– Big Thompson River –

WALTONIA & MOUNTAIN SHADOWS REACHES

Big Thompson Watershed

2013 Colorado Flood Recovery

COLORADO Department of Local Affairs — Community Development Block Grant — Disaster Recovery

COLORADO Colorado Water Conservation Board — Department of Natural Resources

USDA United States Department of Agriculture — Natural Resources Conservation Service

BIG THOMPSON WATERSHED COALITION

Multiple Benefits

- Protect life, property, and infrastructure
- Mitigate flood risk
- Enhance ecosystem structure and function
- Restore access for tourism and recreational businesses
- Enrich tourism opportunities
- Maintain home access
- Protect critical infrastructure

Watershed
Big Thompson

Locale
Larimer County

Local Sponsor
Big Thompson Watershed Coalition

Property Ownership
100% private

Project Cost
$5,240,802

Construction Dates
Oct. 2 2017 - May 11 2018, (222 days)

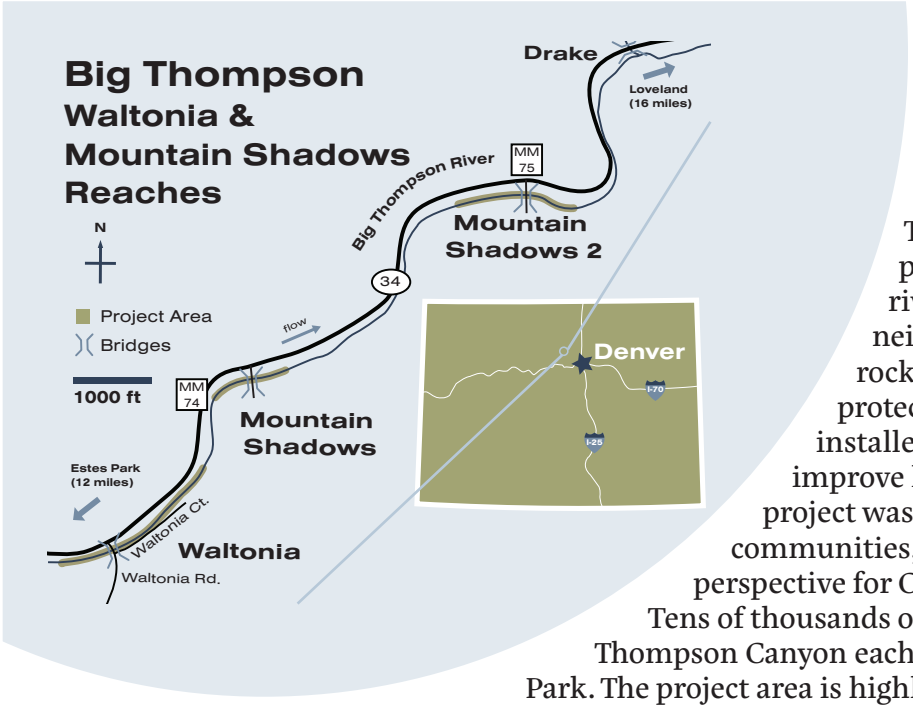
Disaster repeats itself for the Waltonia and Mountain Shadows communities. A catastrophic flood heavily impacted these neighborhoods in 1976, and again in September 2013. Tons of earth were carried downstream by the 2013 flood, and 3 homes built within the active river corridor were lost in the Waltonia and Mountain Shadows neighborhoods. The homes that remained were left at risk and in disrepair. US Highway 34, a major route connecting the Colorado Front Range to iconic Rocky Mountain National Park, was also severely damaged as a result of the flood. Emergency repairs, while necessary to provide residents with access to their homes following the flood, further impaired the river corridor by straightening and homogenizing the channel and armoring the banks with rock, absent of soil and vegetation.

The W/MS/MS2 projects aimed to provide a sustainable floodplain design to protect the safety of neighborhood residents while enhancing habitat and improving river function and resilience. Work included low-flow channel re-establishment, floodplain reconnection, buried bank protection, flood deposit excavation, bank stabilization, and native revegetation.

The Big Thompson Watershed Coalition (BTWC) was formed in the wake of the 2013 flood to lead long-term flood recovery, first managing the development of a Master Plan that ranked the Waltonia and Mountain Shadows projects (W/MS/MS2) as high priorities for river improvements. A Damage Survey Report conducted by the Natural Resources Conservation Service (NRCS) and Colorado Water Conservation Board (CWCB) in 2015 confirmed the opportunity for improvements in these reaches, and BTWC secured funding for rehabilitation of nearly a mile of river corridor along the Big Thompson.

Erosion damage undermining residences in the downstream section of the Waltonia reach, November 2013.
Photo: Bill Spitz

River Corridor Rehabilitation



The W/MS/MS2 project improved protection of multiple homes along the river in Waltonia and Mountain Shadows neighborhoods. In addition to extensive rock installed for bank and channel bed protection, thousands of native plants were installed to control erosion, stabilize banks, and improve habitat for fish and wildlife. While this project was critical for the people who live in these communities, it is also important from a broader perspective for Colorado's statewide residents and visitors. Tens of thousands of people travel US 34 through the Big Thompson Canyon each year to visit Rocky Mountain National Park. The project area is highly visible and many travelers stop to fish and picnic in this area. The W/MS/MS2 project improved aesthetics and recreational opportunities for these travelers. The project also helps to build a sense of healing from the 2013 flood for the landowners and those who are visiting.

On a larger scale, the W/MS/MS2 project is one of many river projects that occurred in the Big Thompson Canyon over the last two years. CDOT, Larimer County, the City of Loveland, and others have performed road, river, and bridge work in the corridor. These projects could have occurred as isolated efforts, improving aspects and areas of the canyon in bits and pieces with little thought as to how one project would affect another. Instead, these entities worked together and incorporated one another's designs, coordinated construction schedules, shared construction teams, and solved problems collaboratively. The result for the W/MS/MS2 effort is a holistic, cohesive project that improves public safety, protects infrastructure and private property, enhances habitat, bolsters tourism and recreational opportunities, and provides a more resilient Big Thompson Canyon.

Project Objectives

- Stabilize stream banks and channel bed to protect against damage to homes and infrastructure
- Restore the river's discharge capacity to pre-flood levels where feasible
- Establish vegetative cover on critically eroding land
- Improve water quality by reducing sediment loading caused by bank erosion
- Enrich riparian habitat via the addition of topsoil, seeding, and native vegetation
- Enhance aquatic habitat through added complexity, additional vegetation, and improved water quality

Banner hung by residents in the Waltonia neighborhood.

BY THE NUMBERS

project length: 4,920 linear feet

25 participating landowners

57 in-stream structures

3,805 willow & cottonwood live stakes planted

4,639 container plants installed

4.3 acres seeded

Before

Massively eroded bank at a cabin near the downstream extent of the Waltonia project, after the flood and emergency repair work, but before the W/MS/MS2 project.

After

Rock bank protection is covered in topsoil, seeded, and planted. Erosion control blanket holds soil in place while vegetation establishes. A constructed boulder cascade and plunge-pool add complexity and help dissipate energy while creating cold-water refuge that is vital summer habitat for trout.

Post-flood photo of a house in the Mountain Shadows reach. The flood scoured banks and tore away vegetation, and severe erosion threatened to undermine the home.

After the project, the banks are graded back and protected with buried rock, erosion control matting, and native vegetation. Existing vegetation is preserved to the extent possible.

Looking downstream from the Waltonia Bridge, after the flood and emergency repair but prior to the W/MS/MS2 project. Trees remain on top of the banks, but the river is disconnected from floodplain and the floodplain is devoid of vegetation. Though this is one of the river's widest spots in the canyon, there is little floodplain to provide relief in high water events. While difficult to discern at this high flow, the channel is relatively homogeneous.

Floodplain relief on the left side of the river (photo shows some unfinished work and exposed rock in the foreground due to new bridge construction) and improved connectivity on the right. Banks are protected with rock, covered in topsoil, and revegetated with native plants. Constructed riffles and pools provide a complex channel that can better absorb velocity at high flows and provide aquatic habitat. The channel was realigned to better protect infrastructure and increase sinuosity at low flows.

– PROJECT – TEAM

The W/MS/MS2 project involved a substantial collaborative effort. The project was funded by CWCB, Colorado Department of Local Affairs (DOLA)'s Community Development Block Grant – Disaster Recovery (CDBG-DR) Watershed Resilience Pilot Program, and NRCS's Emergency Watershed Protection (EWP) Program. CWCB provided support and technical assistance through project design and construction.

Rock used for bank and channel protection was contributed by Colorado Department of Transportation (CDOT) and used as in-kind funding match. Adjacent CDOT projects are reconstructing US 34, improving the river where it abuts the highway, and replacing the Waltonia and Mountain Shadows 2 bridges. During construction, BTWC and CDOT worked closely with the City of Loveland to control turbidity and protect the City's water supply. The team also coordinated with the Bureau of Reclamation, Northern Water, and Big Thompson water users to manage water demand, storage, and a pipeline repair project that altered seasonal river flows and significantly affected the project's construction schedule.

Partners

Private landowners

City of Loveland

Northern Colorado Water Conservancy District (NCWCD)

Colorado Water Conservation Board (CWCB)

Colorado Department of Local Affairs (DOLA)

Colorado Department of Transportation (CDOT)

Natural Resources Conservation Service (NRCS)

Bureau of Reclamation (BOR)

Contractors

Muller Engineering Company

Kiewit Corporation

Resilient Watershed Partners (RWP)

FOR MORE INFORMATION

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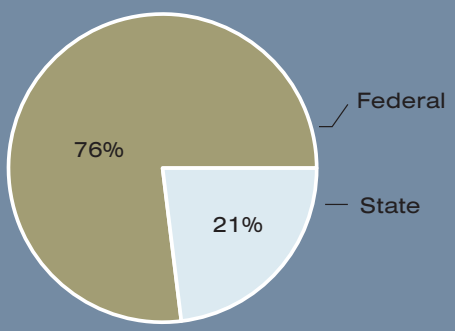
Pollinator visiting a native forb planted in the Mountain Shadows 1 reach (August 2018).

BUDGET

TOTAL: $5,240,802

Project Funding by Source



Project Cost Breakdown