



Delta County Multi-Hazard Mitigation Plan

August 2008

Developed by Delta County with professional planning assistance from
AMEC Earth and Environmental
Hazard Mitigation and Emergency Management Program
Denver, Colorado





SPECIAL THANKS AND ACKNOWLEDGEMENTS

Delta County Hazard Mitigation Planning Committee

Rob Fiedler, Chair	Delta County Office of Emergency Management
Fred McKee	Delta County Sheriff's Office
Susan Hansen	Delta County Administrator
Jeff Emmons	Delta County Assistant Administrator
Dave Rice	Delta County Planning
Jeremy Puckett	Delta County GIS Department
Brad Kolman	Delta County Attorney
Jim Brown	City of Delta
Steve Glammeyer	City of Delta
Mike Owens	Town of Hotchkiss
Doug Fritz	Hotchkiss Fire District
Ron Rowell	Town of Paonia and Paonia Fire District
Mike Morgan	Town of Orchard City
Tim Roberts	Town of Cedaredge
Gabby George	Town of Crawford
Steve Denney	Colorado Division of Emergency Management
Jason Ward	Colorado Division of Water Resources
Kelly Rogers	Colorado State Forest Service
Jim Pringle	NOAA National Weather Service
Maggie McCaffrey	Montrose Interagency Fire Management Unit
Steve Ellis	Montrose Interagency Fire Management Unit
Kathy Welt	GEC/Oxbow
Levi McEuen	Union Pacific Railroad

AMEC Earth and Environmental

Julie Baxter
Shelby Hudson
Christa Rabenold
Greg Wobbe



TABLE OF CONTENTS

Executive Summary	v
Prerequisites	ix
Chapters	
<hr/>	
1 Introduction and Planning Area Profile	1.1
1.1 Purpose.....	1.1
1.2 Background and Scope	1.1
1.3 Jurisdictional Annexes.....	1.3
1.4 Plan Organization.....	1.3
1.5 Planning Area Profile	1.3
1.5.1 History.....	1.5
1.5.2 Geography and Climate.....	1.5
1.5.3 Population.....	1.6
1.5.4 Economy.....	1.7
2 Planning Process	2.1
2.1 Multi-Jurisdictional Participation	2.1
2.2 The 10-Step Planning Process	2.2
Phase 1: Organize Resources.....	2.3
Phase 2: Assess Risks	2.7
Phase 3: Develop the Mitigation Plan	2.8
Phase 4: Implement the Plan and Monitor Progress.....	2.9
3 Risk Assessment	3.1
3.1 Hazard Identification.....	3.2
Disaster Declaration History	3.5
3.2 Hazard Profiles	3.6
3.2.1 Avalanche.....	3.8
3.2.2 Dam Failure	3.11
3.2.3 Drought.....	3.16
3.2.4 Earthquake	3.22
3.2.5 Expansive Soils	3.27
3.2.6 Flood.....	3.30
3.2.7 Hazardous Materials Release (Transportation).....	3.38
3.2.8 Landslide, Mudflow/Debris Flow, Rockfall.....	3.41
3.2.9 Lightning	3.45
3.2.10 Severe Winter Weather	3.48
3.2.11 Wildfire.....	3.53
3.2.12 Windstorm.....	3.58
3.2.13 Hazard Profiles Summary.....	3.61
3.3 Vulnerability Assessment	3.63

3.3.1 Methodology	3.63
3.3.2 Community Asset Inventory.....	3.64
3.3.3 Vulnerability by Hazard.....	3.77
3.3.4 Development and Land Use Trends.....	3.93
3.4 Risk Assessment Summary.....	3.97
4 Mitigation Strategy.....	4.1
4.1 Goals and Objectives.....	4.1
4.2 Identification and Analysis of Mitigation Actions.....	4.2
4.3 Implementation of Mitigation Actions.....	4.4
5 Plan Implementation and Maintenance.....	5.1
5.1 Implementation.....	5.1
5.2 Monitoring, Evaluating, and Updating the Plan	5.2
5.2.1 Hazard Mitigation Planning Committee	5.2
5.2.2 Plan Maintenance Schedule.....	5.2
5.2.3 Plan Maintenance Process.....	5.3
5.3 Incorporation into Existing Planning Mechanisms	5.4
5.4 Continued Public Involvement	5.4

Annexes

Annex A: Unincorporated Delta County

Annex B: Town of Cedaredge

Annex C: City of Delta

Annex D: Town of Hotchkiss

Annex E: Delta County Fire Protection District #4 (Hotchkiss)

Annex F: Town of Orchard City

Annex G: Town of Paonia

Annex H: Delta County Fire Protection District #2 (Paonia)

Appendices

Appendix A: References

Appendix B: Planning Process Documentation

Appendix C: Mitigation Alternatives and Prioritization



EXECUTIVE SUMMARY

The purpose of natural hazards mitigation is to reduce or eliminate long-term risk to people and property from natural hazards. Delta County and participating jurisdictions developed this multi-hazard mitigation plan to reduce future losses to the County and its communities resulting from natural hazards. The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 and to achieve eligibility for the Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance, Pre-Disaster Mitigation, Hazard Mitigation Grant Programs.

The Delta County Multi-Hazard Mitigation Plan is a multi-jurisdictional plan that covers the following local governments that participated in the planning process:

- Delta County
- Town of Cedaredge
- City of Delta
- Town of Hotchkiss
- Town of Orchard City
- Town of Paonia
- Delta County Fire Protection District #4 (Hotchkiss)
- Delta County Fire Protection District #2 (Paonia)

The County's planning process followed a methodology prescribed by FEMA, which began with the formation of a Hazard Mitigation Planning Committee (HMPC) comprised of key stakeholders from Delta County, participating jurisdictions, and state and federal agencies. The HMPC conducted a risk assessment that identified and profiled hazards that pose a risk to Delta County, assessed the County's vulnerability to these hazards, and examined the capabilities in place to mitigate them. The County is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Floods, wildfires, severe winter weather, and drought are among the hazards that can have a significant impact on the County.

Based upon the risk assessment, the HMPC identified goals and objectives for reducing risk to hazards. The goals and objectives of this multi-hazard mitigation plan are to:

Goal 1: Reduce risk to the people, property, economy, and environment of Delta County from the impacts of natural hazards

- Reduce the vulnerability of future development to natural hazards by minimizing growth in hazardous areas
- Restore and enhance natural systems and landscapes to serve natural hazard mitigation functions
- Maintain and improve the flood mitigation program to provide a minimum of 100-year protection

-
- Improve quality and availability of hazard-related data and geographic information to better understand the vulnerability of existing and future development

Goal 2: Protect critical infrastructure and lifeline utilities from the impacts of hazards

- Minimize the loss of critical services during and after hazard events
- Assess vulnerability and prioritize mitigation activities to protect critical facilities and infrastructure

Goal 3: Improve education and awareness regarding hazards and risk in Delta County

- Improve the public's understanding of hazards and risk in Delta County
- Identify and develop needed training and education regarding hazards for targeted audiences, such as private dam owners, elected officials, and vulnerable populations
- Encourage water conservation practices among governmental, residential, commercial, and agricultural users

Goal 4: Implement the mitigation actions identified in this plan

- Prioritize mitigation funding and activities based upon the most likely and damaging future events
- Enhance local capabilities in hazard mitigation and response
- Strengthen communication and coordination among communities, public agencies, businesses, and nonprofit organizations in Delta County
- Incorporate mitigation into existing and future policies in the County

To meet identified goals and objectives, the plan recommends the mitigation actions summarized in the table on the following page. The HMPC also developed an implementation plan for each action, which identifies priority level, background information, ideas for implementation, responsible agency, timeline, cost estimate, potential funding sources, and more.

The multi-hazard mitigation plan has been formally adopted by the Delta County Board of County Commissioners and the governing bodies of each participating jurisdiction and will be updated within a five-year timeframe.

Mitigation Action Matrix

Jurisdiction Number	Action	Priority	Goals Addressed	Hazards Addressed
Multi-Jurisdictional—1	Coordinate annual meetings of the Delta County Hazard Mitigation Planning Committee to monitor, evaluate, and update the multi-hazard mitigation plan	High	Goal 4	Multi-Hazard
Multi-Jurisdictional—2	Expand communication to all parts of County through purchase of 800 megahertz repeater	High	Goals 1,4	Multi-Hazard
Multi-Jurisdictional—3	Assist dam owners in updating their Emergency Action Plans	Medium	Goals 1,2	Dam Failure
Multi-Jurisdictional—4	Conduct large-scale wildfire training exercises	Medium	Goals 3, 4	Wildfire
Multi-Jurisdictional—5	Distribute National Flood Insurance Program and floodplain development information in County libraries for access by the public	Low	Goals 1,3	Flood
Delta County—1	Enhance the County's GIS database and capabilities related to hazards information	High	Goals 1, 2, 3	Multi-Hazard
Delta County—2	Encourage good land use planning for future growth and development	Medium	Goals 1, 4	Multi-Hazard
Delta County—3	Improve floodplain management information on Delta County website	Medium	Goals 1,3	Flood
Delta County—4	Conduct detailed study and mapping of Kiser Creek floodplain	Medium	Goal 1	Flood
Delta County—5	Research different implementation models and the flexibility for implementation of a building code that would be acceptable to the citizens of Delta County	Low	Goals 1, 4	Multi-Hazard
Delta County—6	Improve interactive hazard mapping resources available to public	Low	Goals 1,3	Multi-Hazard
Cedaredge—1	Complete a comprehensive drainage study followed by a street condition and usage survey and the development of a preliminary joint drainage and street reconstruction plan.	High	Goals 1, 2	Flood
Cedaredge—2	Replace the one lane southeast Jay Avenue bridge over Surface Creek	Medium	Goals 1, 2	Flood
Cedaredge—3	Participate in floodplain map modernization process with Delta County and join National Flood Insurance Program (NFIP), if appropriate	Medium	Goals 1, 2, 3, 4	Flood
	Participate in floodplain map modernization process with Delta County and update flood damage prevention ordinance	High-Medium	Goals 1, 2, 3, 4	Flood
City of Delta—1	Implement stormwater infrastructure improvements identified in the Stormwater Master Planning Project currently being completed	High	Goals 1, 2	Flood

Jurisdiction Number	Action	Priority	Goals Addressed	Hazards Addressed
City of Delta—2	Provide alternate hazardous materials routes that incorporate grade separation of railways	High	Goals 1, 2	Hazardous Materials Release
City of Delta—3	Mitigate potential flood damage to private and public facilities at Confluence Park, including the Four Seasons Motel and RV Park	Medium	Goals 1, 2	Flood
City of Delta—4	Participate in floodplain map modernization process with Delta County and update flood damage prevention ordinance	Medium	Goals 1, 2, 3, 4	Flood
Hotchkiss—1	Provide back-up power generation to critical facilities	High	Goals 1,2	Multi-Hazard
Hotchkiss—2 Fire Protection District #4—2	Coordinate Town of Hotchkiss Spring Clean-Up Day for fire safety	Medium	Goals 1,3	Wildfire
Hotchkiss—3	Participate in floodplain map modernization process with Delta County and update flood damage prevention ordinance	Medium	Goals 1, 2, 3, 4	Flood
Fire Protection District #4—1	Implement fuel reduction projects in the Hotchkiss Fire District	High	Goal 1	Wildfire
Fire Protection District #4—3	Update and distribute wildfire risk mapping for Delta County	Low	Goals 1,3,4	Wildfire
Orchard City—1	Replace water main from treatment plant to Eckert tanks	High	Goal 2	Multi-Hazard
Orchard City—2	Participate in floodplain map modernization process with Delta County and update flood damage prevention ordinance	High	Goals 1, 2, 3, 4	Flood
Paonia—1	Stabilize Stewart Ditch infrastructure to prevent flood damage in Town of Paonia	High	Goals 1, 2	Flood
Paonia—2	Participate in floodplain map modernization process with Delta County and update flood damage prevention ordinance	Medium	Goals 1, 2, 3, 4	Flood
Fire Protection District #2—1	Develop a program to provide technical and financial assistance to private property owners to implement fuel reduction	High	Goals 1, 3	Wildfire



PREREQUISITES

44 CFR requirement 201.6(c)(5): The local hazard mitigation plan shall include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Note to Reviewers: When this plan has been reviewed and approved pending adoption by FEMA Region VIII, the adoption resolutions will be signed by the participating jurisdictions and added to the Prerequisites section. A model resolution is provided below:

The following jurisdictions participated in the development of this plan and have adopted the multi-jurisdictional plan and their jurisdiction's annex. Resolutions of Adoptions are included on the following pages.

- Delta County, lead agency
- Town of Cedaredge
- City of Delta
- Town of Hotchkiss
- Town of Orchard City
- Town of Paonia
- Delta County Fire Protection District #4 (Hotchkiss)
- Delta County Fire Protection District #2 (Paonia)

Model Resolution

Resolution # _____ **Adopting the Delta County Multi-Hazard Mitigation Plan**

Whereas, the (Name of Government/District/Organization seeking FEMA approval of hazard mitigation plan) recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 (“Disaster Mitigation Act”) emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments;

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the (Name of Government/District/Organization) fully participated in the FEMA-prescribed mitigation planning process to prepare this Multi-Hazard Mitigation Plan; and

Whereas, the Colorado Department of Emergency Management and the Federal Emergency Management Agency Region VIII officials have reviewed the “Delta County Multi-Hazard Mitigation Plan”, and approved it contingent upon this official adoption of the participating governing body;

Whereas, the (Name of Government/District/Organization) desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Delta County Multi-Hazard Mitigation Plan.

Whereas, adoption by the governing body for the (Name of Government/District/Organization), demonstrates the jurisdictions commitment to fulfilling the mitigation goals and objectives outlined in this Multi-Hazard Mitigation Plan.

Whereas, adoption of this legitimacies the plan and authorizes responsible agencies to carry out their responsibilities under the plan.

Now, therefore, be it resolved, that the (Name of Government/District/Organization) adopts the “Delta County Multi-Hazard Mitigation Plan” as an official plan; and

Be it further resolved, the (Name of Government/District/Organization) will submit this Adoption Resolution to the Colorado Department of Emergency Management and Federal Emergency Management Agency Region VIII officials to enable the plan’s final approval.

Passed: _____

_____ Certifying Official