



FEMA

Interagency Recovery Coordination

CASE STUDY

Colorado Watershed Coalitions

COALITION BUILDING THROUGH NATURAL BOUNDARIES

Learning Objective: Examine the cross-agency partnerships, projects, and innovative financial management strategies employed in Colorado to rebuild and restore the natural flood mitigation benefits of regional watersheds after the devastating flood in 2013.

Keywords: Recovery, Flood, Mudslide, Landslide, Severe Storm, Major Disaster Declaration, Regional Coordination, Recovery Planning, Infrastructure Systems, Natural and Cultural Resources, Resilience, Hazard Mitigation, Identifying and Leveraging Resources, Disaster Financial Management

PART ONE

Background

In September 2013, the Colorado Resiliency and Recovery Office knew they had their work cut out for them as they watched a major flood disaster unfold while still in the midst of managing a recovery effort from wildfires that had ravaged Colorado's hillsides a year before. In the span of just five days, over 17 inches of water fell across the state, approaching the state's total annual precipitation level. The extensive flooding and subsequent mudslides resulted in 10 fatalities and forced evacuations of over 18,000 residents. More than 17,800 homes and 2,250 non-residential structures were damaged or destroyed across 24 counties. Nearly 500 miles of roads and 30 bridges were destroyed, with an additional 20 bridges requiring significant repairs.



Figure 1. The floodwaters damaged this road in Colorado.

Three major rivers and their tributaries breached their banks: Big Thompson, St. Vrain, and South Platte. The high volume of floodwaters carved out new water channels within these three major watersheds in the state, causing significant damage. The recent wildfires and burn scars exacerbated these floods by drastically increasing the amount of silt and debris being carried through the waterways. As a result, many properties, resources, and public assets were left unprotected from the impact of floodwaters.

When the waters receded it became apparent how impactful this would be to the state's economy. Over 28,000 acres of active agricultural land were destroyed, resulting in more than \$5 million in crop losses. Road closures and direct damages had a severe impact on businesses in terms of repair costs and business loss. In addition, 230 miles of trails and 20 recreational facilities, including campgrounds, picnic areas, and boating access areas, had to be closed for repairs, resulting in lost tourism revenue. The total damage from the flooding was estimated at nearly \$4 billion and 18 of the 24 affected counties were designated as eligible for federal disaster assistance.

Challenges

Colorado residents rely heavily on the watersheds for agriculture and recreation. Crop damage from standing water in fields and pastures, and the potential release of raw sewage or other hazardous materials into publicly accessible water sources were a major concern for residents and local leadership in the immediate aftermath of the flooding.

The 2013 flood was Colorado's first major flooding event in 14 years. This significant time gap between flooding events left many residents and businesses without a sense of urgency to prepare for the next big disaster. As Kevin Houck, Chief of the Watershed and Flood Protection Section of Colorado Water Conservation Board put it,

"When the flood happened, it was like drinking from a firehose. A lot of people just didn't know what to do, because it had been so long since anybody in the state had to deal with this kind of thing, on anything more than just a very isolated scale. So, everyone was learning as we went."

Managing the numerous federal and state funding sources available to support watershed recovery, following all funding-related requirements, and meeting the local grant funding matching requirements was challenging and required a significant amount of coordination and capacity building at both the state and local levels. Despite the numerous funding sources available, it was clear early in the recovery process that the available funding would not cover all of the projects proposed by the local recovery leaders in the Watershed Coalitions.



Figure 2. Road damaged from flooding in Colorado in 2013.

PART TWO

Actions

Community leaders and local government representatives quickly realized the importance of working together in a coordinated effort across sectors and agencies to achieve sustainable recovery. Following the flooding, the Department of Local Affairs' (DOLA) Colorado Resiliency and Recovery Office (now the "Colorado Resiliency Office") led a stakeholder tour to engage local communities in the recovery process. Unique to this recovery effort, stakeholders were organized by watersheds rather than traditional jurisdictions, prompting cooperation among the affected communities in prioritizing needs. The state wanted to build upon the Colorado Water Conservation Board's (CWCB) existing watershed work and apply the watershed scale approach to the disaster recovery context. The stakeholder meetings were an opportunity to engage communities at the grassroots level and highlighted the critical role of local decision-making in recovery planning. These early actions ensured that all stakeholders, including different levels of government, held a shared vision for watershed recovery.

CWCB and DOLA supported the creation of Watershed Coalitions, diverse groups of stakeholders who could identify additional funding opportunities, recruit volunteers, and coordinate resources to implement projects focused on restoring healthy and resilient watersheds. Nearly 70 Watershed Coalitions existed prior to the 2013 flooding. Following the flooding, ten Watershed Coalitions emerged from the hardest-hit areas as the primary entities in need of recovery support. Two of the ten coalitions existed prior to the flooding and were able to expand. While the composition of each coalition varied, a coalition typically included representation from every local government within the watershed, private landowners, and special interest groups. Coalitions determined their own members and set their own watershed boundaries to focus recovery efforts. In addition, FEMA liaisons attended many coalition meetings, providing access to federal resources, technical support, and promoting information-sharing among coalitions and the federal recovery office.

Key Recovery Partners

- Colorado Department of Natural Resources, Colorado Water Conservation Board (CWCB)
- Colorado Department of Local Affairs (DOLA), Division of Local Government
- U.S. Department of Housing and Urban Development (HUD)
- USDA - Natural Resources Conservation Service
- Watershed Coalitions

In order to jumpstart the recovery process, state funding was utilized to draft the Watershed Master Plan and form the Watershed Coalitions. Rather than waiting for federal funding, which could have delayed program implementation, providing state funding upfront gave state and local officials the flexibility to establish the structure and goals for the program, in preparation for other, later grants and funding opportunities. This proactive investment by the state highlighted its commitment to the communities and to the projects, presenting an even more compelling case in its requests for funding from federal, local, and private sector sources.

With CWCB technical support and funding, each of the ten Watershed Coalitions coordinated the development of a stakeholder-driven Watershed Master Plan. The plan established goals, prioritized projects for the short-term and long-term stabilization and rehabilitation of affected watersheds, and provided implementation strategies.

To solve the issue of limited local capacity to determine and execute the best way to leverage the array of federal and state grant opportunities and requirements to implement their recovery objectives, outside consultants were brought in to augment the small program team. The consultants helped address this issue by designing and prioritizing projects with a high chance of receiving funding and a high degree of potential impact, supplementing the capacity of the Watershed Coalitions as projects moved into the implementation phase.

Each Watershed Coalition had the freedom to develop its own governance system and utilize its unique local knowledge to serve its community's needs. However, CWCB and DOLA worked closely with the coalitions' operations, serving as both financial partners and technical partners. This dual role allowed for greater oversight of each coalition's actions and decisions and created a review system to ensure that all projects were compliant with any

grant-related requirements. It also created opportunities to identify gaps and leverage available resources. For example, CDBG-DR funding cannot be used for fundraising efforts, so CWCB funding was applied to support up to ten percent of DOLA-funded staff members' time to fund raise.

CWCB and DOLA also facilitated the creation of a Watershed Coalition cohort, which held monthly cross-learning calls, extensive in-person training events, and served as a crucial forum for coalitions to receive feedback and help each other during project implementation rather than rely solely on the state.



Figure 3. A Watershed Coalition meeting with landowners.

The Watershed Coalitions proved instrumental in engaging local community members in watershed restoration efforts, obtaining local and private matching funds for federally funded projects, and pushing projects through to completion. The coalitions also provided a forum for regional collaboration and sharing best practices.

Public engagement meetings were held to discuss community goals and solicit the local perspective. Consultants from the private sector who were engaged through the coalitions provided technical expertise and volunteers with the knowledge and skills to develop robust, resilient project designs that would better protect the restored watersheds from future risks.

Results

After the Watershed Master Plan was established, DOLA was awarded \$320 million in Community Development Block Grant-Disaster Recovery (CDBG-DR) funds from the U.S. Department of Housing and Urban Development (HUD). These funds were used to support the formation of a Watershed Resiliency Pilot Program, implementing a part of the Colorado Resiliency Framework. The development of the Colorado Resiliency Framework itself was a cross-agency effort led by the Colorado Resiliency and Recovery Office, supported significantly by FEMA and the Community Planning and Capacity Building (CPCB) RSF, and developed over one year with more than 150 local, state, and federal stakeholders. Its six sectors are depicted in Figure 4 on the right.

The CDBG-DR-funded Watershed Resiliency Pilot Program was a holistic program designed to align watershed restoration and risk mitigation with community and economic development goals, using a collaborative, multi-jurisdictional, coalition-based approach. Per CDBG-DR funding requirements, the Program focused on projects within the hardest-hit counties of Boulder, Larimer, and Weld. The CDBG-DR funds supported capacity-building by providing up to two staff members for up to three years in each coalition.

With staff on board, the CDBG-DR program then funded demonstration projects, which were intended to implement some smaller, shovel-ready projects in the watersheds' master plan and build momentum for the subsequent rounds of large-scale restoration and resilience projects. These large-scale projects included repairing ditch infrastructure and ensuring all adjacent waterways were functioning properly.

Additional funding from the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Emergency Watershed Protection (EWP) Program was secured, which provided additional financial and technical assistance for watershed projects related to erosion, bank protection, conservation, and riparian health. The EWP Program funding required a local match of 25%, which was met through a 50/50 contribution from CWCB and



Figure 4. The Six Resiliency Sectors from the State's Resiliency Framework. Source: DOLA.

available CDBG-DR funds. DOLA successfully navigated the CDBG-DR Program requirements so the Watershed Coalitions could utilize the CDBG-DR Watershed Program to supplement CWCB's contribution and meet the EWP-required funding match. As a result, 67 flood recovery projects were funded through the NRCS EWP Program. The adaptability of the CDBG-DR funding source and DOLA's flexibility were key to the successful implementation of the Watershed Coalitions' priority projects.

The projects funded through the Watershed Resilience Pilot Program and EWP utilized the natural channel function approach, which avoids the construction of excessive structures in streams. Hard structures were built only where critical infrastructure needed to be protected. The characteristics of the landscape, including previous flood history, stream depth, and water velocity were considerations in each project's design. Successful projects can decrease erosion and sedimentation risks and minimize the need for future oversight and stream management. This innovative approach integrates habitat and resource considerations with development goals, mitigates flood risk for people and properties, and is a relatively new line of thinking in the stream restoration field.

Though the Watershed Resilience Pilot Program was focused on community and economic development, and the EWP Protection Program was focused on protecting life and property while enhancing ecological function, both programs shared similar goals around natural and environmental health on a watershed scale. The partnerships that developed early on in flood recovery broadened to increase coordination in order to leverage program funding to execute more flood resiliency projects.

State funding programs were successfully leveraged in order to access Federal funds and/or cover expenses that were ineligible for federal funding. For example, DOLA's Energy/Mineral Impact Assistance Fund and CWCB's Colorado Watershed Restoration Grant Program supplemented coalition staffing grants to cover staffing and other expenses ineligible for federal funding. In total, over \$4.6 million was awarded in various capacity-building grants.

As of September 2018, the Watershed Coalitions and their associated stakeholders have completed 117 flood recovery projects across 65 miles of river and floodplain improvements and have engaged over 700 private property owners through the EWP Program. Two rounds of projects identified from

Colorado Watershed Recovery Statistics

- \$36 million in CDBG-DR funds awarded for watershed recovery work
- Total construction costs over \$70 million
- \$4.2 million awarded for capacity-building staffing grants across the 10 coalitions
- \$400,000 additional funding from CWCB
- \$270 million of short-term damage costs avoided through the EWP Program

Source: *Colorado Watershed Flood Recovery 2013- 2018 Report*

coalitions' Master Plans have been implemented, and the third final round, focused on large scale impact and replicability of projects, is underway. Though outcomes are still being evaluated, preliminary studies examining watershed projects across all ten coalitions have demonstrated a decreased flood risk to low- and moderate-income populations, a stipulation of CDBG-DR funding. The 2013 flood impacts underscored to communities the need to prepare for the next flood event, no matter how many years might pass before the next event. Extensive mitigation work, such as CWCB's flood mapping efforts, will continue to improve communities' readiness to respond and recover from future flooding.

Lessons Learned

- Multi-jurisdictional partnerships and the ability to leverage and coordinate federal, state, and private funding sources expedited the watershed recovery process following the devastating flood.
- The state's early engagement with local and regional stakeholders was crucial in establishing clear channels of communication and shared goals for the watersheds.
- The application of CDBG-DR funds to the restoration of dynamic stream systems required an adaptive project management strategy tailored to each Watershed Coalition's unique regional needs, and an iterative decision-making process.
- Local engagement in the recovery process, particularly through the Watershed Coalitions, was key to the success of the various stream and watershed restoration projects. Pairing local volunteers with subject matter experts for training on long-term maintenance and monitoring gave communities a stake in the success or failure of their restoration projects.
- By integrating resilience and hazard mitigation into the watershed restoration efforts, Colorado will be better prepared for future flooding disasters.

"The best time to plan for a disaster is before, not after. Having a program that's already developed, that they can run funds through and that they can manage from is incredibly important and may need to be adapted after a disaster... if you want to be nimble." – Chris Sturm, Stream Restoration Coordinator, CWCB

Additional Resources

- [Colorado Water Conservation Board](#)
- [Colorado Department of Local Affairs](#)
- [Watershed Resilience Pilot Program](#)
- [CDBG-DR Program](#)
- [Colorado Watershed Coalitions](#)
- [Colorado Watershed Recovery Success Stories](#)