– Big Thompson River –

JASPER LAKE REACH

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
- Engage local community
- Enhance ecosystem structure & function

Watershed
Big Thompson

Locale
Larimer County

Local Sponsor
Big Thompson Watershed Coalition

Property Ownership
80% private
20% public

Project Cost
$939,091

Construction Dates
March 7 - May 23, 2017
(78 days)

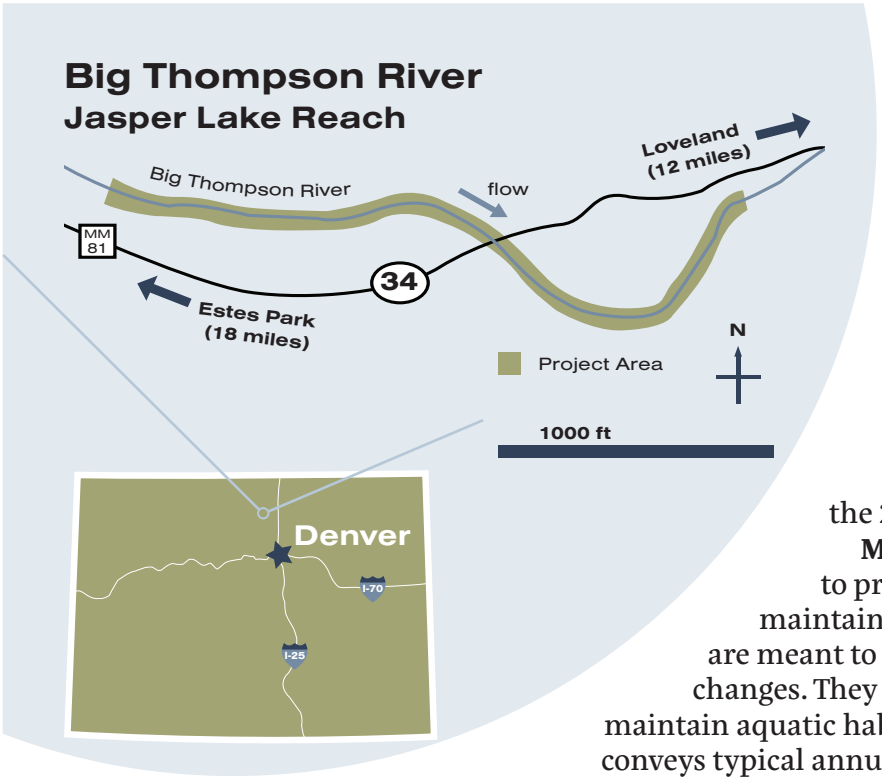
The Big Thompson Watershed Coalition formed in the wake of the 2013 flood to facilitate the long-term recovery of the Big Thompson River corridor. The first effort of the Coalition was to develop a Master Plan to assess existing river conditions and prioritize work. The Jasper Lake reach ranked highest of all 59 reaches based on an assessment of flood risk, geomorphic risk, and riparian and aquatic habitat improvement potential.

Energized by the flood, the Big Thompson River through the Jasper Lake reach reclaimed some of its former channel through natural processes of widening and aggradation. Structures built within the river corridor were impacted by deposition of sediment and debris, and several homes and bridges were severely damaged or destroyed. A Damage Survey Report conducted by the Natural Resources Conservation Service (NRCS) in 2015 confirmed the opportunity for long-term river-related improvements to reduce future damages to existing infrastructure and repair some of the degradation caused by emergency work done immediately following the flood. Through funds procured from federal, state, and private sources, the Coalition was able to improve the resiliency of 2,600 linear feet of the Big Thompson River through a well-planned and executed river project.

The purpose of the Jasper Lake project was to protect vulnerable infrastructure located within the river corridor from future flood damage while repairing and enhancing aquatic and riparian habitat. The project design was based on the results of active stakeholder engagement and quantitative and qualitative analyses.

A newly-restored stretch of the Big Thompson River along the Jasper Lake reach.

River Corridor Rehabilitation



The Jasper Lake project area includes approximately 2,600 linear feet of stream and two acres of upland area. The team constructed a multi-stage channel throughout the project area to restore the river processes that were compromised as a result of land-use change and development in the river corridor, the 2013 flood, and subsequent emergency repairs. **Multi-stage channels** are channels that attempt to provide habitat benefits at a range of flows while maintaining relative stability. Zones within the channel are meant to be inundated as the amount of water in a river changes. They typically contain an inner low-flow channel to maintain aquatic habitat during baseflows, a bankfull channel that conveys typical annual high water flows, and at least one floodplain bench to provide floodplain relief during larger runoff events.

The Jasper Lake project provides improved capacity to the channel and attempts to reduce the river's erosive energy during high water events. During the late summer and early fall when flows are typically low, the low-flow channel was constructed to provide refuge for fish and aquatic organisms.

Revegetation work in this reach included seeding, mulching, and planting native, locally-adapted riparian plants. The revegetation effort has multiple benefits and is paramount for long-term stream health. Native riparian vegetation provides critical habitat, shade, streambank stability, and water quality improvements.

The Jasper Lake project installed a step pool series in the lower part of the project, which will help reduce the velocity and shear stress through this high gradient section of the river.

BY THE NUMBERS

project length: 2,600 linear feet

10 participating landowners

33 in-stream structures

430 linear feet of bioengineered streambanks

Project Objectives

- Stabilize streambanks to protect against additional damage to existing infrastructure
- Establish cover on critically eroding land
- Improve floodplain capacity and connection
- Improve water quality through the reduction of sediment loading caused by bank erosion
- Enhance riparian habitat through the addition of topsoil, seeding, and vegetation
- Improve fish habitat through additional vegetation, improved water quality, and better habitat complexity

Looking upstream from the downstream portion of the Jasper Lake project reach prior to restoration.

Before

In September 2013, heavy rain fell across the Colorado Front Range, causing catastrophic flooding in the Big Thompson Canyon. Located in a natural canyon pocket, the Jasper Lake reach of the Big Thompson River was heavily impacted as natural stream processes caused sediment and debris to deposit in the floodplain, damaging and destroying homes and infrastructure that had encroached on the river corridor. Restoring access to these areas was a high priority immediately following the flood. Emergency measures were executed without the input of a river expert, leaving extensive reaches of river severely degraded and in need of significant additional investment to repair.

After

Design and construction of the Jasper Lake project successfully accomplished the objectives identified for this area in the Master Plan. The in-stream structures installed are intended to provide grade control and bank protection by shifting higher velocity flow paths away from infrastructure and sensitive banks, and to re-establish a stable bedform while improving aquatic habitat. Since completion of the project, the Coalition has been working on long-term stewardship of the project area through volunteer revegetation projects, collaboration with project partners on adaptive management, and work with the State on long-term project effectiveness monitoring to assess changes in river health and watershed resilience.

REVEGETATION

690 container plants

3,184 willow & cottonwood live stakes

2 acres seeded

Coalition members and volunteers helped maintain recently planted vegetation and planted additional willows and other native plants in September 2017.

– PROJECT – TEAM

The Big Thompson Watershed Coalition led a planning project, funded by a Colorado Department of Local Affairs (DOLA) Community Development Block Grant for Disaster Recovery (CDBG-DR) Resilience Planning Grant, with the Stantec design team in 2016 to produce river designs for the Jasper Lake area. These designs were vetted by a variety of stakeholders and an independent team of restoration experts to provide quality assurance and improve the overall final product. Funding for project implementation came from the Colorado Water Conservation Board (CWCB), DOLA, NRCS Emergency Watershed Protection (EWP) Program, the Trout and Salmon Foundation, and Rocky Mountain Flycasters (local chapter of Trout Unlimited).

Effective coordination with project stakeholders and cooperators was critical to the successful completion of this project in May 2017. All stakeholder collaboration was led by the Big Thompson Watershed Coalition in its role as the local sponsor.

Partners

Private landowners

Rocky Mountain Flycasters

Trout and Salmon Foundation

City of Loveland

Larimer County

Colorado Water Conservation Board (CWCB)

Colorado Department of Local Affairs (DOLA)

Colorado Parks and Wildlife (CPW)

Colorado Department of Transportation (CDOT)

Natural Resources Conservation Service (NRCS)

United States Forest Service (USFS)

Contractors

Stantec Consulting Services, Inc.

RMC Consultants

Resilient Watershed Partners (RWP)

FOR MORE INFORMATION

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www.BigThompson.co
www.ColoradoEWP.com

VISIT

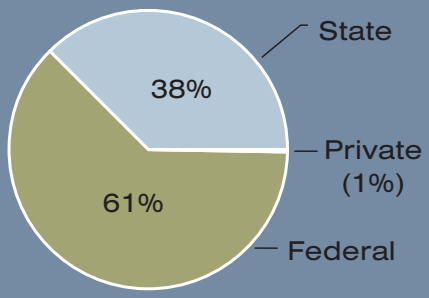
www.bigthompson.co/lower-canyon/

FOR UPDATES

BUDGET

TOTAL: $939,091

Project Funding by Source



Project Cost Breakdown