



Parks & Open Space Advisory Committee

January 22, 2015

Watershed Recovery



Emergency
Response



Immediate
Threat
Assessment and
Mitigation



Long-Term
Vision

Watershed
Master Plans



Future Creek
Projects

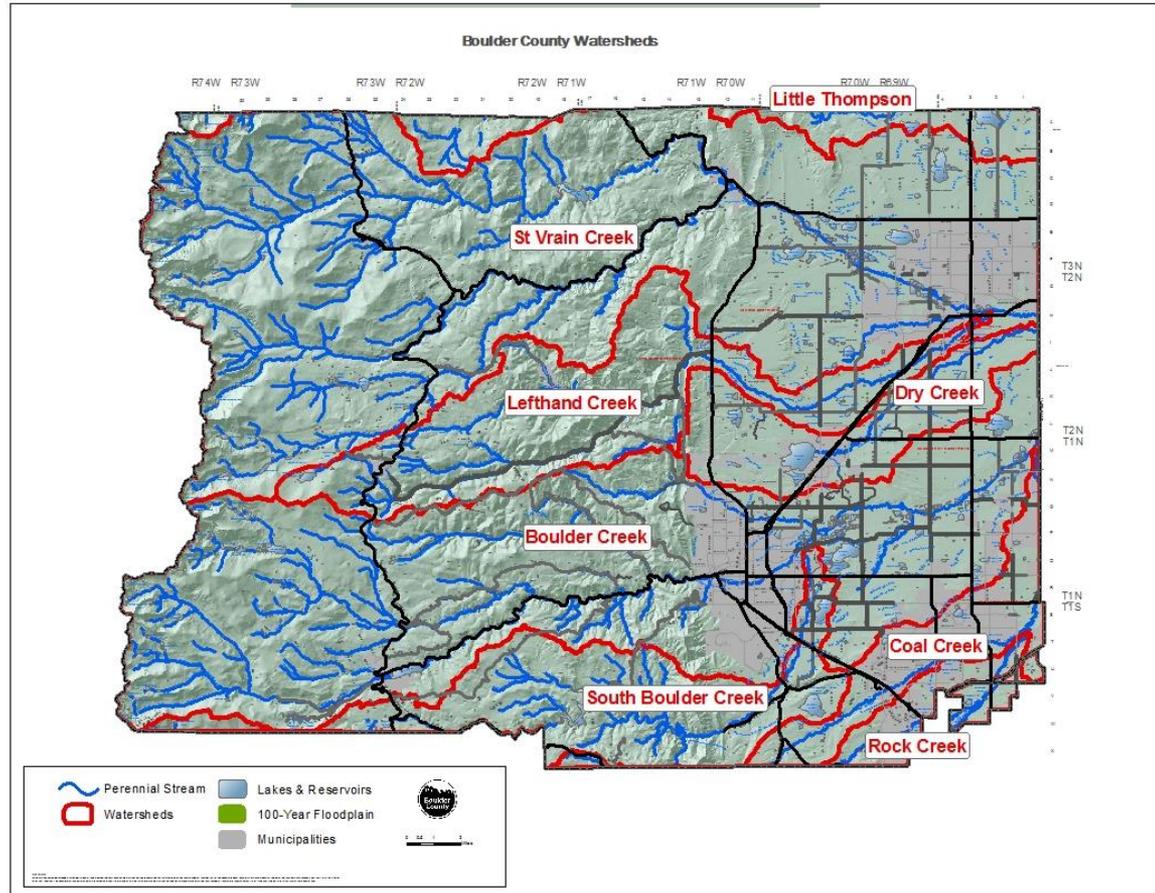
Funding and
Implementation

Agenda

- **Overview: Comprehensive Creek Planning Initiative**
 - Plan development
 - Outcomes
- **Parks and Open Space**
- **Next steps for Watershed Recovery**
 - Plan use
 - Project implementation
- **Public Comment**
- **Planning Commission Feedback**
-

Boulder
County

Boulder County Watersheds



Comprehensive Creek Planning Initiative

The logo for Boulder County is a circular emblem in a light teal color. It features a stylized landscape with a mountain peak, several evergreen trees, and a silhouette of a town or city. The words "Boulder County" are written across the center of the emblem in a white, sans-serif font.

- Initiated to ensure county-wide view of creek recovery and restoration
- Began with community meetings to identify needs
- Moved to high-hazard debris removal and mitigation projects
- Prepared for and transitioned to watershed-level master planning process
- Master plans complete in December 2014
-

Little Thompson River



Long-Term
Vision

Watershed
Master Plans



FINAL REPORT

Little Thompson Watershed Restoration Master Plan



Little
Thompson
Watershed
Restoration
Coalition



COLORADO
Colorado Water
Conservation Board
Department of Natural Resources



Long-Term
Vision

Watershed
Master Plans

St. Vrain Creek

St. Vrain Creek Watershed Master Plan

PREPARED BY

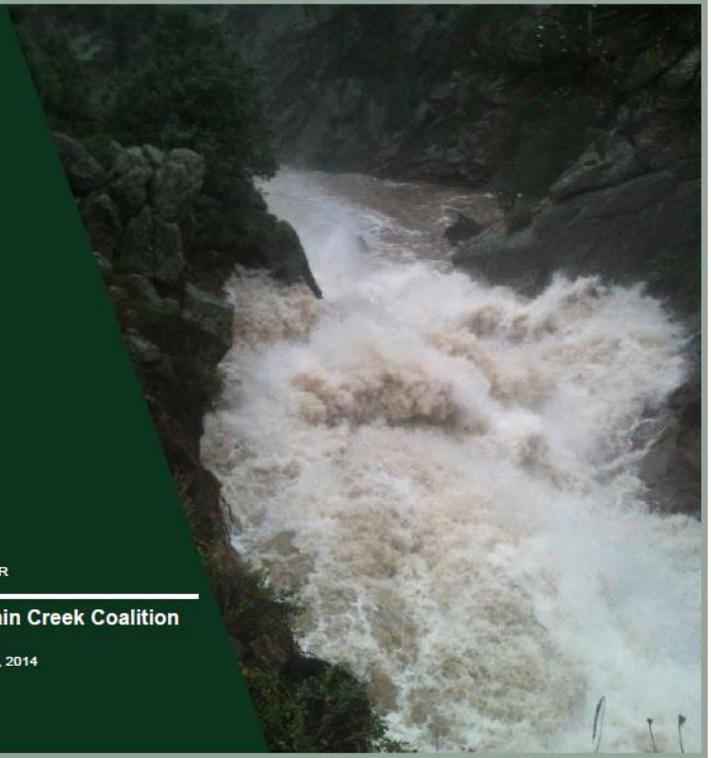
Baker



PREPARED FOR

The St. Vrain Creek Coalition

NOVEMBER 25, 2014



Left Hand Creek



Long-Term
Vision

Watershed
Master Plans

LEFT HAND CREEK WATERSHED MASTER PLAN



November 14, 2014

amec

CDR
ASSOCIATES
COLLABORATIVE DECISION RESOURCES

Walsh



Long-Term
Vision

Watershed
Master Plans

Fourmile Creek

Fourmile Creek Watershed Master Plan



Michael Baker
INTERNATIONAL

CDR
ASSOCIATES
COLLABORATIVE DECISION RESOURCES



COLORADO
Colorado Water
Conservation Board
Department of Natural Resources

DRAFT REPORT, NOVEMBER 2014



Long-Term
Vision

Watershed
Master Plans

Coal Creek (Upper Reaches)



Upper Coal Creek Watershed Restoration Master Plan

November 2014

Jefferson and Boulder Counties



ICON
ENGINEERING, INC.

8100 S Akron Street, Suite 300
Centennial, CO 80112
303-221-0802
www.iconeng.com



Ecological Resource Consultants, Inc.





Long-Term
Vision

Watershed
Master Plans

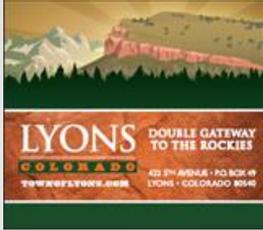
Enabling Flood Recovery through Watershed Planning

- **Partnerships**
 - Coalition partners
 - Community members & landowners
 - Stakeholder interests
- **Resources**
 - County: Staffing and funding, \$300K
 - State: Guidance and funding
 - CWCB Master Plan Grant, \$700K
 - CDBG-DR Planning Grant, \$80K
 - CWCB Stream Restoration Grants*

**Funding needed for project implementation, including local match*



Partnerships



COLORADO
Colorado Water Conservation Board

Department of Natural Resources



COLORADO
Division of Homeland Security & Emergency Management

Department of Public Safety



Community Engagement

- **1** project video produced
- **15** community meetings with over **575** total participants
- **3,593** postcards sent announcing the master plan process and kick-off community meetings
- **10** presentations at meetings, conferences, and workshops
- **13** press releases sent
- **16** external emails with updates and announcements on master plans

Information Clearinghouse

Emer
Res

The screenshot shows a web browser window with the URL <http://www.bouldercounty.org/flood/property/pages/creeks.aspx>. The browser's address bar and tabs are visible. The website's navigation menu includes: Families & Adults, Open Space & Recreation, Property & Land, Roads & Transportation, Environment, Safety & Law, and Licenses, Permits & Records. A sidebar on the left contains a tree view with categories: Flood, Assistance, Cleanup, Health & Safety, Community Resiliency, Contacts, Emergency Preparedness, FAQs, Forms, News, Rebuilding & Restoration, Assessor Valuation & Taxes, Creek Planning & Recovery, Flood Rebuilding & Permit Information Center, Hazard Mitigation Review, Permits, Private Roads, Culverts & Bridges, Restoration & Repair, Self-Report Property Damage Assessment, Septic Systems, Roads, and Videos & Photos. The main content area is titled "Creek Planning & Recovery" and includes a paragraph about the Comprehensive Creek Planning Initiative (CCPI), a video player for "Comprehensive Creek Planning Initiative Video", and a list of "Master Plan Pages" for various creeks. Below this is an "Events Calendar" section and a "News & Presentations" section with a list of recent presentations.

Families & Adults | **Open Space & Recreation** | **Property & Land** | **Roads & Transportation** | **Environment** | **Safety & Law** | **Licenses, Permits & Records**

Flood

- Assistance
- Cleanup, Health & Safety
- Community Resiliency
- Contacts
- Emergency Preparedness
- FAQs
- Forms
- News
- Rebuilding & Restoration**

- Assessor Valuation & Taxes
- Creek Planning & Recovery**
- Flood Rebuilding & Permit Information Center
- Hazard Mitigation Review
- Permits
- Private Roads, Culverts & Bridges
- Restoration & Repair
- Self-Report Property Damage Assessment
- Septic Systems
- Roads
- Videos & Photos

Creek Planning & Recovery

Boulder County's Comprehensive Creek Planning Initiative (CCPI) is helping the county move forward with long-term creek recovery by initiating watershed-level master planning processes throughout the county. Master plans will assist in rebuilding efforts by providing post-flood analysis of flows, facilitating key decisions about creek alignment, and identifying actions for stream restoration and flood risk management. The master planning process will be an open and collaborative effort among public agencies, property owners, ditch companies, stakeholders, and the public.

Comprehensive Creek Planning Initiative Video

Comprehensive Creek Planning Initiative

For more information on the master plans visit www.BoulderCountyCreekPlan.org

More information on each of the master plans can be found at the links below.

Master Plan Pages

- Boulder Creek (Lower Reaches)
- Coal Creek (Lower Reaches) and Rock Creek
- Coal Creek (Upper Reaches)
- Fourmile Creek
- Left Hand Creek
- Little Thompson River
- South Boulder Creek
- St. Vrain Creek

Events Calendar

For a list of all events for the Comprehensive Creek Planning Initiative, please see the [CCPI Events Calendar](#).

News & Presentations

- [Colorado Watershed Symposium Presentation, July 2014](#) (2 MB)
- [Boulder County Watershed Coalitions Presentation, June 2014](#) (3 MB)
- [Post-Flood Planning in Boulder County](#)
- [Update Presentation to Planning Commission, May 2014](#) (2 MB)
- [Comprehensive Creek Planning Initiative Moves Forward, February 2014](#)
- [Update Presentation to Planning Commission, January 2014](#) (2 MB)
- [Community Outreach Meeting Presentation, December 2013](#) (740 KB)
- [Commissioners' Study Session on the Stream Planning Initiative, November 2013](#)

Plan Outcomes



Long-Term
Vision

Watershed
Master Plans

Multidisciplinary technical assessment of current watershed conditions, including:

- Ecological Assessment
- Geomorphic Assessment
- Flood Risk Assessment
- Channel Migration Zone Analysis

Ecological Assessment

St. Vrain Creek



Poor

Recommendations:
Consider opportunities for improved meanders, habitat, vegetation, etc.; need to create more complexity within the channel

No further management recommended

Excellent



Geomorphic Assessment

Left Hand Creek



Good

In tact section of lower Left Hand Creek (on BoCo Open Space). This reach largely in tact due to functioning, connected floodplain.

Tight bedrock pinch led to stripping of alluvium in James Canyon, ultimately destroying the roadway and the pre-flood channel.

Poor

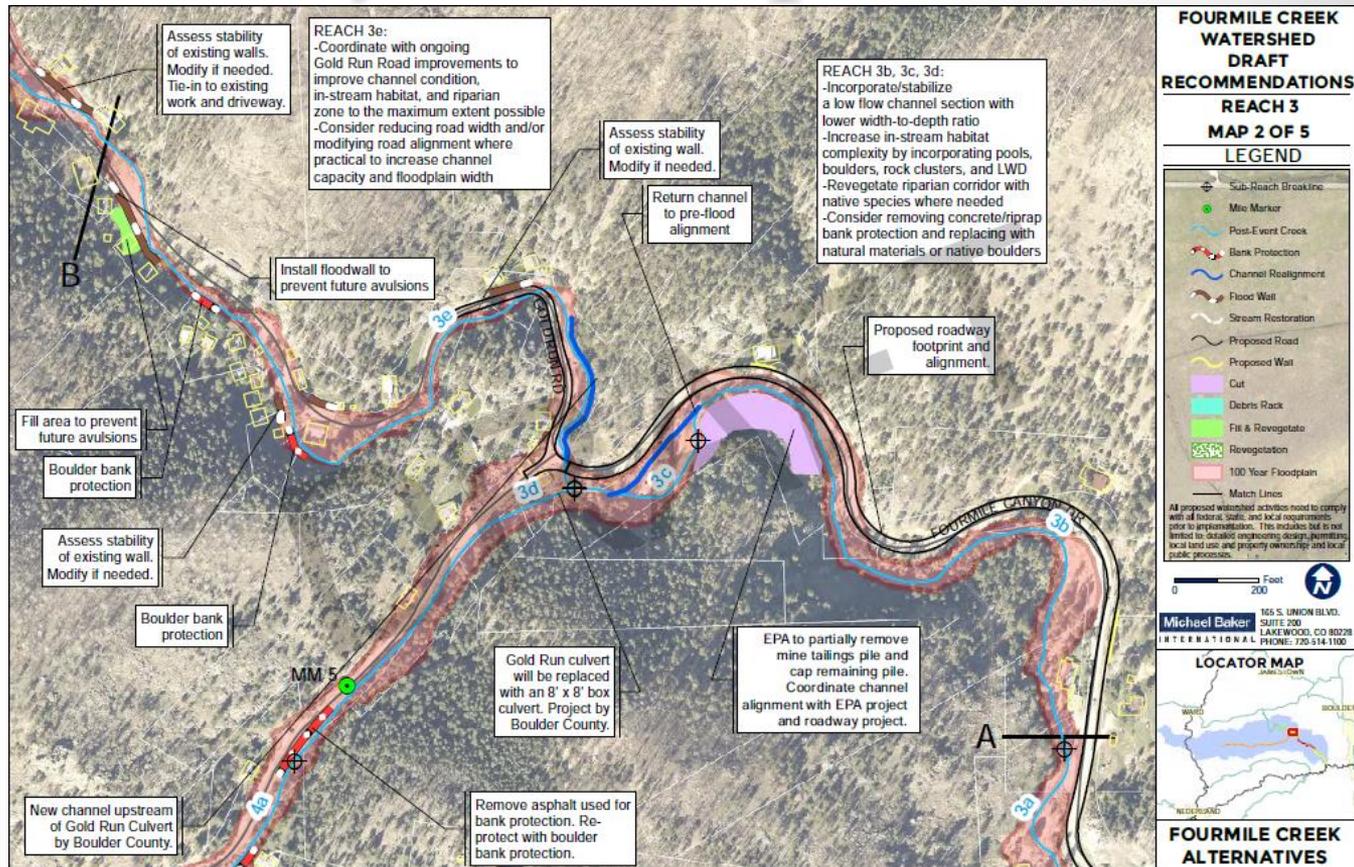


Project Maps



Long-Term
Vision

Watershed
Master Plans



Conceptual Designs



Figure 28. Graphical example of existing crossing constructed with low-flow channel that facilitates aquatic organism passage and sediment transport.

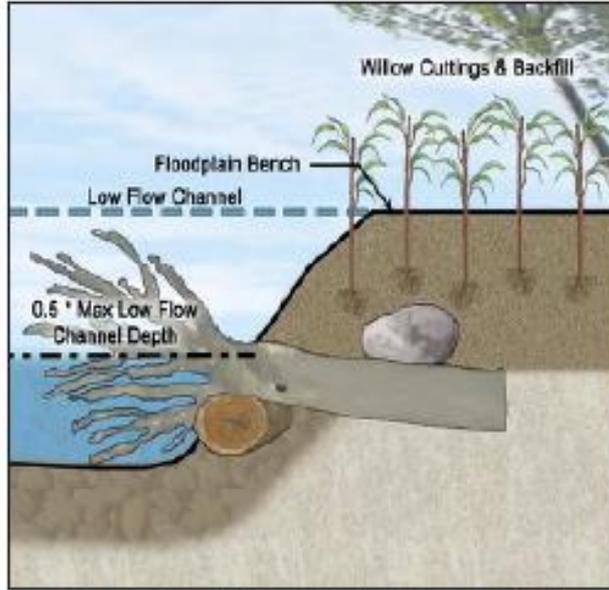


Figure 7.4 Large Woody Debris Bank Protection Detail*

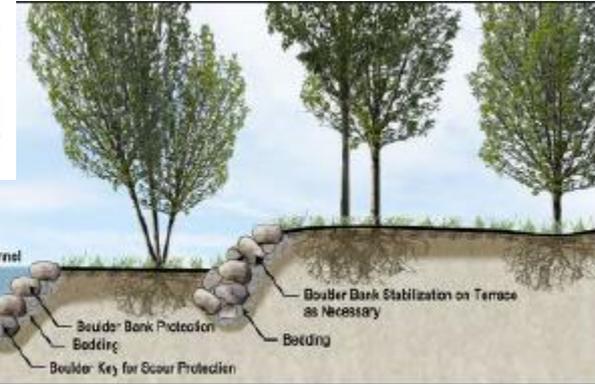


Figure 7.3 Boulder Bank Protection Detail*



Long-Term
Vision

Watershed
Master Plans

Project Prioritization

Fourmile Creek Master Plan

Tier 1 - Projects reducing flood risk due to post-flood conditions

Reach 1 – Removal of Sediment aggradation from the channel near Mile Marker 1.1

Reach 1 – Fourmile Creek restoration project (CWCB Grant)

Reach 3 – Assessing the stability of existing walls and modifying if necessary

Reach 3 – Filling and revegetating avulsion areas

Reach 3 – Installing debris racks and stabilizing the banks of Ingram Gulch

Reach 4 – Removal of sediment aggradation from the channel and floodplain near Mile Markers 5.1, 5.8, and 6.3

Reach 4 – Removing a debris jam in a high avulsion risk area near Mile Marker 7.7

Tier 2 - Projects that improve stream stability and promote ecological recovery

All Reaches – Low flow channel restoration

All Reaches – Increasing in-stream habitat

All Reaches – Revegetation

Reaches 1, 3, and 4 – Bank Protection

Reach 3 – Relocating Fourmile Creek in the vicinity of Salina Junction

Reach 4 – Removing a temporary berm near Mile Marker 7.2 and bank protection

Tier 3 - Projects that affect areas with low risk to infrastructure

Reach 2 – Filling the pre-flood channel to reduce avulsion risk





Long-Term
Vision

Watershed
Master Plans

Cost Estimates

- Top priority projects
 - St. Vrain \$68 million*
 - Left Hand \$20 million**
 - Fourmile \$2.6 million*
- Floodplain management recommendations and cost estimates
 - Studies and remapping \$1.6 million

*Cost estimates for all Tier 1 projects with unmet needs

**Cost estimates for all of the top 5 projects with unmet needs



Long-Term Recovery

Plan Use

- Conceptual
 - Framework and guidance for recovery actions
 - Informed by scientific data
 - Next steps of further planning, design
- Funding tool
- Communication and organizing tool



Long-Term Recovery

Project Implementation

- Projects could be completed by:
 - Individual property owners
 - Groups of neighbors
 - Watershed Coalitions
 - Government agencies
 - Non-governmental agencies
 - Cooperative efforts
- Private property owners will need to participate/give approval for any projects on their property



Long-Term
Recovery

Project Funding: CDBG-DR Round 2

Two Programs for Creek Recovery (DOLA/CWCB)

- Watershed Resiliency
- Planning Resiliency

January

Planning program: Projects (up to 30% design)

Planning program: Staff

Watershed program: Watershed Coordinators

March

Watershed program: Small scale or pilot projects

November

Watershed program: Large projects



Long-Term Recovery

Project Funding: CDBG-DR Round 2

County Applications- January

- Floodplain program staff
- Floodplain studies and map updates
- Creek recovery staff
- Project design, to prepare for November applications
 - South St. Vrain Creek (Hall Meadows)
 - St. Vrain breaches 1 and 2
 - St. Vrain breaches 5-9
 - Left Hand Creek and Fourmile Creek stream restoration (roadway design integration)



Long-Term Recovery

Next Steps: Creek Recovery and Restoration Program Activities (Winter-Spring)

- Complete county adoption of master plans
- Continue participation in Coalitions
- Complete January and March CDBG-DR Round 2 funding applications
- Initiate project designs (30%) by department staff, when funding secured
 - Parks & Open Space
 - Transportation
- Pursue additional funding for project implementation
 - Projects considered on a case-by-case basis
 - Dependent on resource availability
- Complete CWCB Watershed Planning grant activities
 - Lower Boulder Creek Master Plan (UDFCD)
- Continue communication and outreach activities



Long-Term
Vision

Watershed
Master Plans

Plan Adoption

Feedback on Plans

- Planning Commission January 21
- POSAC January 22

Adoption

- BOCC February 26

• • •

Julie McKay

Phone: 720-564-2662

Email: jmckay@bouldercounty.org

Website: www.BoulderCountyCreekPlan.org

St. Vrain Creek Watershed Master Plan

PREPARED BY

Baker



PREPARED FOR

The St. Vrain Creek Coalition

NOVEMBER 25, 2014





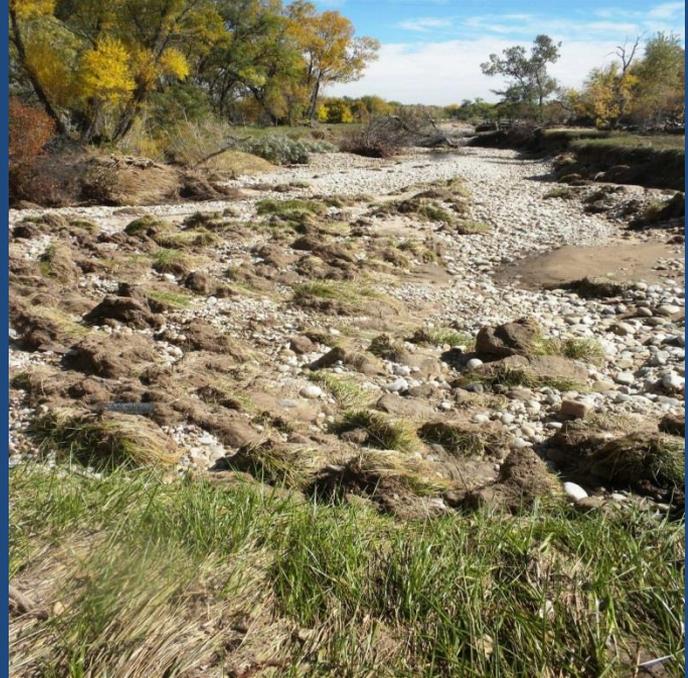
ST. VRAIN WATERSHED MASTER PLAN
ALTERNATIVES ANALYSIS

Figure 3.1 Planning Area

0 2 4 8 12 16 Miles

St. Vrain Creek Watershed Master Plan

- Worked with:
 - St. Vrain Creek Coalition
 - Michael Baker Jr., Inc. Consulting Team
- Regular and one-on-one meetings
- Provided property and damage assessment information
- Input and comments throughout process



Management Plans and Policies

- Boulder County Comprehensive Plan – Environmental Resources Element (Boulder County 2014)
- St. Vrain Creek Corridor Open Space Management Plan (2004)
- St. Vrain Trail Master Plan (2004)
- Pella Crossing and Marlatt Open Space Recreation and Visitor Use Plan (2003)
- North Foothills Management Plan (Hall Ranch and Heil Valley Ranch)
- Parks & Open Space Water Policy
- St. Vrain Creek Greenway Master Plan (City of Longmont 2001)

Assessments

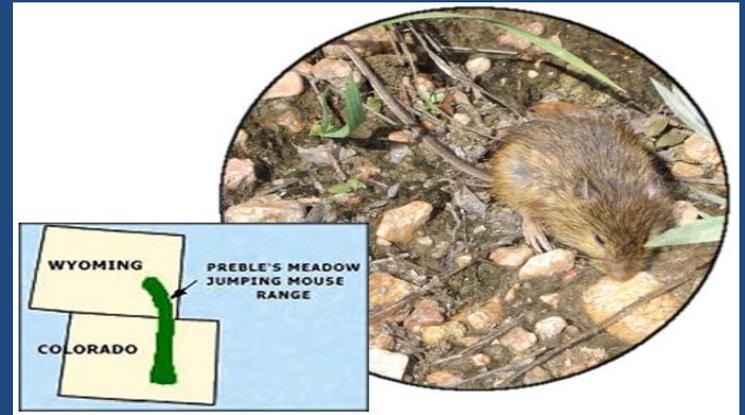
- Riparian Inventory & Assessment Boulder County Parks & Open Space (2009)
- Survey of Critical Biological Resources in Boulder County, Colorado (2009)
- Environmental Assessment – South St. Vrain Creek (2000)
- Pella West Hydrology Study (2009)
- Hall Ranch Meadows Natural Resource Assessment (2005)
- Braly Property – Rapid Assessment Report (2001)
- Habitat Assessment and Survey Report – Portions of Gage-Marlatt Open Space
- Keyes Property Rapid Assessment Report (2002)
- Ramey Homestead Property - Rapid Environmental Site Assessment (2001)
- Resource Assessment Report – Custode Property (2000)

St. Vrain Creek – Significant Resources

- *St. Vrain Creek Corridor Open Space Management Plan*
 - Highlighted significant resources along creek designated as “Sensitive”
- Env. Resource Element - Critical Wildlife Habitat
 - Well-developed complex cottonwood-willow gallery forest
 - Most important native fisheries along Front Range
 - Numerous species of special concern
- *Riparian Inventory & Assessment Boulder County Parks & Open Space (Biohabitats 2009)*
 - 6 out of 14 reaches “High Functioning”, remaining 8 = “Moderate Functioning”

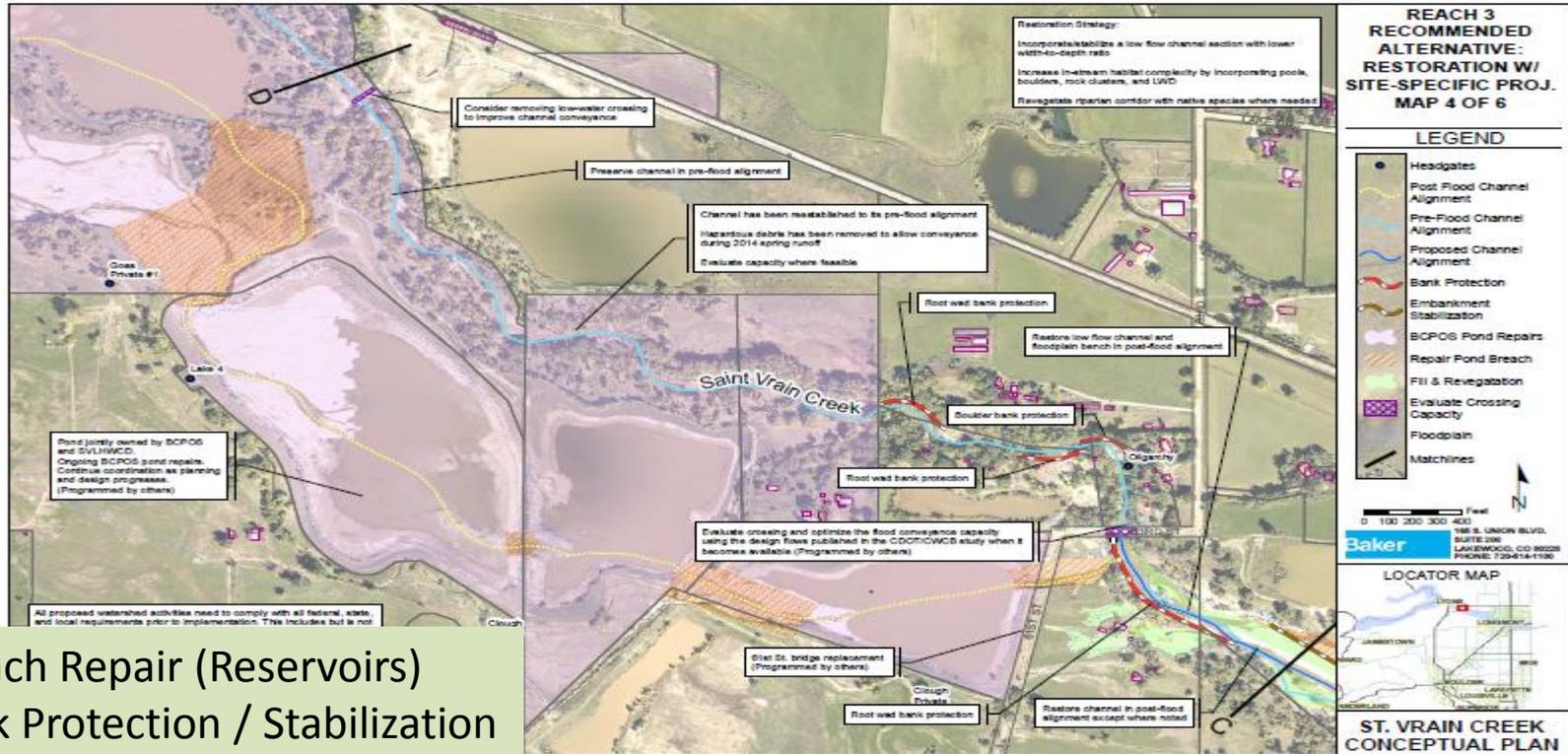
Special Status Species

- Preble's Meadow Jumping Mouse (FT)
- Ute's Ladies Tress Orchid (FT)
- Colorado Butterfly Plant (FT)
- Plains Topminnow
- Common Shiner (ST)
- Iowa Darter (state SSC)
- Stonecat (state SSC)
- Bald Eagle
- Great Blue Heron Rookery
- + 54 other potential special status species

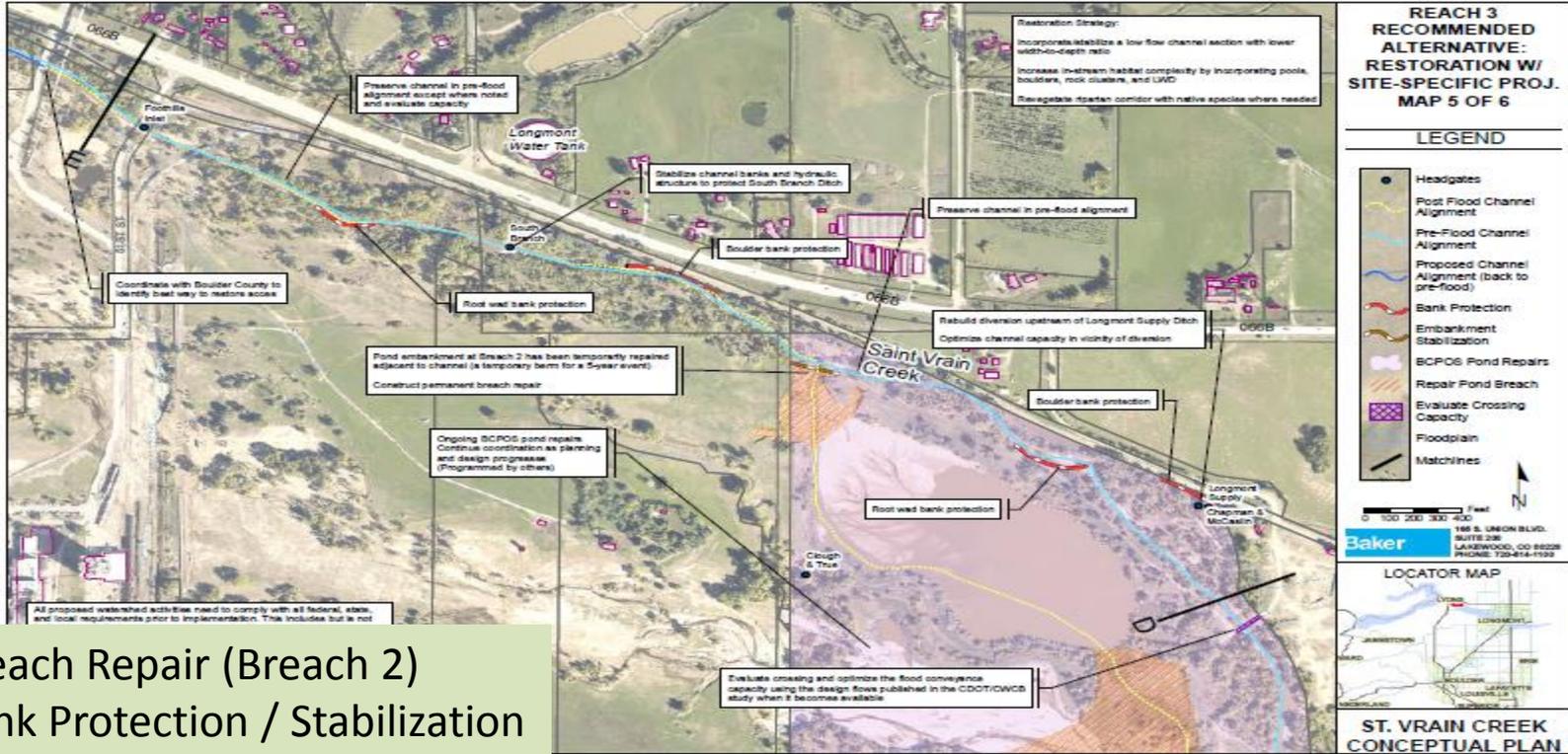


A wide, shallow stream bed filled with smooth, light-colored rocks. Two people are standing in the middle ground, facing away from the camera. The background is a dense forest of trees with green and yellow foliage. The sky is bright and overcast. A blue semi-transparent banner is overlaid at the bottom of the image.

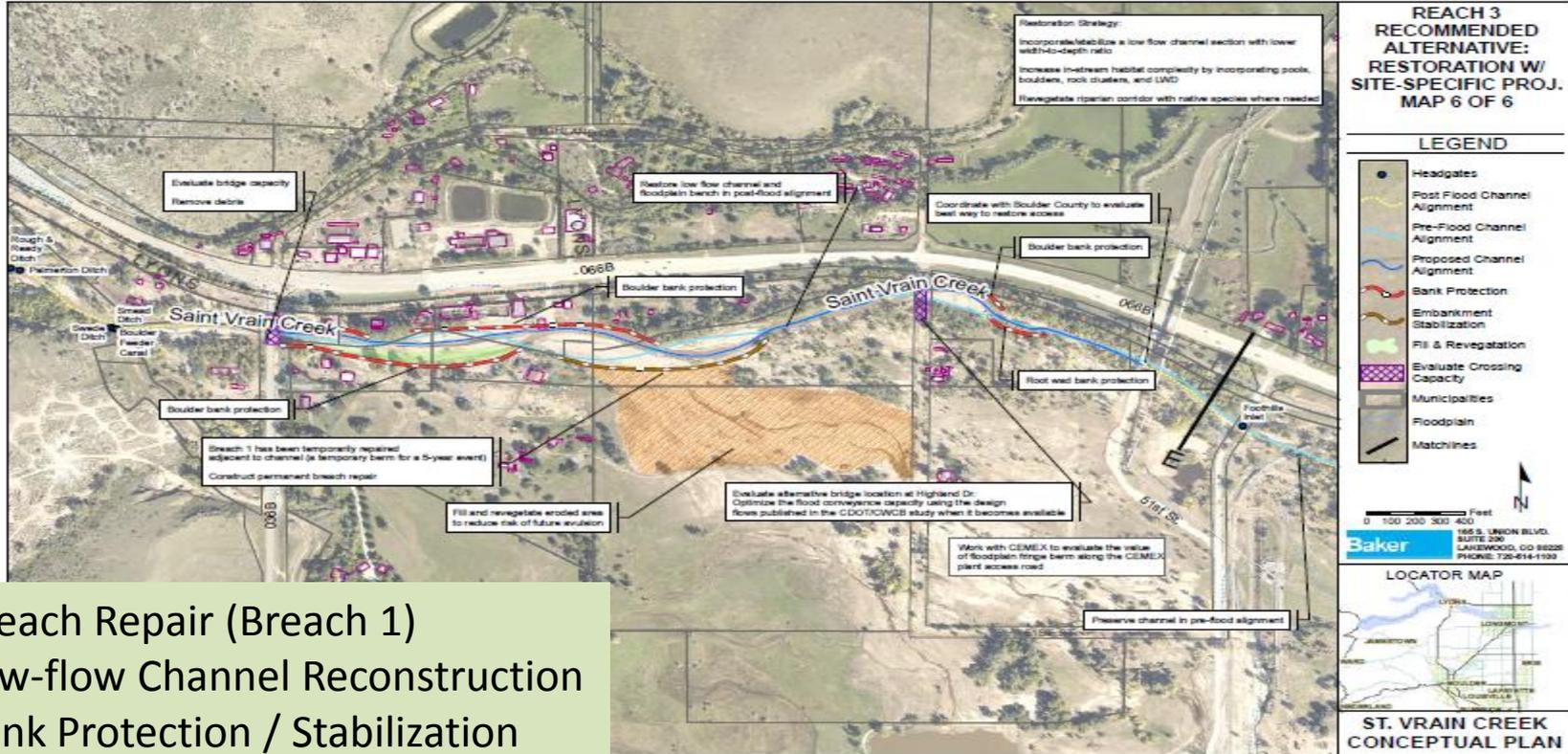
REACH 3
U.S. 36 TO AIRPORT ROAD



Breach Repair (Reservoirs)
Bank Protection / Stabilization
Habitat Restoration



Breach Repair (Breach 2)
Bank Protection / Stabilization
Habitat Restoration

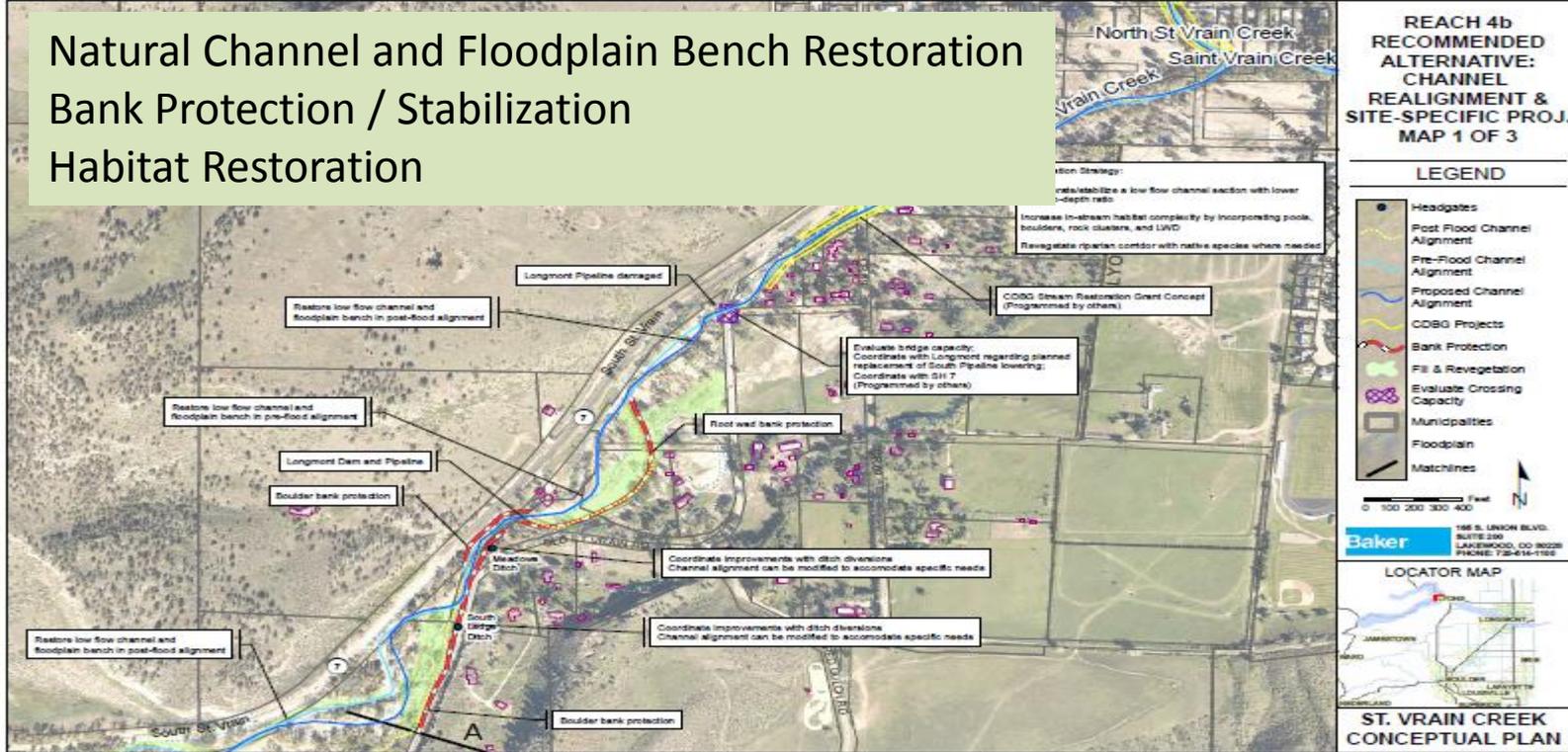


Breach Repair (Breach 1)
 Low-flow Channel Reconstruction
 Bank Protection / Stabilization
 Habitat Restoration



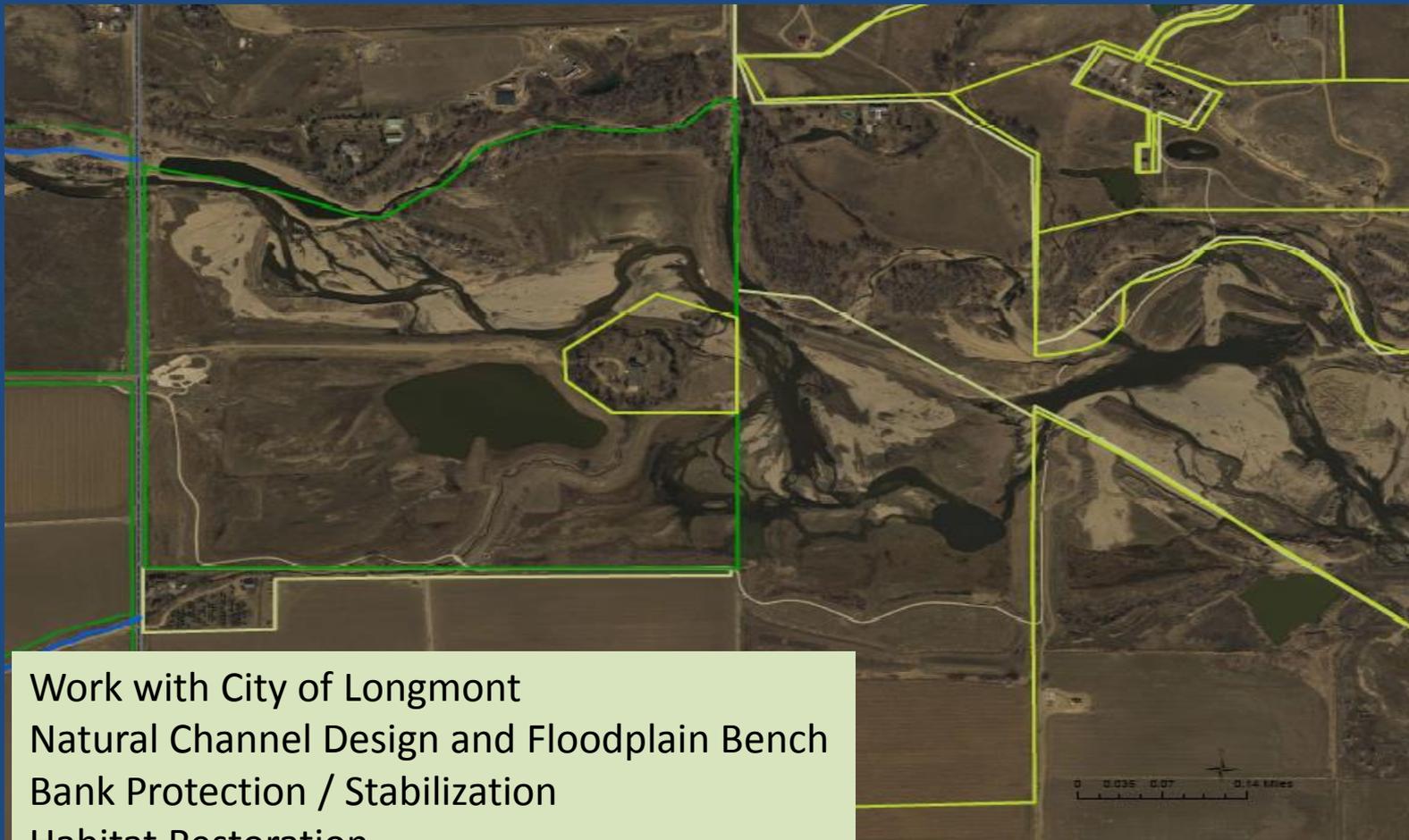
REACH 4B
SOUTH ST. VRAIN / HALL MEADOWS

Natural Channel and Floodplain Bench Restoration
Bank Protection / Stabilization
Habitat Restoration





REACH 1
SANDSTONE RANCH/PESCHEL



Work with City of Longmont
Natural Channel Design and Floodplain Bench
Bank Protection / Stabilization
Habitat Restoration

Prioritization

Tier 1 – Projects reducing flood risk due to post-flood conditions

- Reach 3 – Breach Repairs
- Reach 4b – Hall Meadows/South St. Vrain

Tier 2 – Projects that improve stream stability and promote ecological recovery

- Reach 3 – Stream Restoration

Tier 3 – Projects that affect areas with low risk to infrastructure

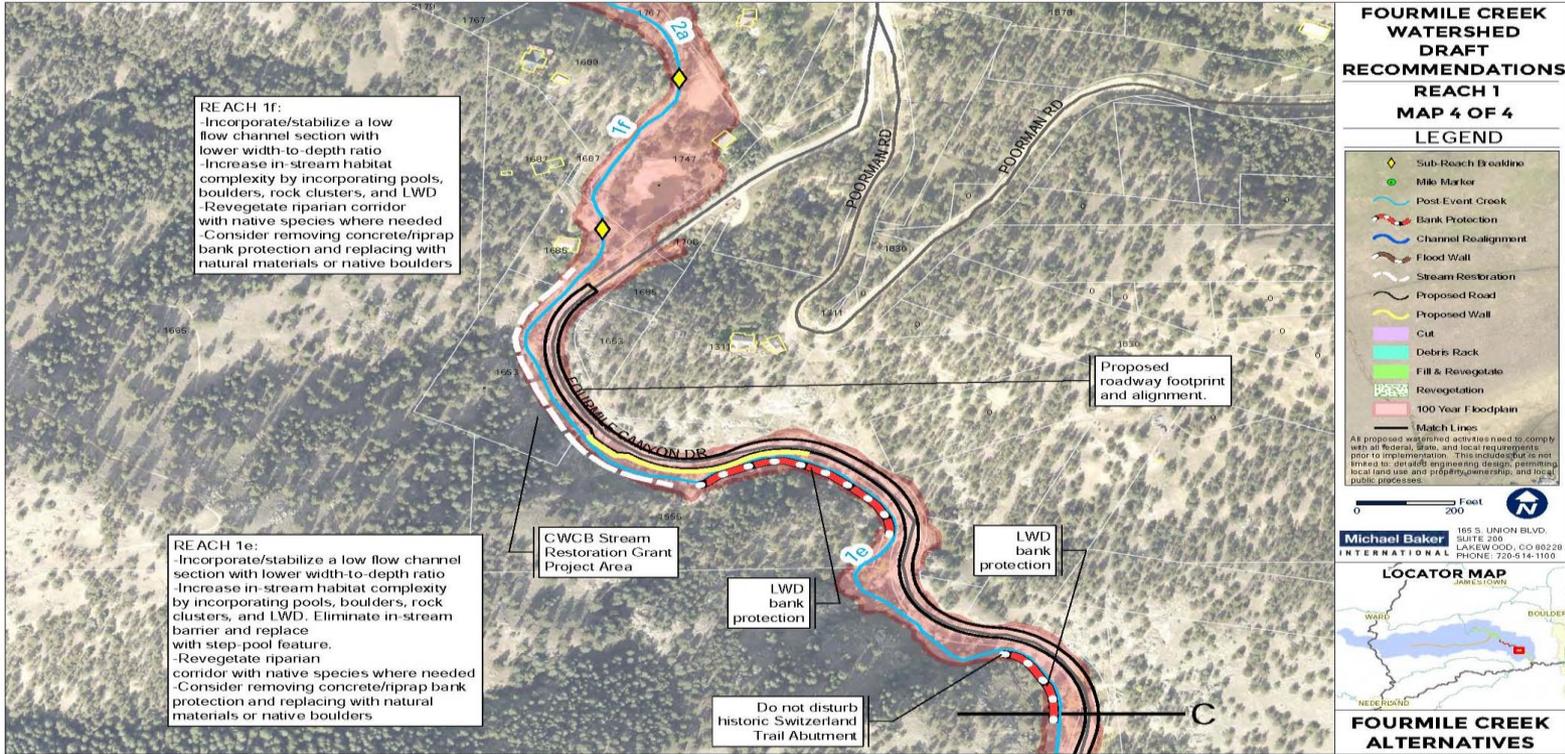
- Reach 1 – Sandstone Ranch (Peschel)

Little Thompson—Parrish 2





Fourmile Creek Flood Recovery Project



Parks and Open Space Project Sites- Lefthand Creek

