planning process are an important part of the mitigation plan. Action items are detailed recommendations for activities that local departments, citizens and others could engage in to reduce risk.

MultiHazard

- Continue to evaluate and improve bridges in Glenwood Springs in collaboration with CDOT and County.
- Review comprehensive plan and development codes for opportunities to more effectively reduce risks to new development.
- Continue to encourage citizens to prepare and maintain 72-hour kits.
- Assess the resilience of the wastewater treatment plant and water intake pond and develop improvements accordingly as part of the capital facilities plans for water and wastewater infrastructure.

Flood

- Continue compliance with the National Flood Insurance Program (NFIP) through the enforcement of local floodplain ordinances.
- Update the town's Flood Insurance Rate Maps (FIRMs) if funding becomes available.
- Replace the culvert at Three Mile Creek
- Work with State Division of Wildlife to develop a plan for removing dead trees from the Mitchell Creek area to reduce debris that blocks the creek and results in flooding.

Severe Weather

- Continue to educate the public about the role of proper tree pruning and stability in preventing damage during windstorms.
- Collaborate with the County to educate citizens about ways to weatherize their homes, as well as safe emergency heating equipment

Proposed Action Item:		Alignment with Plan Goals:	
Continue to evaluate and improve bridges in Glenwood Springs in collaboration with CDOT and County.		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 2: Reduce damage to county assets. MultiHazard	
Rationale for Proposed Action Item:			
All bridges in Glenwood Springs are critical infrastructure, necessary for the normal functioning of the City's economic and social systems, as well as for evacuation in some disaster events. Glenwood's bridges are inspected by CDOT on a regular schedule, and repairs are made based on their recommendations. Several bridges have flood risk and when impacted, isolate large portions of the community and limiting access to emergency services and basic supplies Continuing to maintain bridges with the flood hazard in mind will lead to increased community resilience. Bridges within Glenwood also serve many residents of the County in rural areas. Glenwood is a main access hub to areas within the Roaring Fork Valley, many which lie outside of the City limits. If a bridge were to fail, access could be limited to businesses and residence within Carbondale, Garfield County, Pitkin County, Eagle County, Basalt, El Jebel, Aspen, Snowmass, Rifle, Silt, and New Castle.			
Ideas for Implementation:			
Work with Garfield County, and CDOT to assess bridges within the City. Prioritize any actions that need to be taken to address any natural disaster concerns and coordinate with Garfield County, and CDOT to find appropriate funding sources. The access issues within Glenwood affect all entities involved in the Hazardous Mitigation plan. In an event that impacted access to areas up-valley, or down-valley, these entities would have an interest in correcting any hazards as expeditiously as possible.			
Coordinating Organization:		City of Glenwood Springs Engineering	
Internal Partners:		External Partners:	
Public Works, City Manager		CDOT / Garfield County	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
	Ongoing		
Form Submitted by:		Rick Turner	
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Review comprehensive plan and development codes for opportunities to more effectively reduce risks to new development.		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 5: Reduce damage to personal property MultiHazard	
Rationale for Proposed Action Item:			
The Comprehensive Plans provide the legal framework and long-term vision for implementing plans and land use regulations; this is one of the best places to implement mitigation because risks can be eliminated before development occurs.			
Ideas for Implementation:			
Incorporate new hazard information in the Comprehensive Plan's Periodic Review process. Review latest vulnerability assessment information and policies that address hazards. Information can be obtained from the risk assessment portion of the Garfield County Natural Hazard Mitigation Plan (NHMP) and other state agencies.			
Coordinating Organization:		City Manager and Director of Community Developer	
Internal Partners:		External Partners:	
Fire Department, Police Department, Public Works			
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
<u>X</u>			
Form Submitted by:			
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Continue to encourage citizens to prepare and maintain 72-hour kits.		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 3: Reduce County costs of disaster response and recovery. MultiHazard	
Rationale for Proposed Action Item:			
The town is vulnerable to a number of natural hazards that could disrupt services. In a major disaster, utilities transportation networks, and businesses could be disrupted, and it may take days until vital services are restored. Preparing a 72-hour kit can help community members survive on their own without relying too heavily on emergency services.			
Ideas for Implementation:			
Provide educational material and examples of how to assemble 72-hour kits to residents of the town and employees. Outreach and awareness campaigns need to be carefully organized and developed to ensure that residents receive critical information. Distribute information through the town's newsletter. Alternatively, post information about 72-hour kits on the town's website.			
During National Emergency Preparedness Month or National Night Out, use first responders and community members to host educational presentations to groups within the community to encourage individuals to put together their own kit.			
Resources like www.preparedness.gov or www.72hours.org can provide content needs for 72-hour kits.			
Coordinating Organization:			
Internal Partners:		External Partners:	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
	Ongoing		
Form Submitted by:			
Action Item Status: New Action (2011)			

Proposed Action Item:		Goal Alignment / Hazards Addressed:	
Assess the resilience of the wastewater treatment plant and water intake pond and develop improvements accordingly as part of the capital facilities plans for water and wastewater infrastructure.		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 2: Reduce damage to county assets. MultiHazard	
Rationale for Proposed Action Item:			
The water intake pond and wastewater treatment plant are in the 100 year floodplain and are subject to flood inundation and damage. This would include a focus on drinking water availability and resilience in addition to existing actions for the sewage plant.			
Ideas for Implementation:			
Conduct an assessment of the sewage treatment plant and drinking water intake for potential impacts from flood risk. Contract with an engineer to assess potential of inundation and propose alternative mitigation options including a cost-benefit analysis. Seek funding from FEMA to develop improvements of the sewage treatment plant and water treatment facility, if needed.			
Coordinating Organization:		City of Rifle Utility Director	
Internal Partners:		External Partners:	
City Engineer, Planning Dept, and City Council		Colorado Department of Public Health and Environment	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
XX			
Form Submitted by:		City of Rifle	
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Continue compliance with the National Flood Insurance Program (NFIP) through the enforcement of local floodplain ordinances.		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 5: Reduce damage to personal property Flood Hazard	
Rationale for Proposed Action Item:			
The National Flood Insurance Program provides communities with federally backed flood insurance to homeowners, renters, and business owners, provided that communities develop and enforce adequate floodplain management ordinances. The benefits of adopting NFIP standards for communities are a reduced level of flood damage in the community and stronger buildings that can withstand floods. According to the NFIP, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance.			
Ideas for Implementation:			
<ul style="list-style-type: none"> Actively participate with Colorado Emergency Management and FEMA during Community Assistance Visits. The Community Assisted Visit (CAV) is a scheduled visit to a community participating in the NFIP for the purpose of 1) conducting a comprehensive assessment of the community's floodplain management program; 2) assisting the community and its staff in understanding the NFIP and its requirements; and 3) assisting the community in implementing effective flood loss reduction measures when program deficiencies or violations are discovered. Conduct an assessment of the town's floodplain ordinances to ensure they reflect current flood hazards. Coordinate with the county to ensure that floodplain ordinances and NFIP regulations are maintained and enforced. Continue to assess the need for updated ordinances. Mitigate areas that are prone to flooding and/or have the potential to flood. 			
Coordinating Organization:		Community Development	
Internal Partners:		External Partners:	
Public Works Engineering		Homebuilders, Contractors, Property Owners	
Timeline: Ongoing		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
Form Submitted by:			
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Update the town's Flood Insurance Rate Maps (FIRMs) if funding becomes available.		Goal 4: Minimize economic losses Goal 5: Reduce damage to personal property Flood Hazard	
Rationale for Proposed Action Item:			
The town has Flood Mitigation Rate Maps current as of October 15, 1985. However, if funding becomes available, the FIRMs should be updated to address new information and new vulnerabilities, as well as any new land use developments occurring in the community.			
Ideas for Implementation:			
If there are areas that need to be revised for the flood map, complete the MT-2 Forms Package (Application Forms for Conditional Letters of Map Revision and Letters of Map Revision). The forms and instructions are designed to assist requesters (community officials or individuals via community officials) in gathering the data that the FEMA needs to determine whether the effective NFIP map and Flood Insurance Study report for a community should be revised.			
Coordinating Organization:		Community Development Director	
Internal Partners:		External Partners:	
City Manager and Public Works			
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
	X		
Form Submitted by:			
Action Item Status: New Action (2011)			

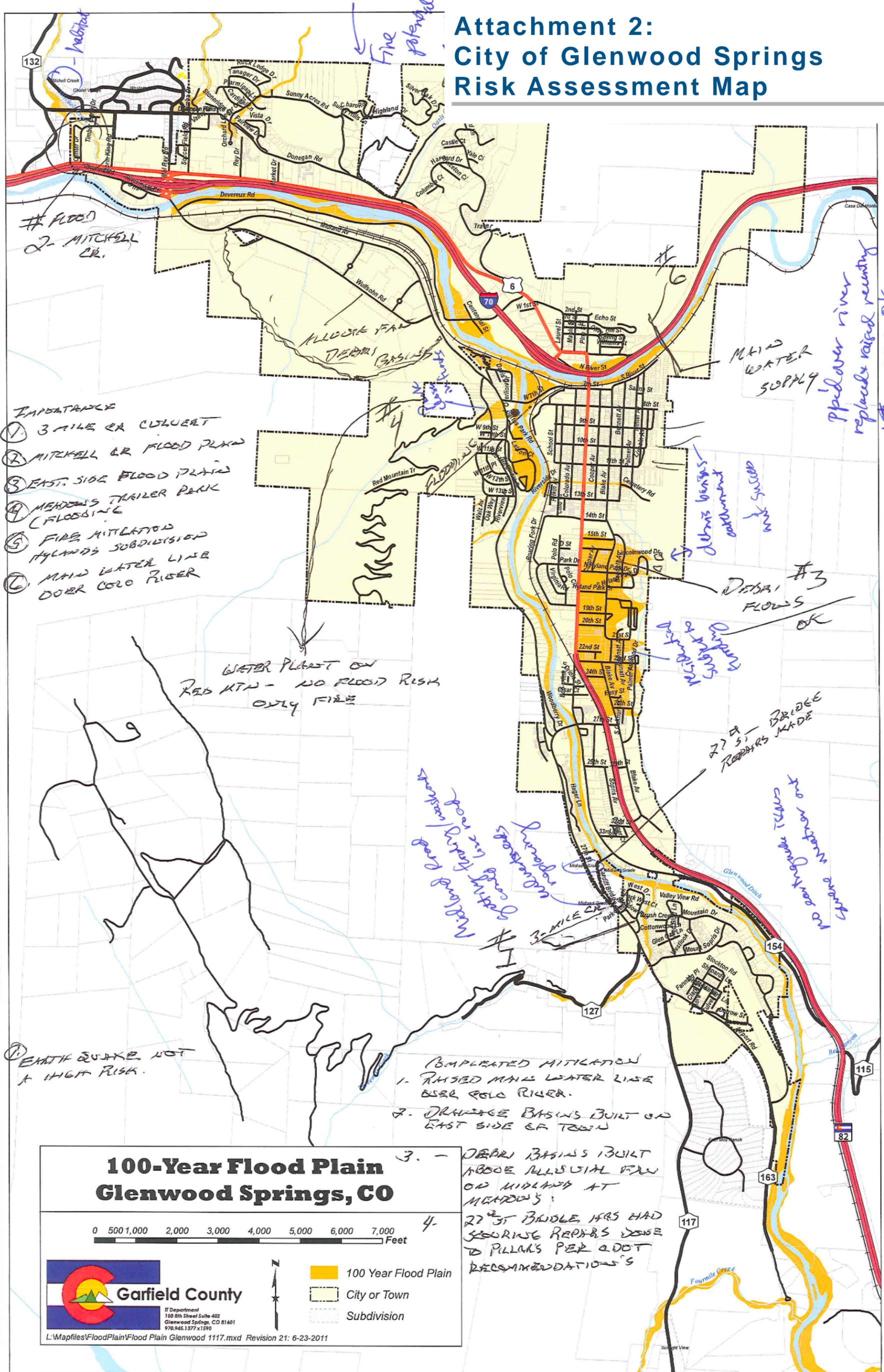
Proposed Action Item:		Alignment with Plan Goals:	
Replace the culvert at Three Mile Creek		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 2: Reduce damage to county assets. Flood Hazard	
Rationale for Proposed Action Item:			
The culvert has separated from its headwall. Failure of the culvert would lead to road closure, on an important transportation (ingress / egress route)			
Ideas for Implementation:			
This process is partially underway. Work with Army Corps of Engineers for permitting. A portion if the bridge is projected to be replaced in the Spring of 2012. This bridge not only services residents of the City, but also residence within the County up Four Mile Canyon. Midland Avenue is the only paved access to this area. Any damage to this structure would inhibit access to the area, and would increase emergency response times to residence both in the City and County			
Coordinating Organization:		City of Glenwood Springs Engineering	
Internal Partners:		External Partners:	
Fire Department, Police Department		County	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
XX			
Form Submitted by:			
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Work with State Division of Wildlife to develop a plan for removing dead trees from the Mitchell Creek area to reduce debris that blocks the creek and results in flooding.		Goal 2: Reduce damage to county assets. Goal 3: Reduce County costs of disaster response and recovery. Flood Hazard	
Rationale for Proposed Action Item:			
Dead / downed trees in this area result in flooding of nearby residential property. Because the area is sensitive habitat for birds, removing them requires careful planning and coordination to reduce or eliminate impacts to nesting areas.			
Ideas for Implementation:			
Initiate planning process with the State. Obtain permits for work from Army Corps of Engineers.			
Coordinating Organization:		City of Glenwood, Streets Divisions, Department of Public Works, Rick Turner.	
Internal Partners:		External Partners:	
		Garfield County; State Division of Wildlife, Army Corps of Engineers	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
XX			
Form Submitted by:			
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Continue to educate the public about the role of proper tree pruning and stability in preventing damage during windstorms.		Goal 4: Minimize economic losses Goal 5: Reduce damage to personal property Severe Weather Hazard	
Rationale for Proposed Action Item:			
High winds can topple trees and break limbs which in turn can result in power outages and disrupt telephone, computer, and TV and radio service, and compromise the functioning of the communities' utilities such as the wastewater and water treatment plants. Private property owners are responsible for trees on their property. Educating property owners about how to properly prune their trees to prevent power outages and damage to their property can help reduce impacts of windstorm events. The City of Glenwood Parks Department has a program in place for managing trees in right of ways. The program makes recommendations to home owners if asked.			
Ideas for Implementation:			
Review regulations and standards for easement and right of way maintenance, and provide training to foresters and logging crews.			
Educate homeowners in pruning of vegetation, tree care safety, and proper tree care for trees bordering utility corridors and public rights of way via door knocker flyers, utility mailers, Safety Fair, Website, or Quarterly Newsletter.			
Coordinate with arboricultural groups, public agencies, and utilities to promote proper tree pruning and care practices that can reduce the risk of tree failure and property damage. Common messages refined by state level entities such as the Colorado Department of Natural Resources can help provide continuity and efficiency across the state.			
Coordinating Organization:		City of Glenwood Parks Department	
Internal Partners:		External Partners:	
Public Works		Contractors	
Timeline: Ongoing		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
Form Submitted by:			
Action Item Status: New Action (2011)			

Proposed Action Item:		Alignment with Plan Goals:	
Collaborate with the County to educate citizens about ways to weatherize their homes, as well as safe emergency heating equipment		Goal 1: Reduce the loss of life and personal injuries from natural hazard events. Goal 3: Reduce County costs of disaster response and recovery. Goal 5: Reduce damage to personal property Severe Weather	
Rationale for Proposed Action Item:			
Severe winter storms can bring extreme cold, snow, and ice, causing power outages and breaks in un-insulated water lines. Power outages can lead to heat loss, potentially harming citizens. Educating citizens about ways to weatherize their homes, as well as safe emergency heating equipment, can reduce the effects of extreme cold and inform residents of how to properly heat their homes in the event of a power outage.			
Ideas for Implementation:			
<ul style="list-style-type: none"> • Use energy audits, cash rebates, and tax credits to help homeowners weatherize their homes. • Coordinate efforts with home improvement businesses to educate citizens about weatherizing homes and providing safe emergency heating equipment. • Coordinate education efforts with local electric companies to educate citizens about weatherization. • Coordinate with the local Fire Districts to develop a list of emergency heating information. • Advertise weatherization tax credits to serve as an incentive for people to weatherize their homes and reduce their heating bills. 			
Coordinating Organization:		To be determined	
Internal Partners:		External Partners:	
		County, Clean Energy Economy for the Region (CLEER, a volunteer group)	
Timeline:		If available, estimated cost:	
<u>Short Term</u> (0-2 years)	<u>Long Term</u> (2-4 or more years)		
X			
Form Submitted by:			
Action Item Status: New Action (2011)			

Attachment 2: City of Glenwood Springs Risk Assessment Map



FLOOD
2. MITCHELL CR.

Fire Potential

MAD WATER SUPPLY

Ppidover river replaced raised retaining wall now OK

- ROADWAY
1. 3 MILE OR COLUERT
 2. MITCHELL CR FLOOD PLANE
 3. EAST SIDE FLOOD PLANE
 4. MENDON'S TRAILER PARK (FLOODING)
 5. FIRE MITIGATION HIGHLANDS SUBDIVISION
 6. MAD WATER LINE DORR COLO RIVER

WATER PLANT ON RED Mtn - NO FLOOD RISK ONLY FIRE

DEBRIS FLOWS OK

27th BRIDGE REPAIRS MADE

Midland Creek getting heavy water

no snow program until winter

1. EARTH QUAKE NOT A HIGH RISK.

1. RAISED MAD WATER LINE OVER COLO RIVER.
2. DRAINAGE BASINS BUILT ON EAST SIDE OF TOWN

3. - DEBRIS BASINS BUILT ABOVE ALLUVIAL FAN ON HIGHLAND AT MENDON'S

4. 27th BRIDGE HAS HAD SEVERE REPAIRS DONE TO PILARS PER DOT RECOMMENDATIONS

100-Year Flood Plain Glenwood Springs, CO



- 100 Year Flood Plain
- City or Town
- Subdivision

L:\Mapfiles\FloodPlain\Flood Plain Glenwood 1117.mxd Revision 21: 6-23-2011

Attachment 3:

City of Glenwood Springs Critical Infrastructure Map

A significant component of the Natural Hazard Mitigation Plan is identifying where and how critical infrastructure and key resources could be impacted by natural hazards. The Garfield County GIS department developed maps of Glenwood Springs that identify public facilities, utilities, agriculture and natural resources, water supply and treatment infrastructure, oil and gas facilities, and transportation facilities. These maps contribute to the understanding of community vulnerability. Due to the sensitive nature of some of the information included in this map, the map is not available upon request from Glenwood Springs Community Development Department, the Garfield County Manager, or the Garfield County GIS Department.