



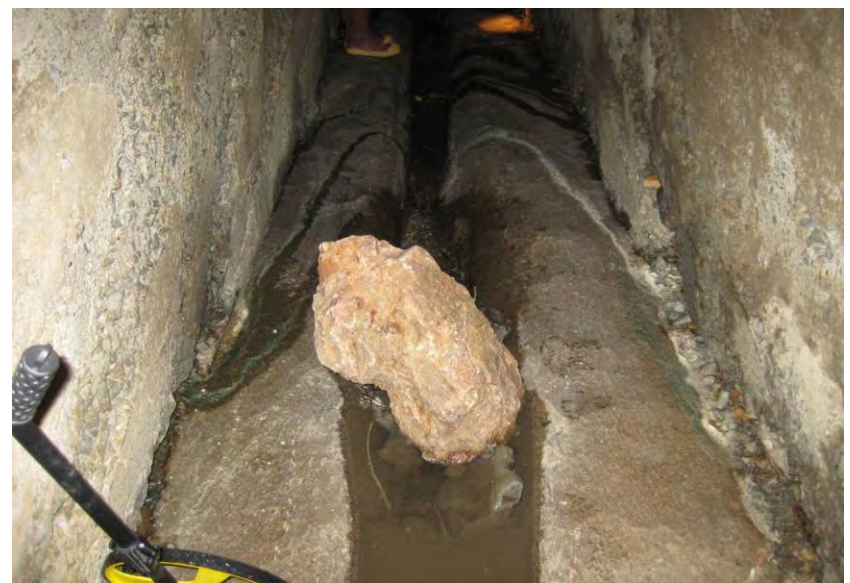
# Butte-Silver Bow Storm Water Management Riparian Habitat Restoration Proposal

Presented to:  
State of Montana Natural Resource Damage Program

Submitted by:  
Butte-Silver Bow City-County Government



# Storm Water System Infrastructure





# Project Purpose

- Continue to improve the storm water management infrastructure
- Better manage sanitary sewer collection and treatment.



- Project Goals

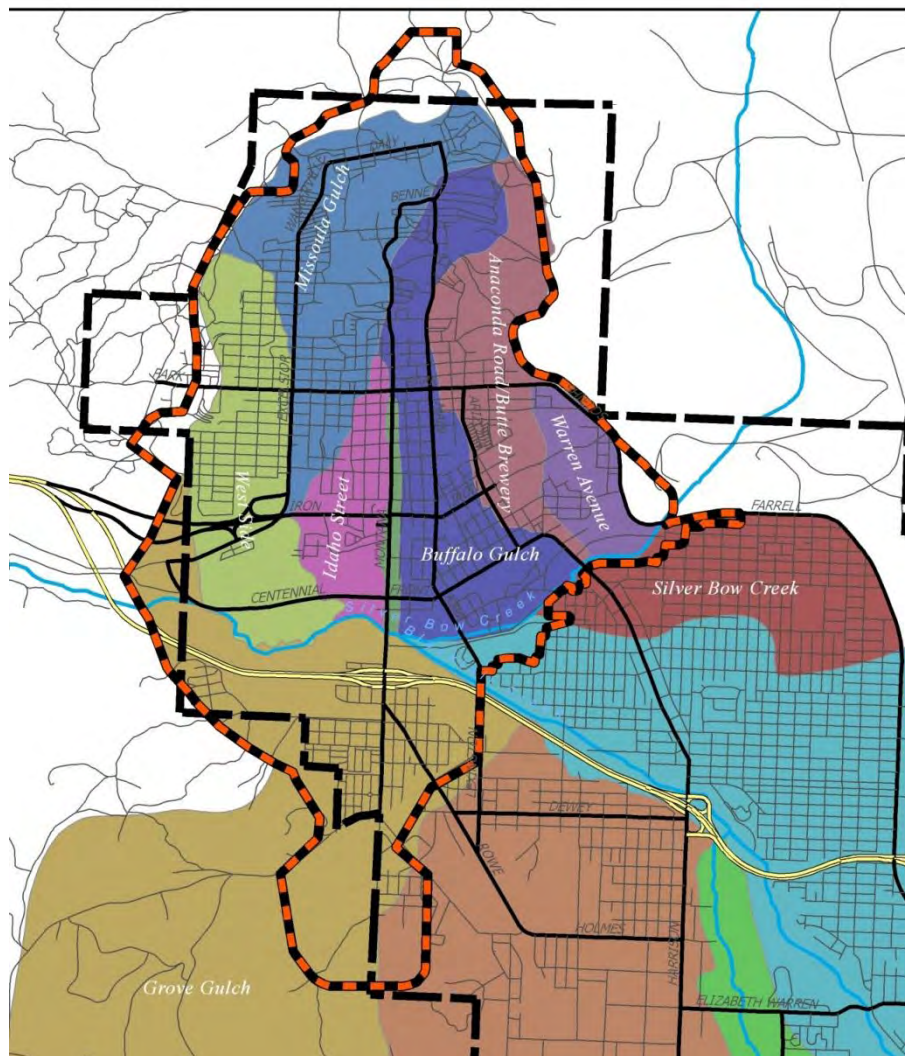
- Restore and protect aquatic resources of Silver Bow Creek
- Integrate remedial action and storm water management
- Protect remediation investments and restoration projects in Silver Bow Creek and its watershed.

- Project Objectives

- Implement Best Management Practices for managing storm water containing heavy metals and constituents of concern (COCs)
- Limit discharge of contaminants from reaching Silver Bow Creek

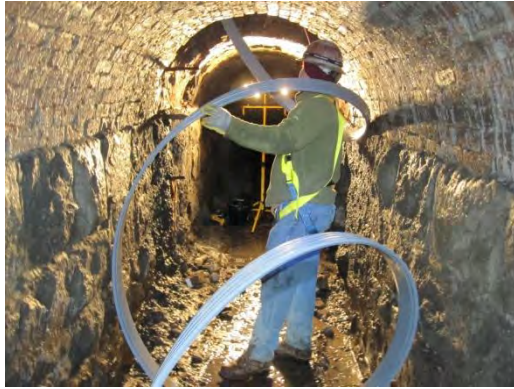


# Anticipated Outcomes



- Four Outcomes
  - Reduction of heavy metals and arsenic reaching Silver Bow Creek
  - Improved flows
  - Survival and passage of native aquatic life forms
  - Maintenance of improved riparian condition

# Project Details



- 20-year implementation includes:
  - Slip-lining of main storm water lines
  - Replacement of catch basins and lateral storm water lines
  - Treatment of sanitary discharge effluent to remove heavy metals and nutrients
  - Replace sanitary sewer collection lines
  - Facilitate beneficial re-use of treated water



# Cost Information

- Up to \$30,000,000; total NRD funds needed is directly dependent upon improvements completed under remedy and Butte-Silver Bow municipal investments.
- Placeholder for Contingency Funds?

The background of the slide is a scenic landscape photograph. It shows a calm blue lake in the foreground, with a dense green forest of evergreen trees along its shores. In the background, a large, rugged mountain with a light-colored, rocky peak rises against a clear blue sky. A fallen log lies horizontally across the middle of the lake. The overall scene is peaceful and natural.

# **AQUATIC IMPROVEMENTS TO THE SILVER LAKE WATERSHED**

## **THE UPPER CLARK FORK RIVER BASIN REMEDIATION AND RESTORATION ADVISORY COUNCIL**

**CITY AND COUNTY OF BUTTE-SILVER BOW**

**AUGUST 1<sup>ST</sup>, 2012**



# STORM LAKE DAM





# STORM LAKE CREEK UPPER DIVERSION





# STORM LAKE CREEK LOWER DIVERSION





# TWIN LAKES CREEK DIVERSION





# TWIN LAKES DIVERSION CHANNEL





# MEYERS DIVERSION





# SILVER LAKE EAST AND WEST DAMS





# SILVER LAKE PUMP STATION





# Timber Butte Open Space Area

## Terrestrial Habitat Replacement Proposal



Presented to:  
State of Montana Natural Resource Damage Program

Submitted by:  
Butte-Silver Bow City-County Government

# Project Purpose

- Acquire, protect, and maintain a native terrestrial landscape
- Acquisition of 225 acres of land on Timber Butte will replace lost or damaged terrestrial resources



- Four Goals

- Prevent urban encroachment
- Improve species diversity
- Promote ecological health and function of the Upper Clark Fork River Basin
- Provide public access to recreation to uninjured native habitat

- Two Objectives

- Secure public ownership through land acquisition.
- Protect uninjured resources from further development and preserve a native terrestrial habitat.

# Timber Butte Ecology



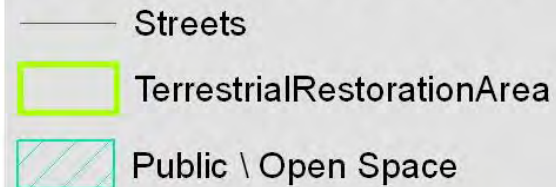
Photo: coopext.colostate.edu

- Timber Butte has one of the few, significant curl-leaf mountain mahogany ecosystems in Silver Bow County and southwest Montana.
- There were over 90 species of plants identified on the Timber Butte, the majority of these species native.

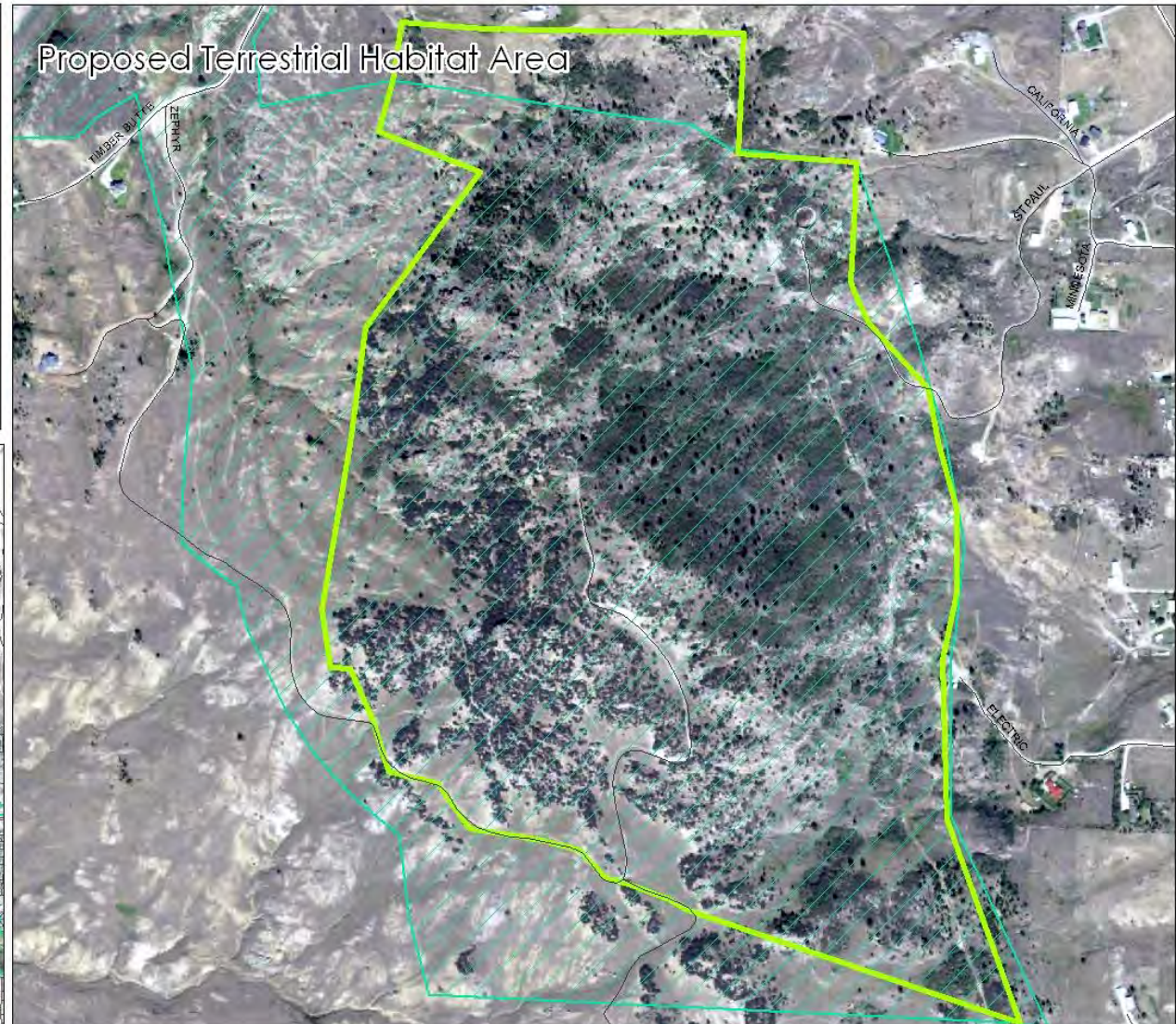
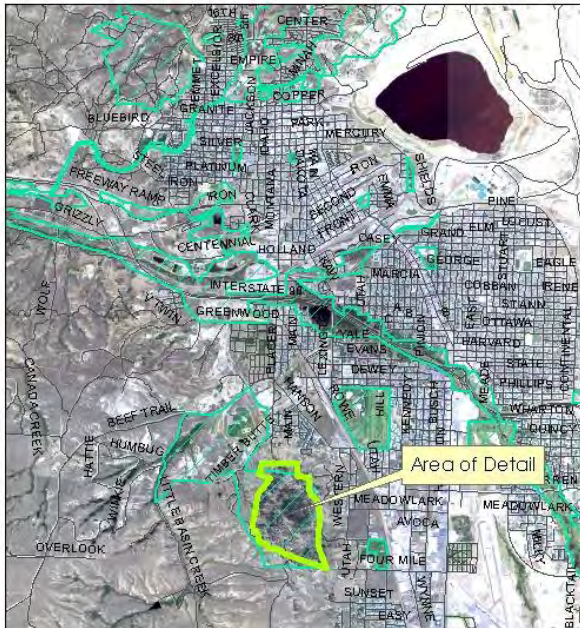


# Project Location

**Figure 1. Timber Butte Terrestrial Habitat Restoration**



0 0.5 1 2 Miles





# Project Details

- **Secure public ownership** of 225 acres of land
  - Initial conversations with land owners indicate project viability
- Develop a sustainable open space **recreation area to highlight restoration**
- Implement **long-term Operations & Maintenance**

# Anticipated Outcomes

- Timber Butte is one of the few examples of uninjured forest and habitat in the area.
- Preservation:
  - Extends benefits of restoration to the entire Clark Fork River Basin
  - Protects viable habitat
  - Promotes connectivity among the parks, trails and open spaces in Butte's urban area



# Project Schedule

## Timber Butte Implementation Schedule

| Objective                  | 2012 | 2013 | 2014 |
|----------------------------|------|------|------|
| Stakeholder outreach       |      |      |      |
| Land Acquisitions          |      |      |      |
| Recreation System Planning |      |      |      |
| Public Participation       |      |      |      |
| Trail Development          |      |      |      |
| Project Completion         |      |      |      |

\* Draft Timber Butte Implementation Schedule

# Cost Information

- \$300,000 for land acquisition at 2012 current market value
- \$100,000 for administrative costs including title insurance, surveys, real estate fees, etc.
- \$100,000 for project management, project design, construction and professional services (in-kind)



# City of Deer Lodge

## Montana Natural Resource Damage Program

### Grant Proposal Abstract Presentation



August 1, 2012

# Presenters

Mary Ann Fraley, Mayor

Darryl Barton, Mt. Powell Environmental

Jason Mercer, Morrison-Maierle

Nancy Cormier, Morrison-Maierle



# Montana Natural Resource Damage Program

## Deer Lodge Wastewater Project Abstract #38



# Proposed Restoration Project

## Improvements to Deer Lodge Wastewater System

1. Slip-lining sewer pipe from town to the Wastewater Treatment Facility (WWTF)
2. Replacement of Ultraviolet (UV) Disinfection System





## Project: Slip-lining sewer pipe from town to the Wastewater Treatment Facility (WWTF)

- Top priority for improvements is reducing infiltration into the system
- Deer Lodge completed lining of sewer lines in town in 2009
- Next step is to line sewer pipe from town to WWTF
- An estimated 2 – 3 MGD will be reduced from the system
- This will have a huge impact on pollutants entering Clark Fork River

# Project: Slip-lining sewer pipe from town to the Wastewater Treatment Facility (WWTF)



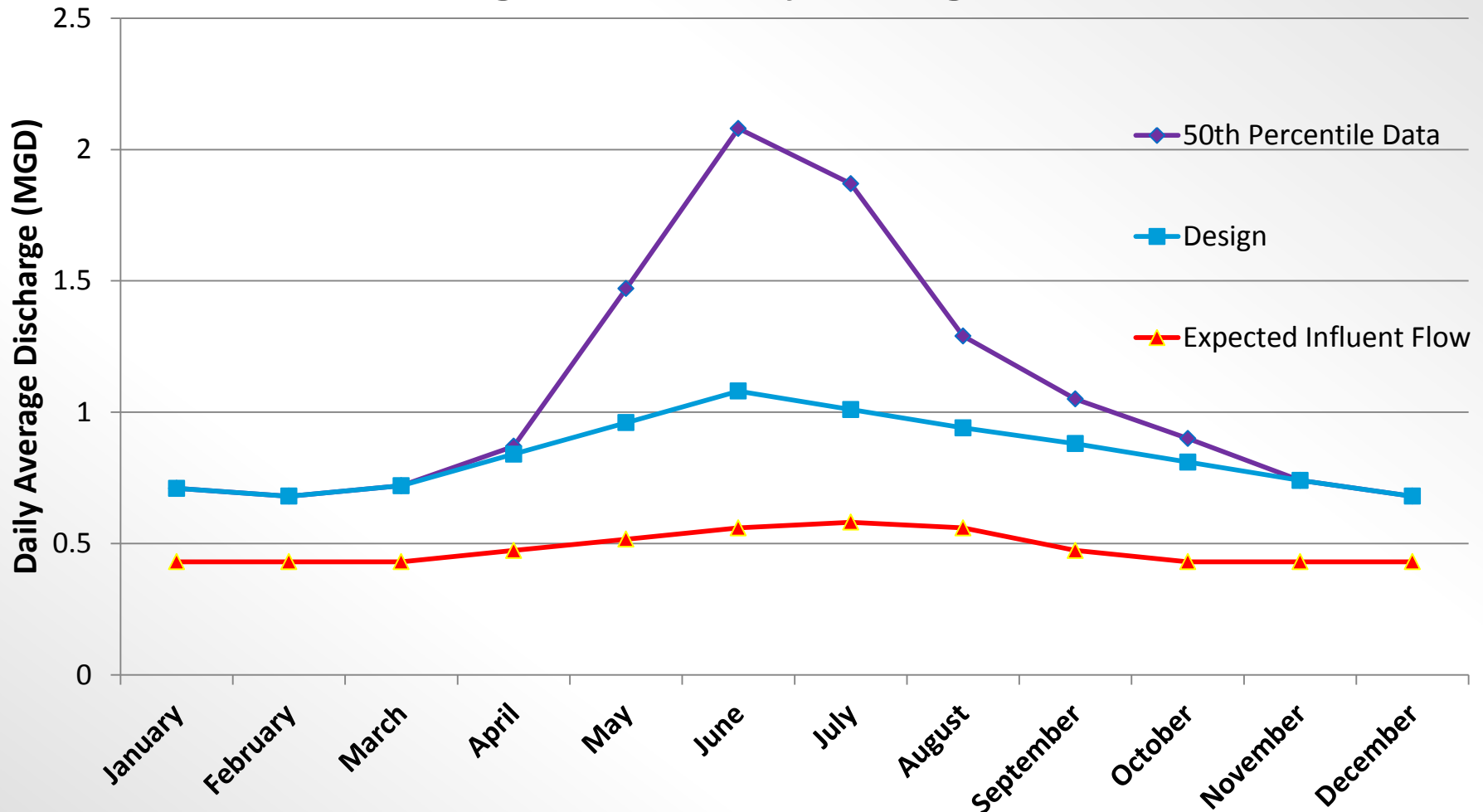


# Infiltration into system is a problem

- Wastewater flows from a town the size of Deer Lodge should be about half a million gallons per day (MGD).
- In winter months we see flows below 1 MGD.
- When Kohrs-Manning irrigation ditch fills with water flows rise and continue to be high until the ditch is dry.
- Flows are consistently above 3 MGD and sometimes over 4 MGD.

# Infiltration into system is a problem

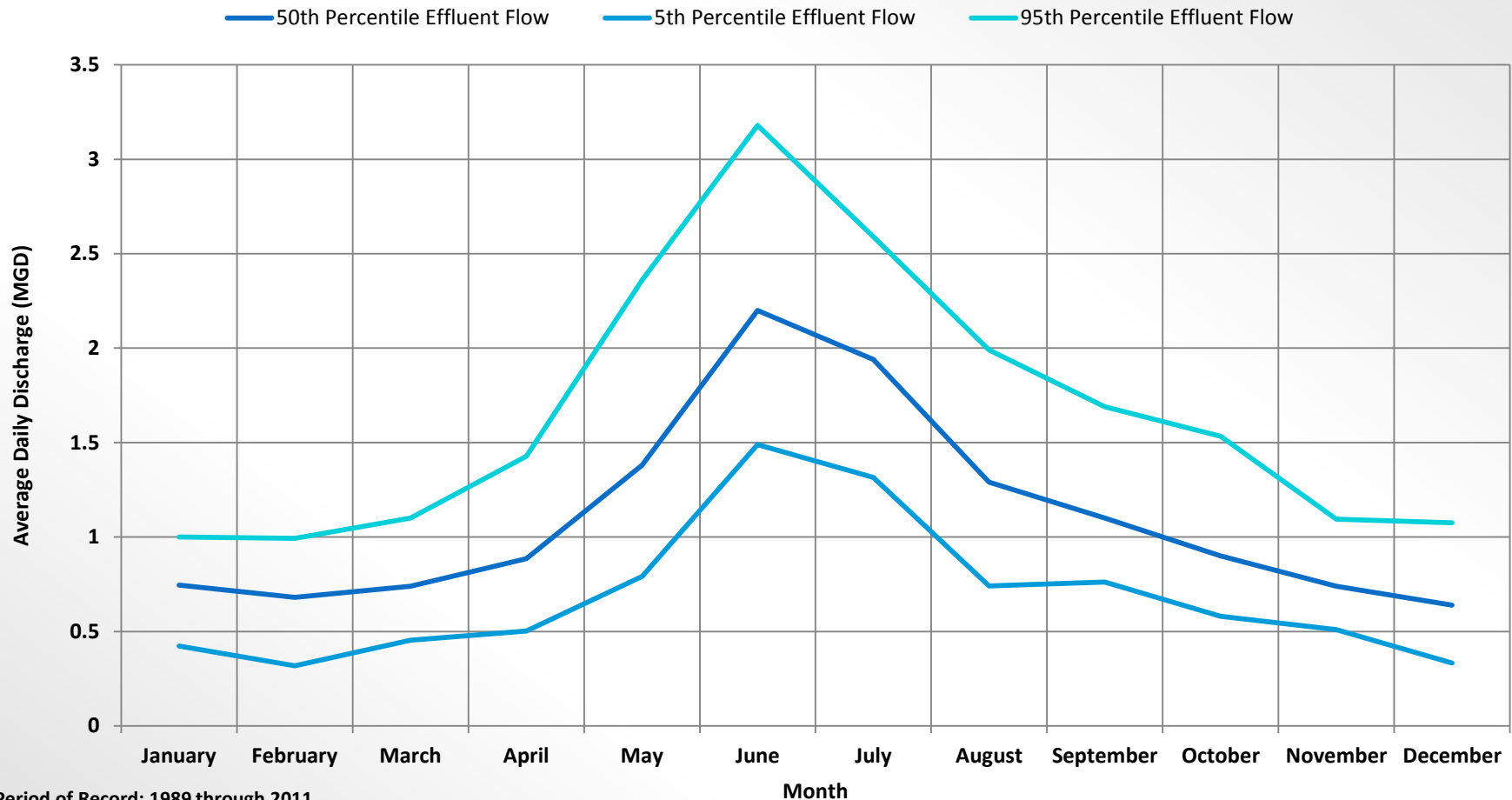
Deer Lodge WWTF Daily Average Influent





# Infiltration into system is a problem

Deer Lodge WWTF Effluent Flow



# Deer Lodge system goes above and beyond typical wastewater systems

- Voluntary Nutrient Reduction Program (VNRP)
- Deer Lodge's innovative and progressive approach
  - Grant – Kohrs Ranch partnership
  - Zero discharge
- Deer Lodge effluent system is going above and beyond normal wastewater systems in MT



# General Costs

| Categories:                       | Estimated Costs    |
|-----------------------------------|--------------------|
| Salaries/Benefits                 | \$15,000           |
| Supplies and Materials            | \$2,500            |
| Travel and Communication          | \$1,500            |
| Equipment                         | N/A                |
| Contracted Services               |                    |
| Engineering Design                | \$176,000          |
| Construction Engineering Services | \$264,000          |
| Permitting                        | \$30,000           |
| Construction of slip-lining       | \$1,578,300        |
| Construction of UV disinfection   | \$425,000          |
| Contingency (~10%)                | \$200,000          |
|                                   |                    |
| <b>Total Costs</b>                | <b>\$2,692,300</b> |

# Proposed Project Funding and Target Rate

|   |                             |
|---|-----------------------------|
| <b>Total Project Cost</b>   | <b>\$2,692,300</b>          |
| Total Match (25%) from Deer Lodge Sewer Reserve Fund and RD Grant           | \$677,200                   |
| Remaining Project Cost  | \$2,015,100                 |
|   |                             |
| Deer Lodge Combined Target Rate   | \$57.23                     |
| Without NRDP funding - Projected Combined Rate after 2014 WWTP improvements | \$78.87<br>(138% of target) |
| With NRDP funding - Projected Combined Rate after 2014 WWTP improvements    | \$73.51<br>(128% of target) |



# Project Schedule

| Improvement                             | Timeline            |
|---|---------------------|
| 1. Secure funding through NRDP Process  | Spring 2013         |
| 2. Design Slip-lining & UV Improvements | Spring- Summer 2013 |
| 3. Slip-lining project construction     | Fall 2013           |
| 4. Construct UV disinfection system     | Summer 2014         |

# Deer Lodge Wastewater Project Abstract #38

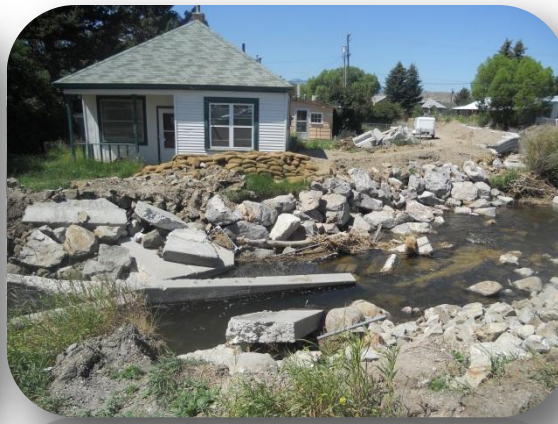
## Questions?



August 1, 2012

# Montana Natural Resource Damage Program

## Cottonwood Creek Abstracts #45 & #46



August 1, 2012



# Project Purpose, Benefits, and Location





# Holistic, Proactive Approach



## Benefits of Master Plan

- Develop urban channel improvement plan
  - Improve aquatic and terrestrial habitat (shading, lower temperature)
  - Improve stream bank stabilization
  - Improve low and high flows through channel
- Plan for how the channel can become an amenity to community (zoning)



# Major Challenge to Cottonwood Creek - Urban Channel



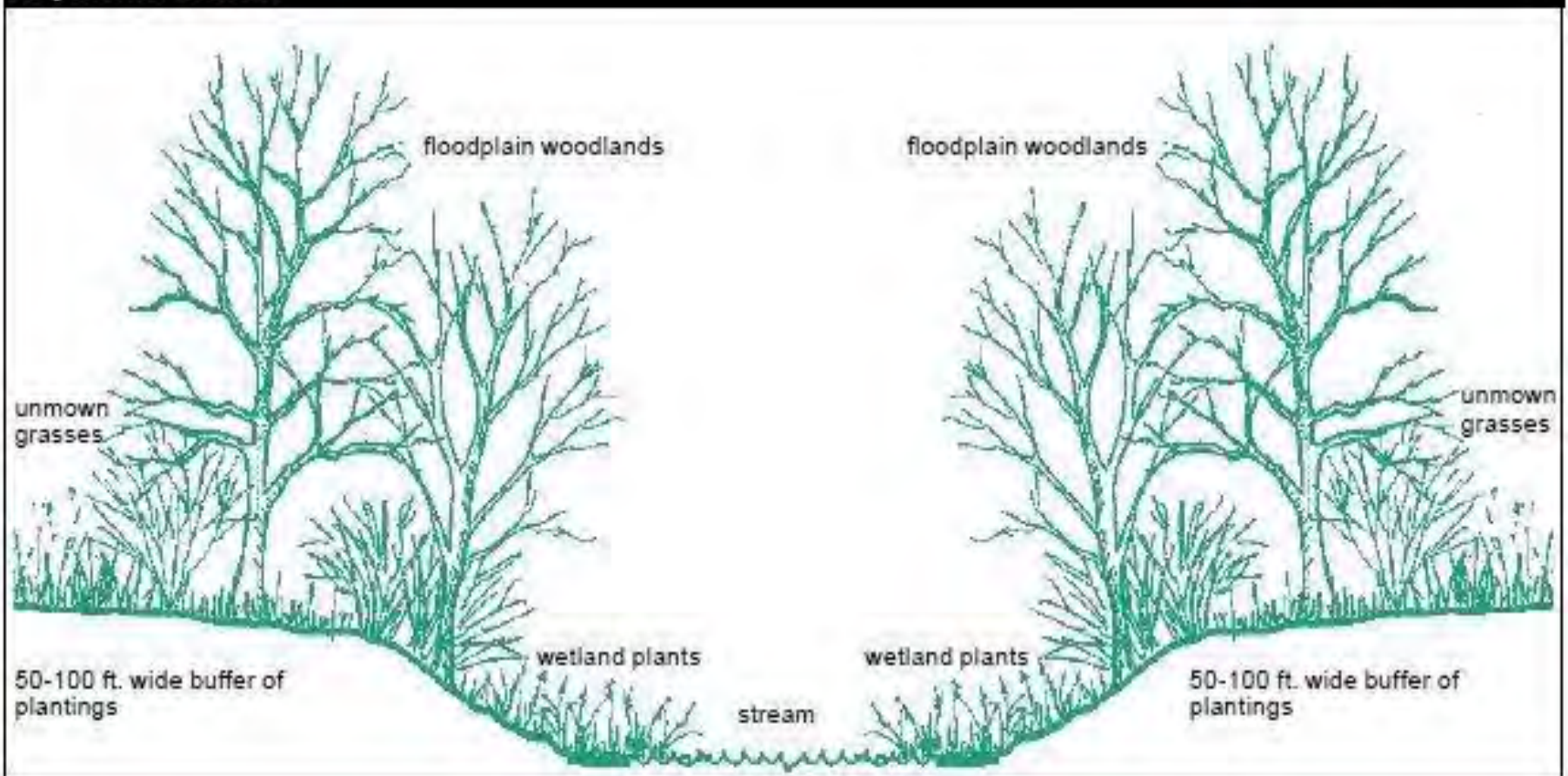
# Potential Improvements





# Potential Improvements

## Riparian Buffer



# Goal of Improvements





# Potential Properties for Channel Improvements







Existing Properties on Cottonwood Creek





12/14/2009 06:16:09

Existing Properties on Cottonwood Creek





Existing Properties on Cottonwood Creek

# Project success will depend on close communication with project partners

| Major Partners                          |
|---|
| Powell County                           |
| Watershed Restoration Coalition         |
| Upper Clark Fork Coalition              |
| Montana Fish Wildlife and Park          |
| Montana Disaster and Emergency Services |
| United States Army Corp of Engineers    |
| And Others                              |

A number of project partners are meeting regularly as part of Cottonwood Creek Advisory Committee



# Estimated Project Schedule

## #46: Cottonwood Creek Master Plan - Urban Channel

| Activity                      | Timeline                |
|-------------------------------|-------------------------|
| Secure Funding                | Spring 2013             |
| Complete Draft Master Plan    | Spring – Fall 2013      |
| Public Meetings               | Fall 2013               |
| Finalize Master Plan          | Winter 2013/2014        |
| Prepare and Submit CLOMR/LOMR | Spring 2014 - Fall 2014 |
| Amend Growth Policy           | Spring 2014             |

# Estimated Project Costs

## #46: Cottonwood Creek Master Plan - Urban Channel

| Categories                 | Estimated Costs  |
|----------------------------|------------------|
| Salaries/Benefits          | \$5,000          |
| Supplies and Materials     | \$1,000          |
| Travel and Communication   | \$1,000          |
| Equipment                  | N/A              |
| Contracted Services        |                  |
| Master Plan                | \$100,000        |
| Preparation of CLOMR/LOMR  | \$50,000         |
| Amending the Growth Policy | \$18,000         |
| Contingency (~10%)         | \$18,000         |
| <b>Total Costs</b>         | <b>\$200,000</b> |



# Estimated Project Schedule

## #45: Cottonwood Creek - Stream Bank Enhancement Project

| Activity              | Timeline                  |
|-----------------------|---------------------------|
| Secure Funding        | Spring 2013               |
| Complete Master Plan  | Spring 2013 – Spring 2014 |
| Complete Design       | Spring – Fall 2014        |
| Complete Permitting   | Winter 2015               |
| Procure Contractor    | Winter 2015               |
| Complete Construction | Spring 2015-Fall 2015     |

# Estimated Project Costs

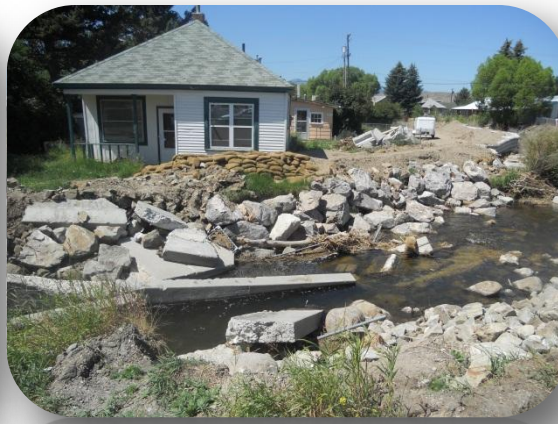
## #45: Cottonwood Creek - Stream Bank Enhancement Project

| Categories                        | Estimated Costs    |
|-----------------------------------|--------------------|
| Salaries/Benefits                 | \$10,000           |
| Supplies and Materials            | \$1,000            |
| Travel and Communication          | \$1,000            |
| Equipment                         | N/A                |
| Contracted Services               |                    |
| Engineering/Landscape Design      | \$90,000           |
| Construction Engineering Services | \$45,000           |
| Permitting                        | \$30,000           |
| Construction                      | \$750,000          |
| Contingency (~10%)                | \$92,000           |
| <b>Total Costs</b>                | <b>\$1,019,000</b> |



# Deer Lodge Cottonwood Creek Abstracts #45 & #46

## Questions?



August 1, 2012



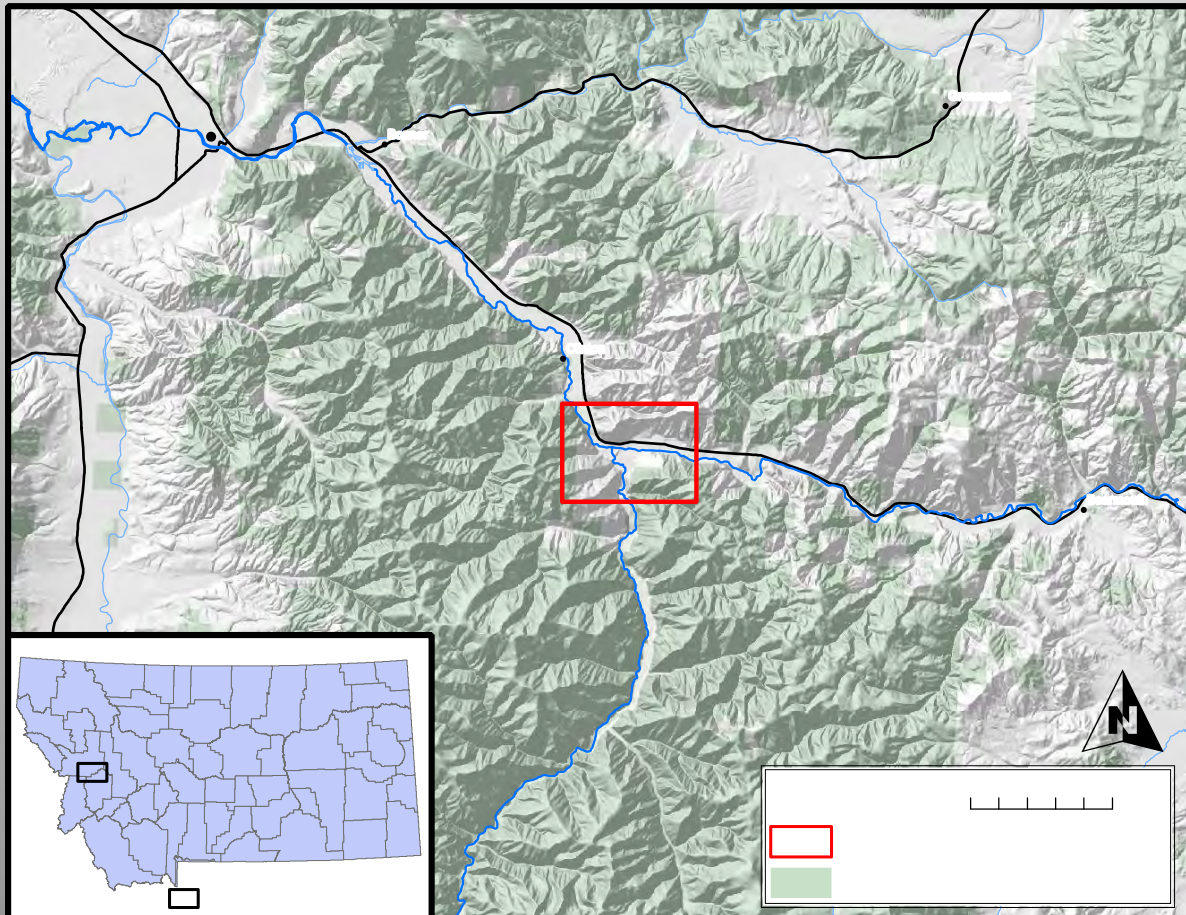
# Five Valleys Land Trust NRDP Abstract Submissions

*UCFRB Remediation and Restoration  
Advisory Council Meeting  
August 1<sup>st</sup>, 2012*



# #48 The Confluence Project

201-acre Land Acquisition at Rock Creek







# #48 The Confluence Project

201-acre Land Acquisition at Rock Creek





# #48 The Confluence Project

## 201-acre Land Acquisition at Rock Creek

- 25 acres of riparian habitat along CFR
- 1.5 miles of CFR corridor + 175 acres of habitat that buffer and enhance corridor
- Return ~10cfs to CFR in-stream flow at Rock Creek
- Provide fishing/floating access to CFR
- Facilitate removal of constructed “fish pond”
- Provide habitat connectivity to nearby protected lands



# #48 The Confluence Project

## 201-acre Land Acquisition at Rock Creek

| Table 3. Project Funding (Phase 1)                        |                    |                |
|---|--------------------|----------------|
| <i>Funding Source</i>                                     | <i>Amount</i>      | <i>% Total</i> |
| Natural Resource Damage Program                           | \$400,000          | 15.80%         |
| MT Fish & Wildlife Conservation Trust                     | \$100,000          | 5.30%          |
| Missoula County Open Lands                                | \$300,000          | 15.80%         |
| Five Valleys Land Trust<br>Rock Creek Trust               | \$300,000          | 15.80%         |
| Five Valleys Land Trust (General fundraising/5-year loan) | \$895,000          | 47.40%         |
| <b>Total Project Funds</b>                                | <b>\$1,995,000</b> | <b>100.00%</b> |





# #49 John Long Mountains

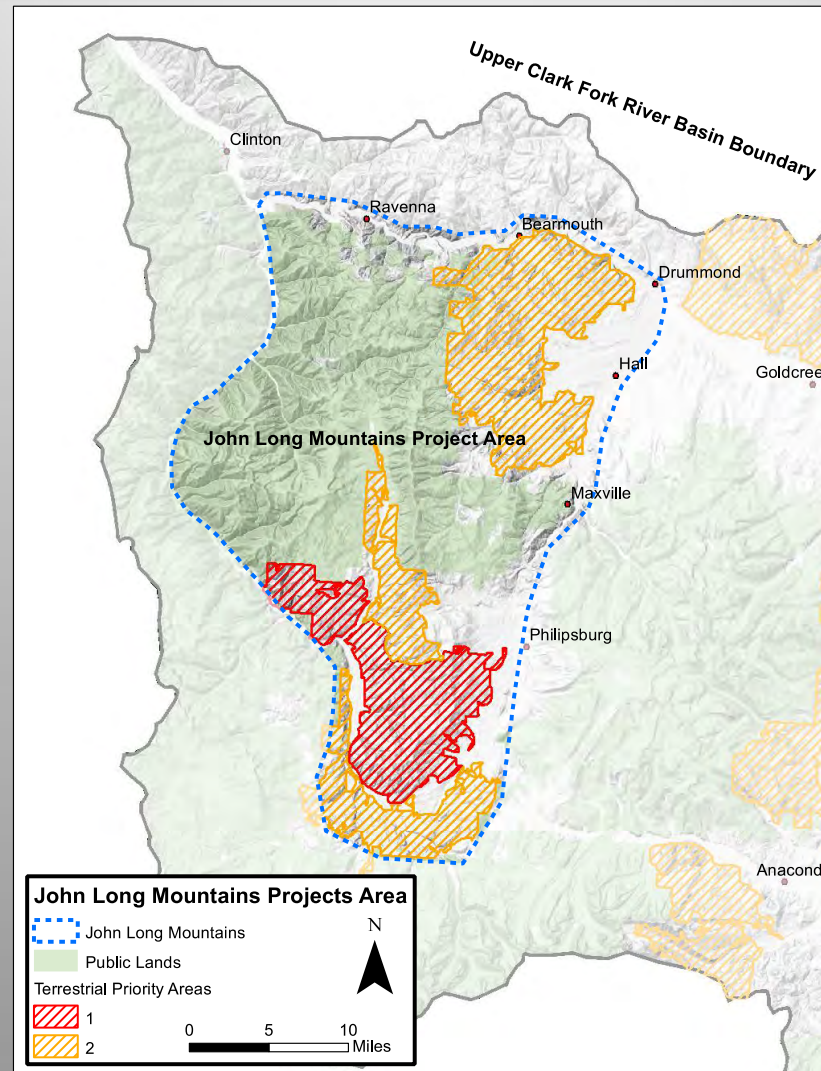
Various Terrestrial Habitat Conservation Projects





# #49 John Long Mountains

## Various Terrestrial Habitat Conservation Projects





# #49 John Long Mountains

## Various Terrestrial Habitat Conservation Projects

- Support development of large-acre conservation easement projects in Terrestrial Priority 1 & 2 areas
- Low cost-per-acre vs. fee acquisition
- Potential for large landscape footprint
- Protection of high-quality, targeted terrestrial habitats
- Protect important wildlife corridors between blocks of existing public lands





# #49 John Long Mountains

## Various Terrestrial Habitat Conservation Projects

| Table 1. Project Timeline   |                                  |
|---|----------------------------------|
| <i>Action</i>   | <i>Scheduled Completion Date</i> |
| Assess interest; landowner outreach   | Year 1                           |
| Develop funding strategies for highest priority / highest feasibility conservation projects | Year 1                           |
| Secure funding from NRDP and matching partners  | Year 2                           |
| Project finalization / due diligence  | Year 2                           |
| Completion of conservation project  | Year 2                           |
| Project monitoring  | Year 3 -->                       |



# #49 John Long Mountains

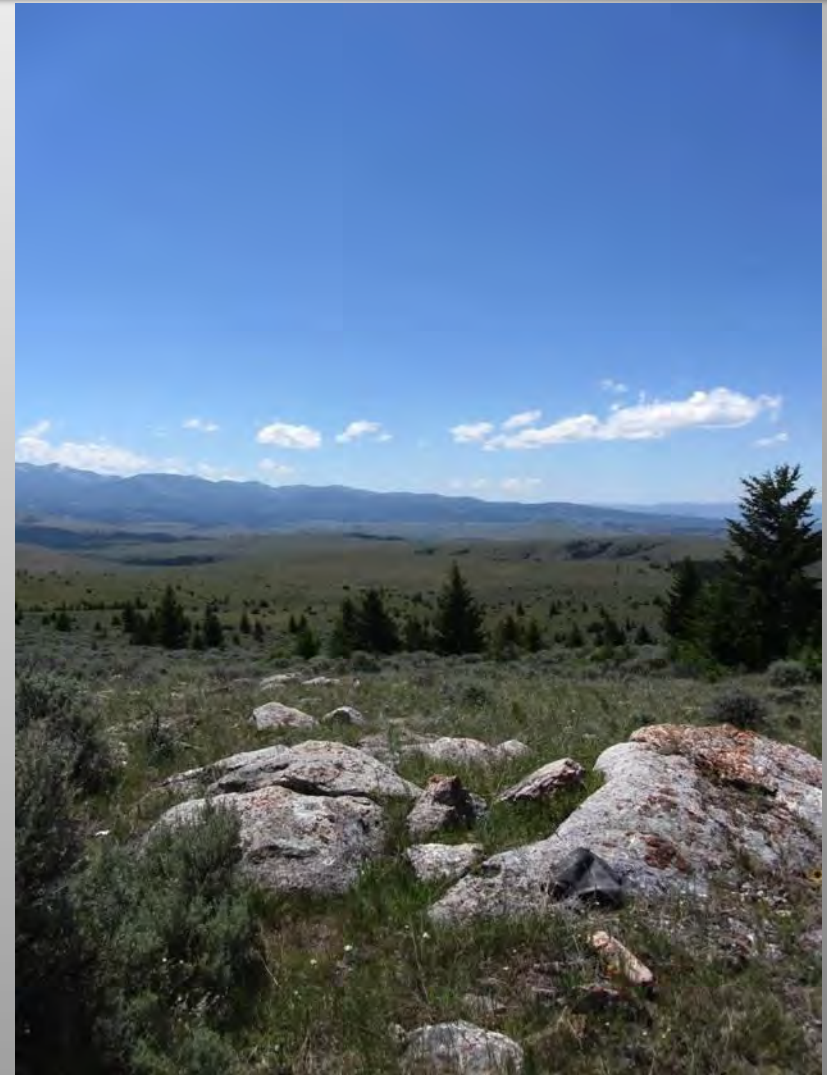
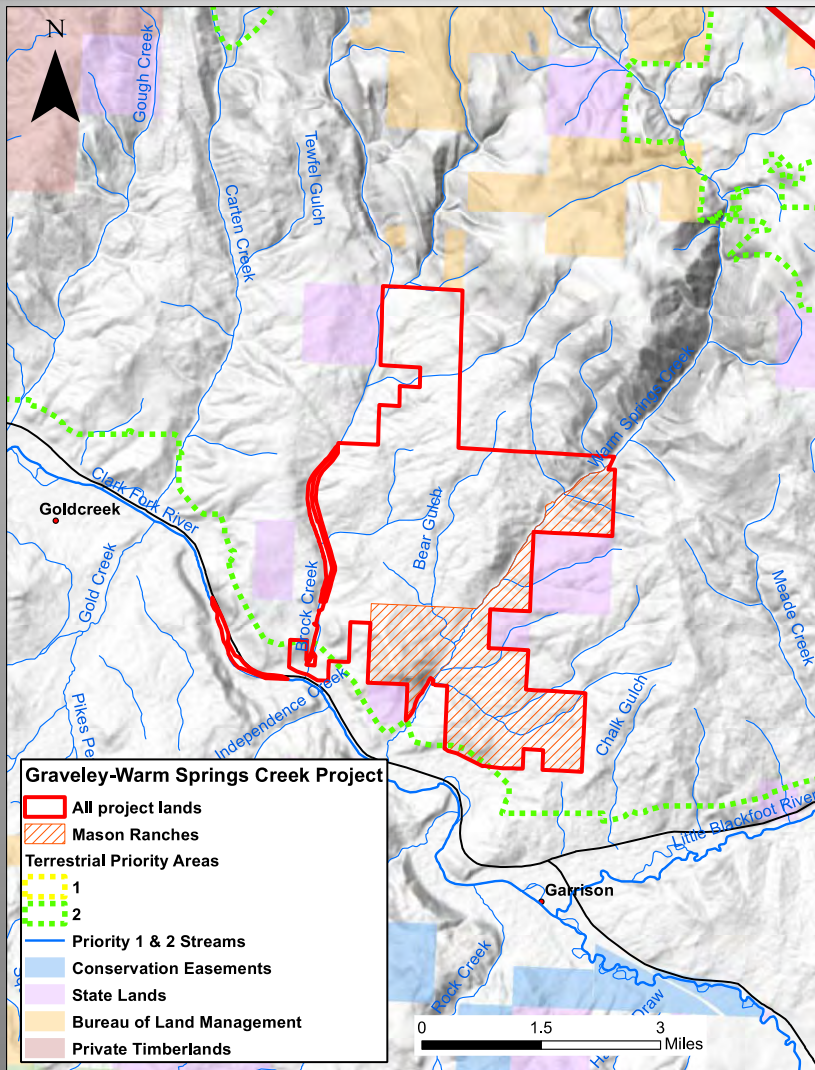
## Various Terrestrial Habitat Conservation Projects

| Table 2: Project Costs                            |                    |
|---|--------------------|
| <i>Cost</i>                                       | <i>Estimate</i>    |
| Purchased Conservation Easement<br>(20,000 acres) | \$6,000,000        |
| Easement Appraisals                               | \$100,000          |
| Project Staff & Overhead                          | \$80,000           |
| Legal fees  | \$15,000           |
| Ecological assessments                            | \$15,000           |
| Title Insurance                                   | \$10,000           |
| Closing, Escrow, Recording fees                   | \$5,000            |
| Long-term monitoring and<br>enforcement costs     | \$100,000          |
| <b>Total Costs</b>                                | <b>\$6,325,000</b> |
| Estimated match funding (20%)                     | \$1,265,000        |
| <b>Estimated required NRDP funding</b>            | <b>\$5,060,000</b> |



# #50 Graveley-East Garnets

8,200-acre Conservation Easement Acquisition







# #50 Graveley-East Garnets

## 8,200-acre Conservation Easement Acquisition

- Protect 8,200+ acres of NRDP Terrestrial Priority 2 wildlife habitat in the East Garnet mountains and 45 acres of Priority 1 riparian habitat along CFR
- Habitat protection from development on all NRDP-targeted terrestrial habitat types
- Protect wildlife connectivity with 1,720 acres of interspersed public lands
- Provide for FWP-managed hunting access
- Provide opportunity for fishing access site @ Gold Creek
- Improved grazing management and opportunities for restoration on 3 miles of Warm Springs Creek (Priority 4)



# #50 Graveley-East Garnets

8,200-acre Conservation Easement Acquisition

Table 2: Acquisition Phase Project Costs

| <i>Expense</i>                     | <i>Amount</i>      | <i>% Total</i> |
|------------------------------------|--------------------|----------------|
| Purchased conservation easement    | \$2,400,000        | 88.9%          |
| Clark Fork River property          | \$200,000          | 7.4%           |
| Property & Easement Appraisals     | \$20,000           | 0.7%           |
| Project Staff & Overhead (2 years) | \$30,000           | 1.1%           |
| Legal fees                         | \$15,000           | 0.6%           |
| Ecological baseline assessment     | \$5,000            | 0.2%           |
| Title Insurance                    | \$8,000            | 0.3%           |
| Closing, Escrow, Recording fees    | \$2,000            | 0.1%           |
| Long-term stewardship endowment    | \$20,000           | 0.7%           |
| <b>Total Expenses</b>              | <b>\$2,700,000</b> | <b>100.0%</b>  |



# #50 Graveley-East Garnets

8,200-acre Conservation Easement Acquisition

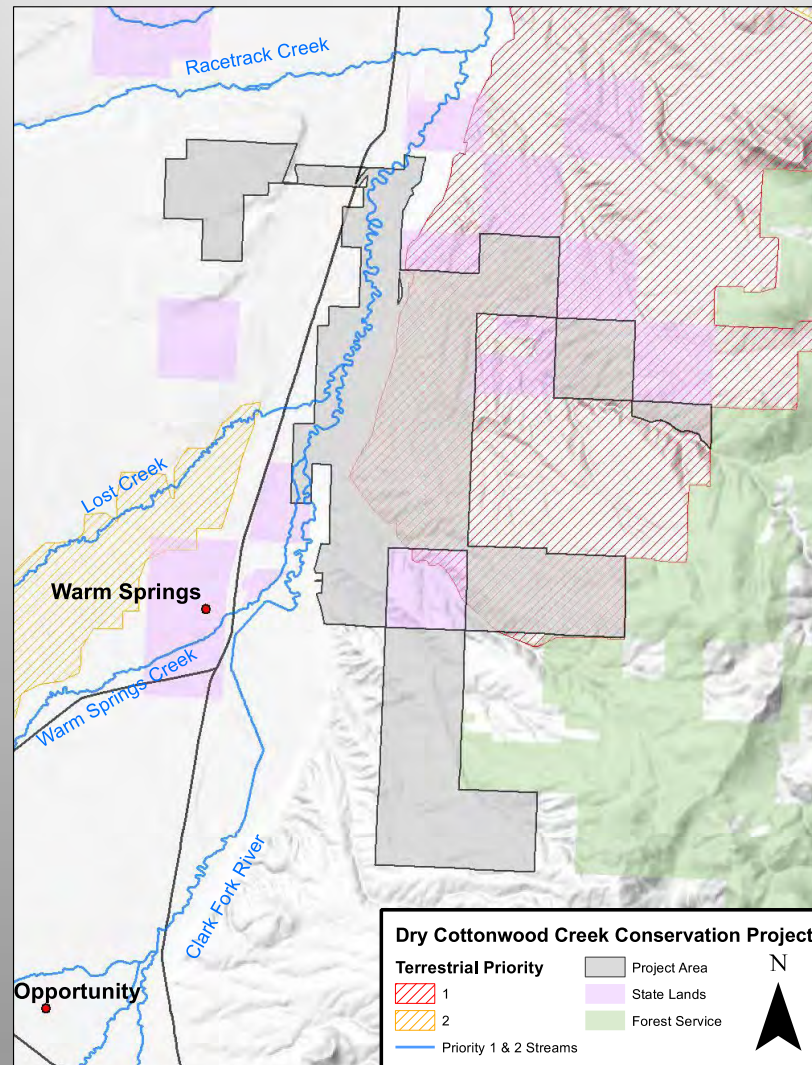
| Table 3. Project Funding (Acquisition)     |                    |                |
|--|--------------------|----------------|
| <i>Funding Source</i>                      | <i>Amount</i>      | <i>% Total</i> |
| Natural Resource Damage Program            | \$2,000,000        | 74.07%         |
| NRCS Farm and Ranchland Protection Program | \$500,000          | 18.52%         |
| Landowner Contribution                     | \$200,000          | 7.41%          |
| <b>Total Project Funds</b>                 | <b>\$2,700,000</b> | <b>100.00%</b> |





# #52 Dry Cottonwood Neighbors

Four acquired conservation easements near Warm Springs





## #52 Dry Cottonwood Neighbors

Four acquired conservation easements near Warm Springs

- Protection of up to 1,400 acres of riparian habitat within the Upper Clark Fork Terrestrial Injured Resource Area
- Protection for up to 5,300 acres of Terrestrial Priority 1 habitat in the west Boulder Mountains
- Riparian habitat protection (grazing limitations, restricted development) for up to 7.8 miles of the Clark Fork River above Deer Lodge and 0.7 miles of lower Warm Springs Creek (NRDP Priority 1 streams), and up to 0.9 miles of Lost Creek (NRDP Priority 2 stream)
- Low cost-per-area protected vs. fee acquisition, large landscape footprint
- Protect habitat continuity with adjacent state trust and USFS land



## #52 Dry Cottonwood Neighbors

Four acquired conservation easements near Warm Springs

- Estimated required NRDP funds: \$3.0 - \$3.8 million

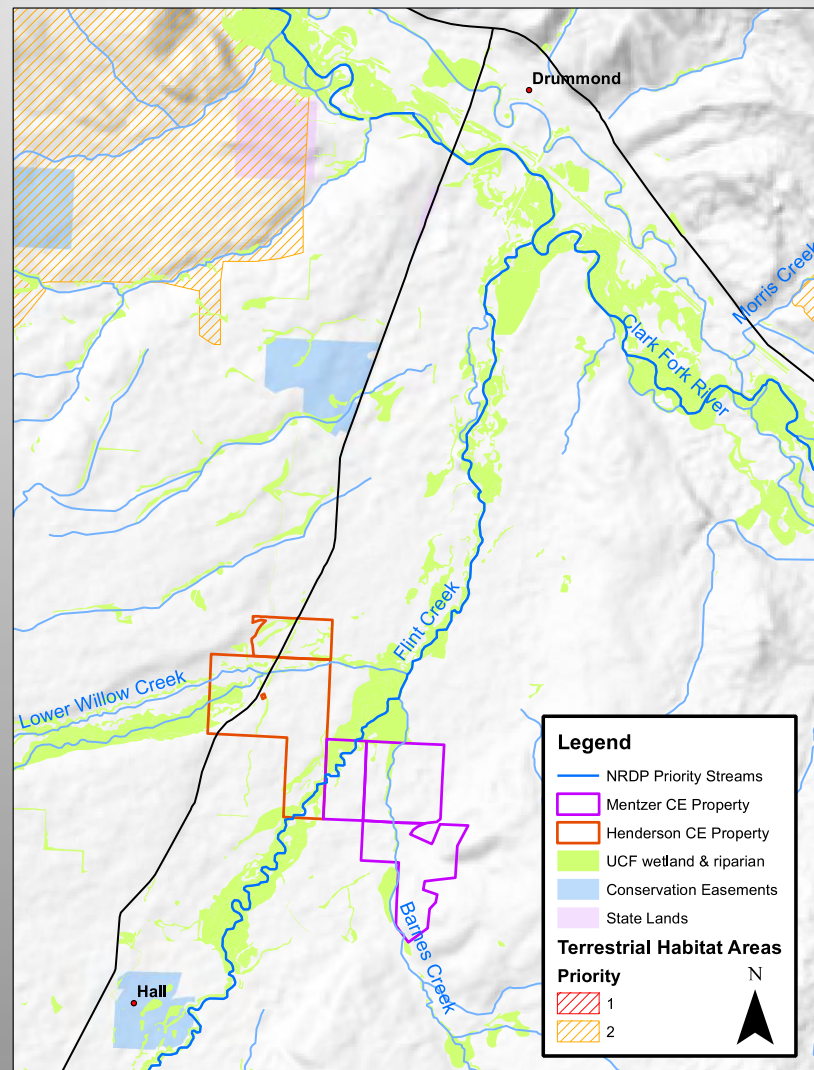
| Table 2: Project Costs                          |                       |                       |
|---|-----------------------|-----------------------|
| <i>Cost</i>                                     | <i>Lower Estimate</i> | <i>Upper Estimate</i> |
| Purchased Conservation Easement (~11,800 acres) | \$2,832,000           | \$3,540,000           |
| Property & Easement Appraisals                  | \$50,000              | \$70,000              |
| Project Staff & Overhead                        | \$40,000              | \$80,000              |
| Legal fees                                      | \$5,000               | \$15,000              |
| Ecological baseline assessment                  | \$8,000               | \$12,000              |
| Title Insurance                                 | \$5,000               | \$10,000              |
| Closing, Escrow, Recording fees                 | \$2,000               | \$4,000               |
| Long-term monitoring and enforcement costs      | \$40,000              | \$60,000              |
| <b>Total Project Costs</b>                      | <b>\$2,982,000</b>    | <b>\$3,791,000</b>    |





# #51 & 53 Mentzer / Henderson

Acquired conservation easements on Lower Flint Creek





# #51 & 53 Mentzer / Henderson

Acquired conservation easements on Lower Flint Creek





## #51 & 53 Mentzer / Henderson

Acquired conservation easements on Lower Flint Creek

- Protect over 1 mile of Flint Creek with fencing, grazing management, restricted development (NRDP Priority 2 stream)
- Protect 110 acres of NRDP Priority 1 wetland and riparian habitat along Flint Creek, Barnes Creek, and Lower Willow Creek
- Provide walk-in fishing access to Flint Creek
- Develop restoration plans for planned Flint Creek and wetland restoration (project partners)





# #51 & 53 Mentzer / Henderson

Acquired conservation easements on Lower Flint Creek

| Table 2. Project Costs               |                    |                |
|--------------------------------------|--------------------|----------------|
| <i>Expense</i>                       | <i>Amount</i>      | <i>% Total</i> |
| Mentzer & Henderson Ranch CEs        | \$960,000          | 92%            |
| Staff time                           | \$40,000           | 3%             |
| Legal fees                           | \$10,000           | <1%            |
| Environmental Assessment             | \$4,000            | <1%            |
| Recording fees                       | \$2,000            | <1%            |
| Riparian & Wetland Restoration Plans | \$40,000           | <1%            |
| <b>Total Expenses</b>                | <b>\$1,056,000</b> | <b>100.00%</b> |



# #51 & 53 Mentzer / Henderson

Acquired conservation easements on Lower Flint Creek

Table 3. Project Funding

| <i>Funding Source</i>                             | <i>Amount</i>      | <i>% Total</i> |
|---|--------------------|----------------|
| Natural Resource Damage Program                   | \$240,000          | 23%            |
| Natural Resource Conservation Service (Farm Bill) | \$480,000          | 45%            |
| Landowner Donation                                | \$256,000          | 24%            |
| FVLT Donation                                     | \$40,000           | 4%             |
| Farm Service Agency                               | \$40,000           | 4%             |
| <b>Total Project Funds</b>                        | <b>\$1,056,000</b> | <b>100%</b>    |

Thank you!







# TU CONCEPT PROPOSALS

Harvey Creek 55

Flint and Boulder Creeks 56

Little Blackfoot River 43, 44, 61

Cottonwood and Baggs Creeks 60

Warm Springs Creek 62, 63

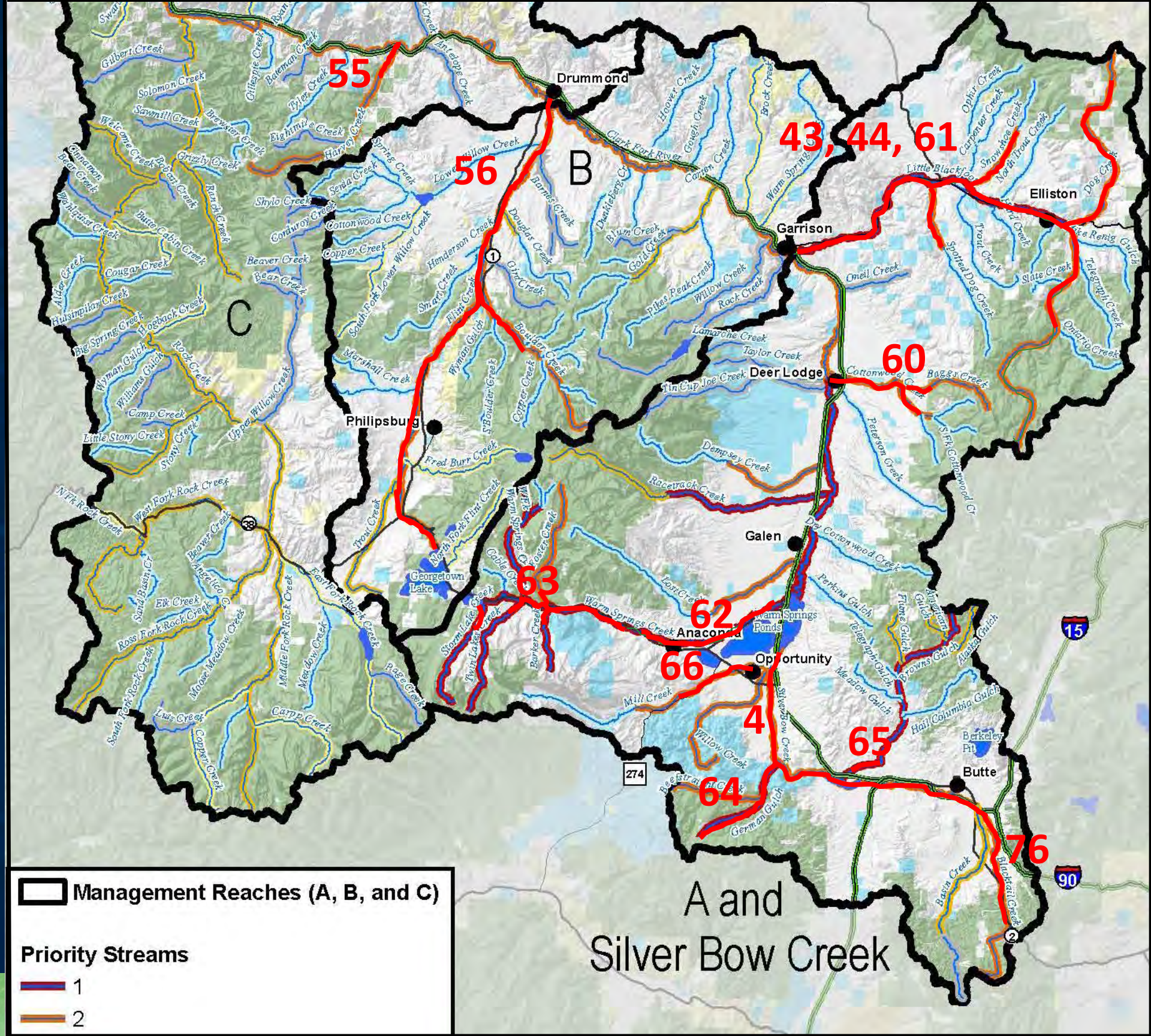
Mill Creek 66

Silver Bow Creek 4

German Gulch 64

Browns Gulch 65

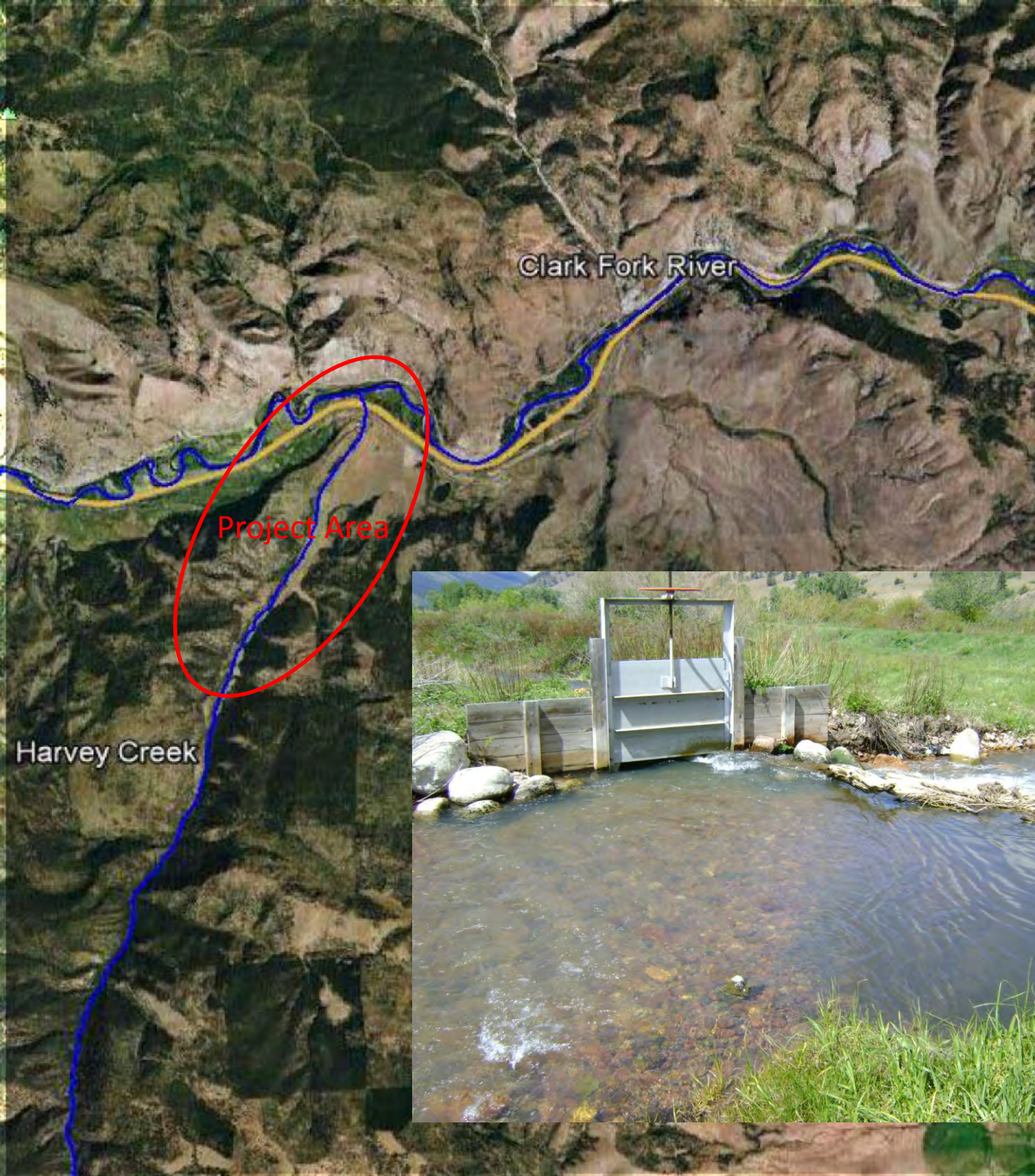
Blacktail Creek 76





# Harvey Creek Integrated Restoration (55)

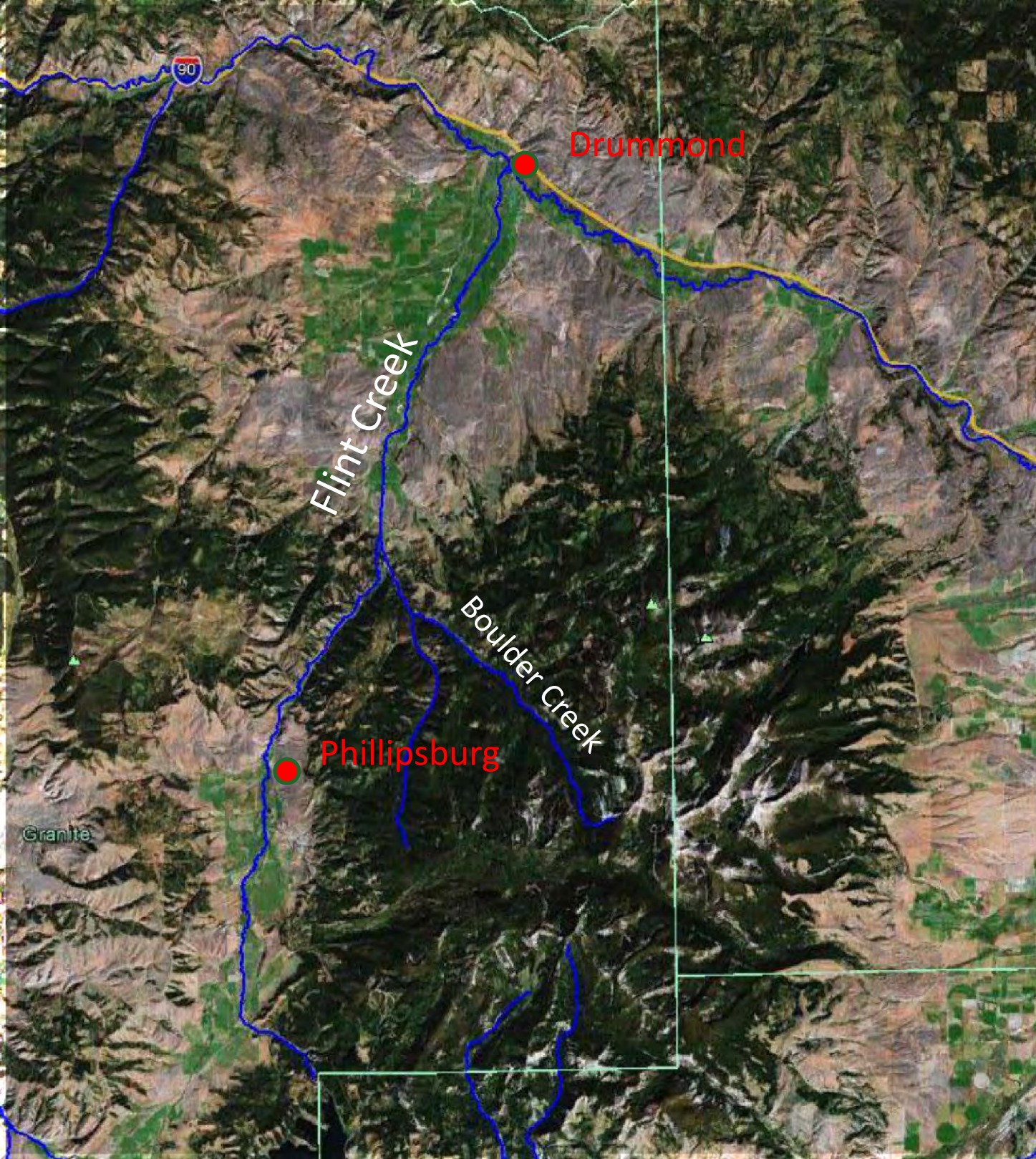
- Culvert Replacement
- Screening
- Diversion Replacement
- Siphon
- Instream Flow
- Riparian Fencing











# Flint Creek Fish Passage (56)

- Diversion Inventory
- Diversion Replacement
- Screening





# Little Blackfoot River

## Fish Passage (61)

- Diversion Inventory
- Diversion Replacement
- Screening





# Little Blackfoot River

## Riparian Habitat Protection and Enhancement (43)

Pat Barnes — Missouri River Chapter TU

- Riparian Fencing/Bank Stabilization
- Conservation Easement Program





# Little Blackfoot River

## Streamflow Restoration (44)

- Flow Targets
- Water Rights Survey
- Transactions
- Monitoring

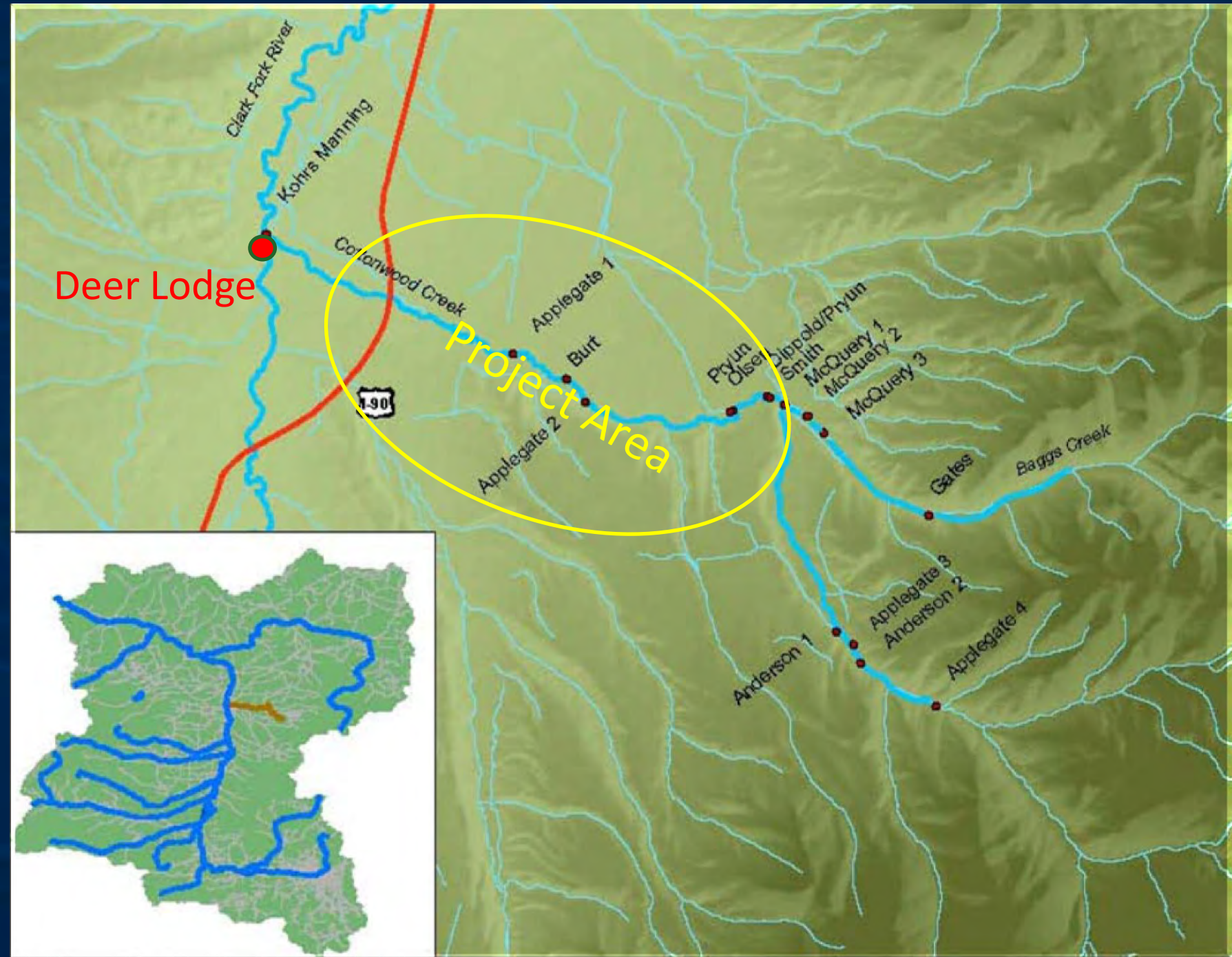




# Cottonwood Creek

## Fish Passage and Monitoring (60)

- Diversion Replacement
- Screening
- Monitoring





# Cottonwood Creek

## Demonstration Project



before



after



# Cottonwood Creek

## Demonstration Project



before

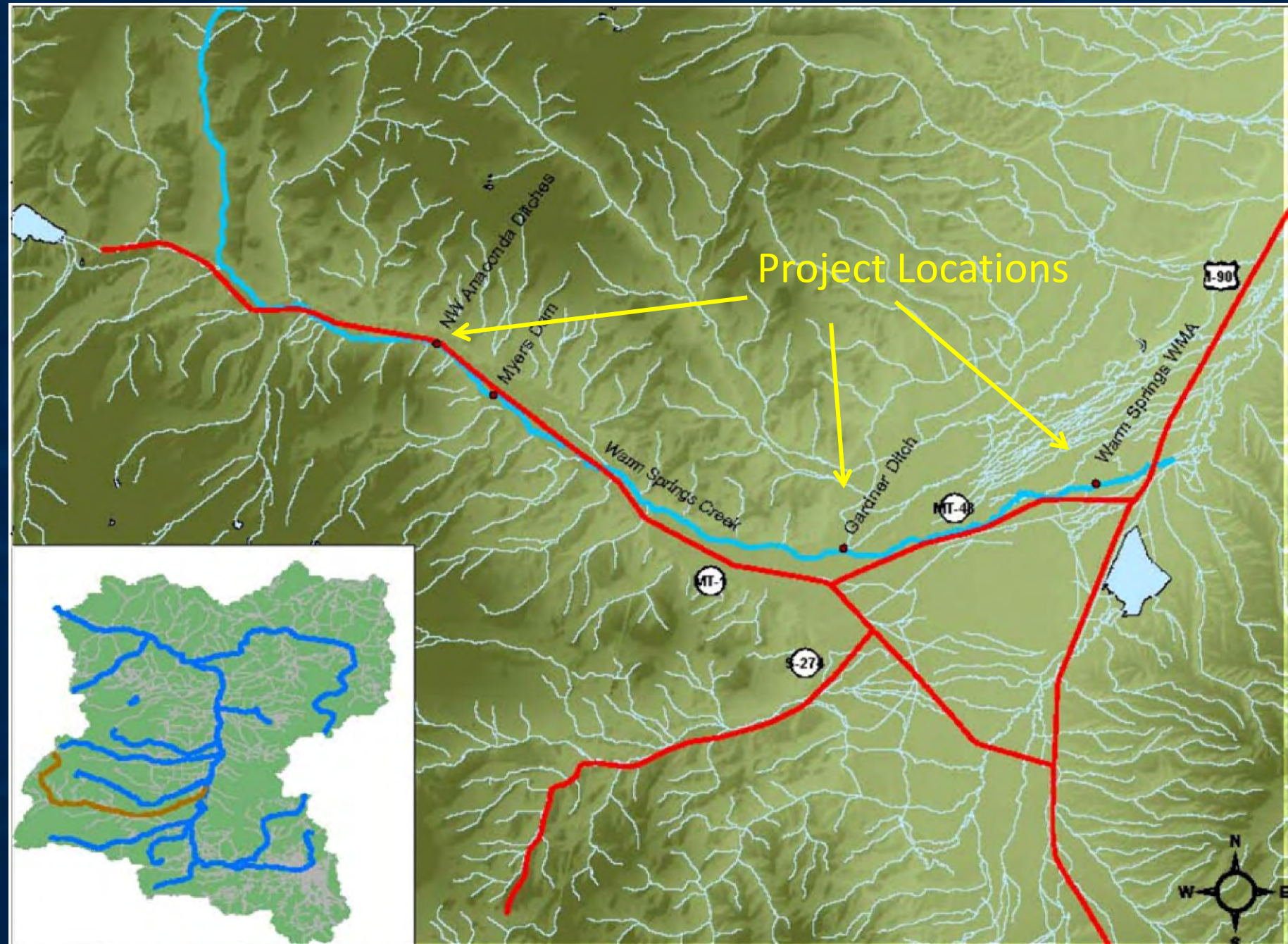


after



# Warm Springs Creek Fish Passage (62)

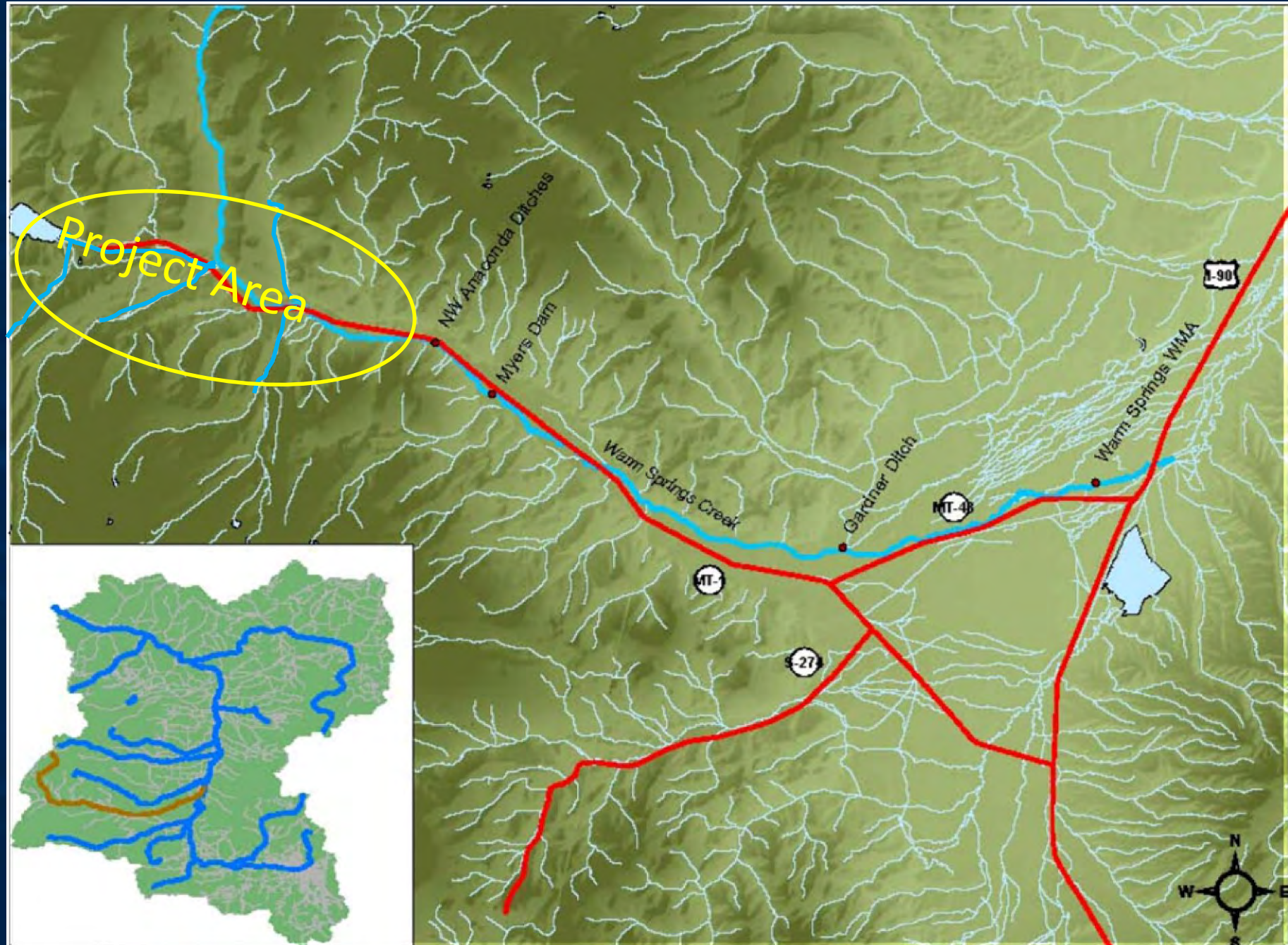
- Diversion Upgrades
- Screening
- Monitoring





# Upper Warm Springs Creek Habitat (63)

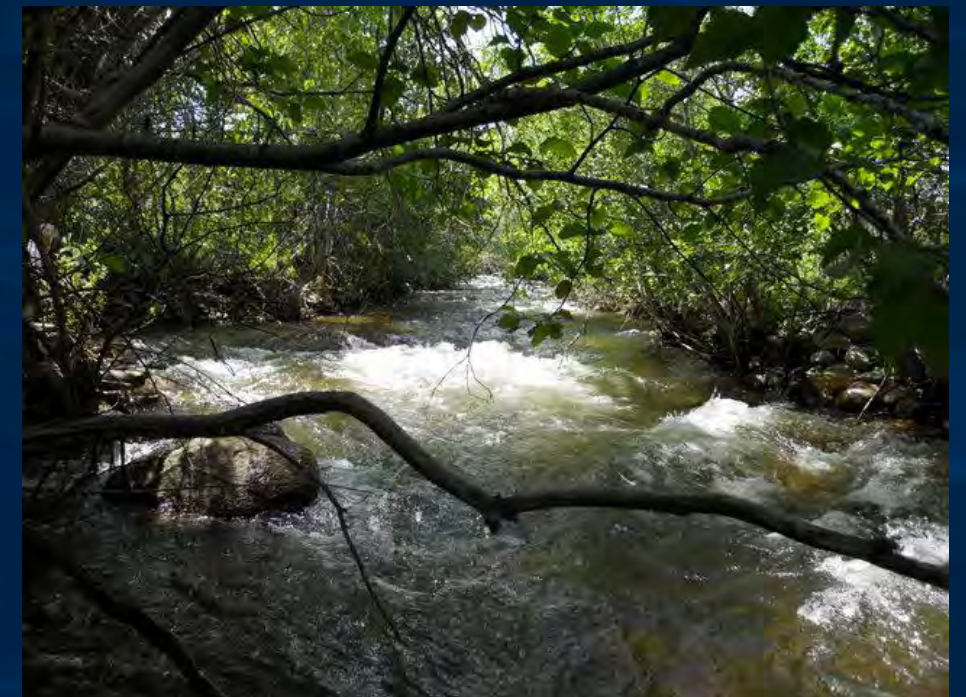
- Diversion Upgrades
- Screening
- Monitoring





# Mill Creek Fish Passage and Flow Restoration (66)

- Diversion Upgrades
- Screening
- Instream Flow





# German Gulch Habitat Restoration (64)

- Riparian Fencing
- Off Stream Water
- Tailings Removal



German Gulch



# Browns Gulch Fish Passage (65)

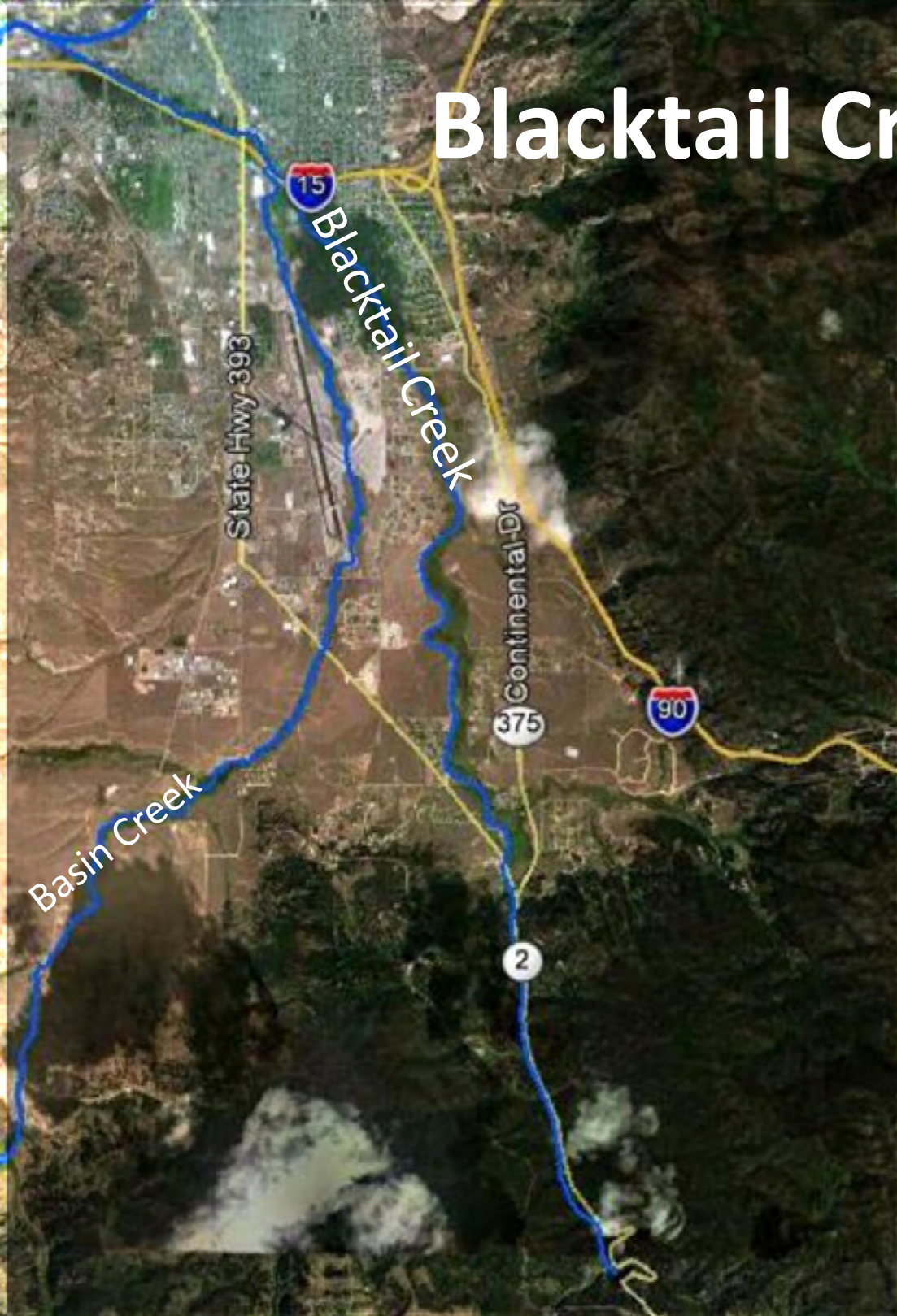
- Fish Ladders
- Monitoring





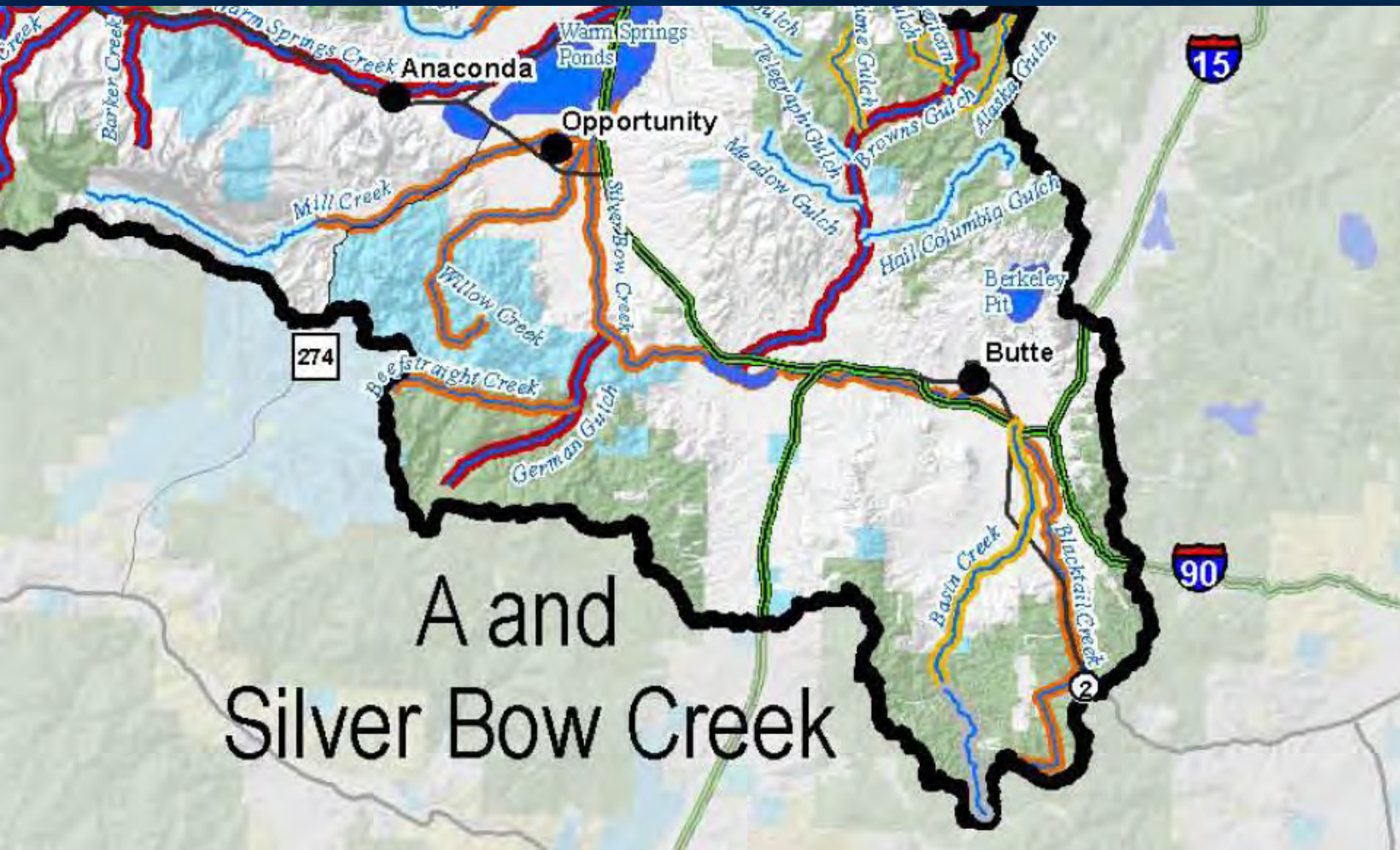
# Blacktail Creek Fish Passage and Habitat (76)

- Diversion and Culvert Inventory
- Diversion and Culvert Replacement
- Riparian Habitat Improvement





# Silver Bow Creek Headwaters Streamflow Augmentation Project (4)



Project Area

- Water budget and flow targets
- Survey existing water rights
- Identify and prioritize projects
- Build partnerships and funding portfolio
- Implement water leases, acquisitions or infrastructure improvements
- Monitoring



# Guidance From Process Plan: Fish and Flow

- *Fish: Trout populations are absent from Silver Bow Creek. The Creek should contain about 190 trout/mile according to the 1994 survey...(A-35)*
- In general, the encouraged activities and methods to accomplish them are:
- *Flow augmentation: water right purchase, lease, or irrigation system efficiency Improvements (Page 45);*



# Goal

Create an abundant, self-sustaining fish community of cutthroat and wild trout and a recreational fishery by identifying and implementing flow enhancement projects with a broad coalition of irrigators, municipal water users, and conservationists.



# Sources of Fish

## Westslope cutthroat trout

German Gulch

Brown's Gulch

Basin Creek

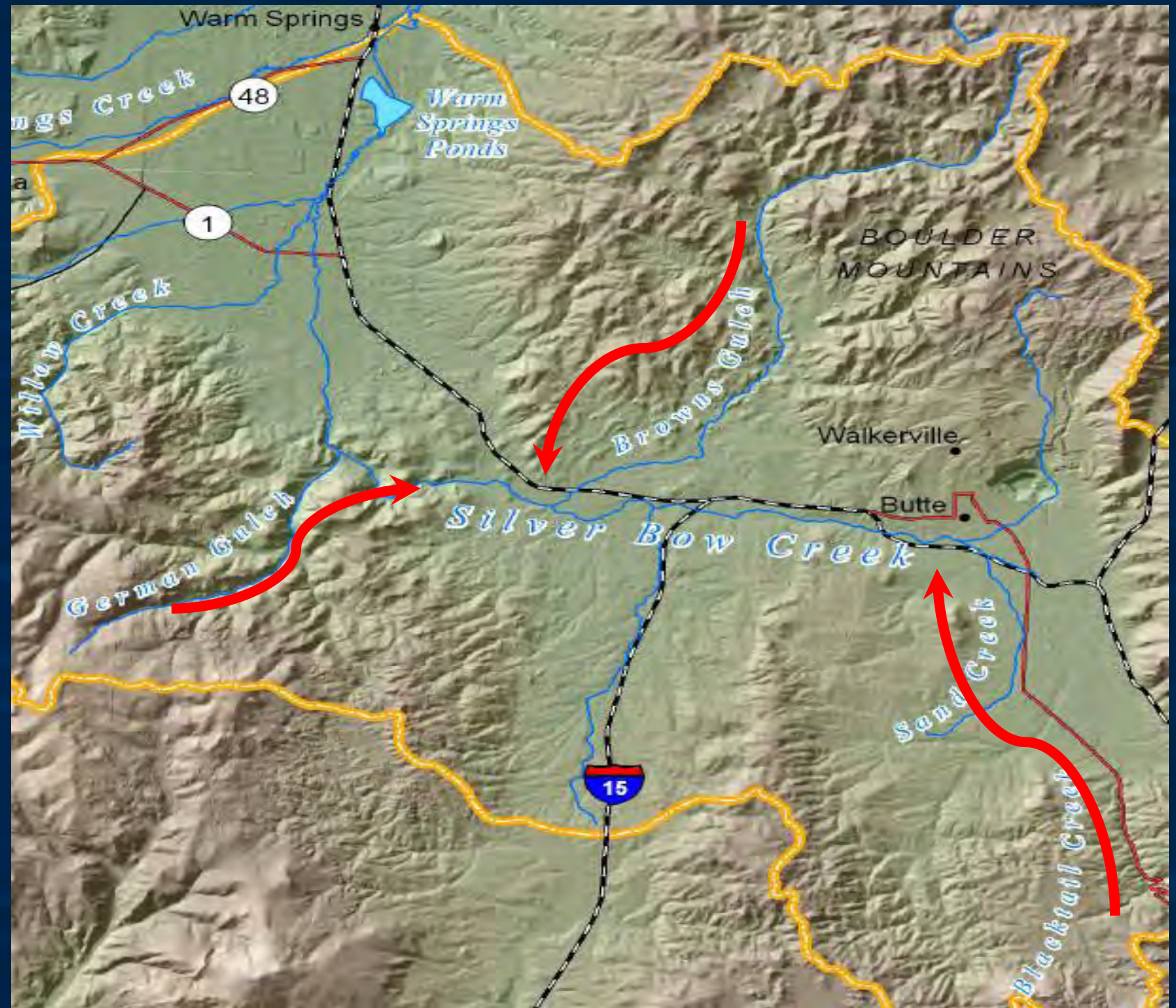
Blacktail Creek

## Brook Trout

Brown's Gulch

Basin Creek

Blacktail Creek





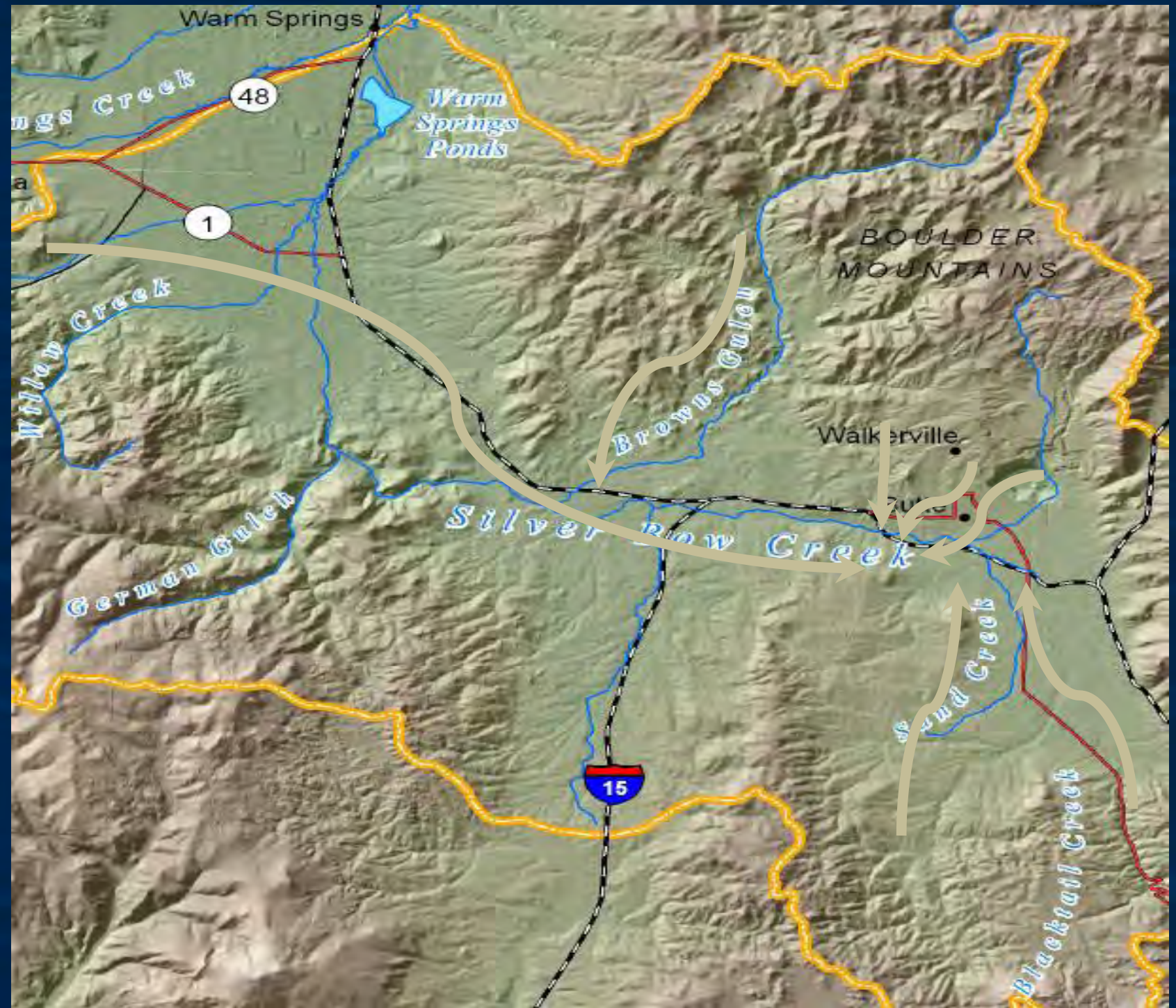
# Water Sources

## Tributaries

- Brown's Gulch
- Basin Creek
- Blacktail Creek
- Yankee Doodle

## Municipal, Industrial

- Stormwater
- Wastewater
- Basin Creek Res.
- Silver Lake
- Mt. Resources





# Partnerships

- City and County of Butte-Silver Bow
- Montana Fish, Wildlife and Parks
- Montana Resources
- Individual Irrigators and Land Owners
- Columbia Basin Water Transfer Program
- Clark Fork Coalition
- Watershed Restoration Coalition



# Why Trout Unlimited?

- Montana Water Project
  - Instream Flow Project Implementation
  - DNRC Water Right Change Processes
- Watersheds Program
  - Fish passage and reconnect
  - Riparian and habitat enhancement
- Montana Council – Chapters
  - Riparian and habitat enhancement





<http://www.rivertrips.com/westlope-cutthroat-trout-salmon-river.html>



# **Watershed Restoration Coalition for the Upper Clark Fork:**

Abstracts submitted to  
Natural Resource Damage Program, June, 2012



# **WRC's process for developing projects:**

- Assessment of streams
- Project Identification
- Landowner outreach
- Design and funding
- Construction
- Monitoring



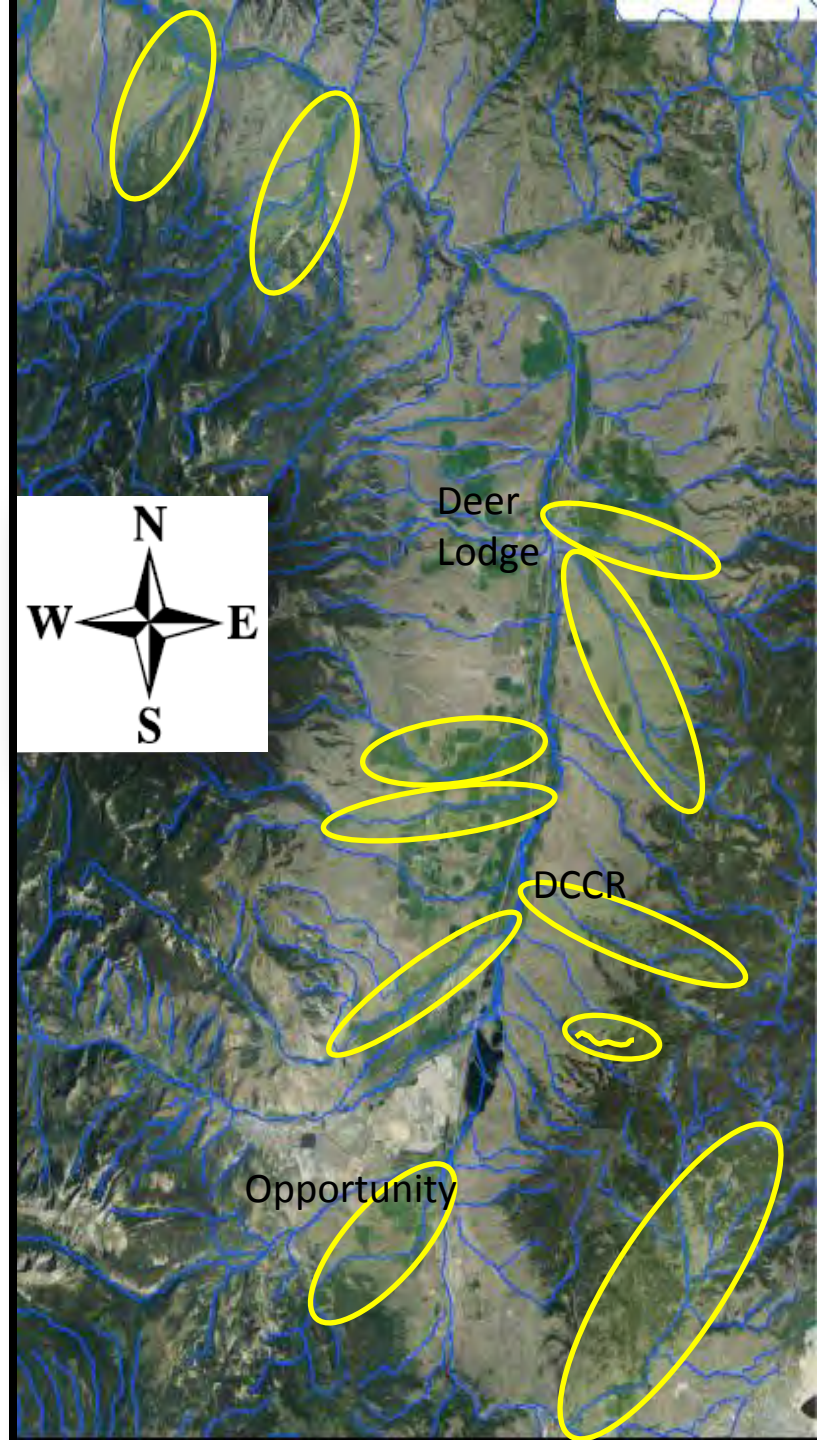
# Field assessment of tributaries:

- DEQ Funding, 2010-2012
- Goals:
  - Identify/characterize impaired streams
  - Determine sources of impairments
  - Potential Projects
  - Monitoring



# Tributary Locations

- Dunkleberg Creek
- Gold Creek
- Cottonwood Creek
- Peterson Creek
- Dempsey Creek
- Racetrack Creek
- Dry Cottonwood Creek
- Lost Creek
- Perkins Gulch
- Willow Creek
- Browns Gulch





# Methods

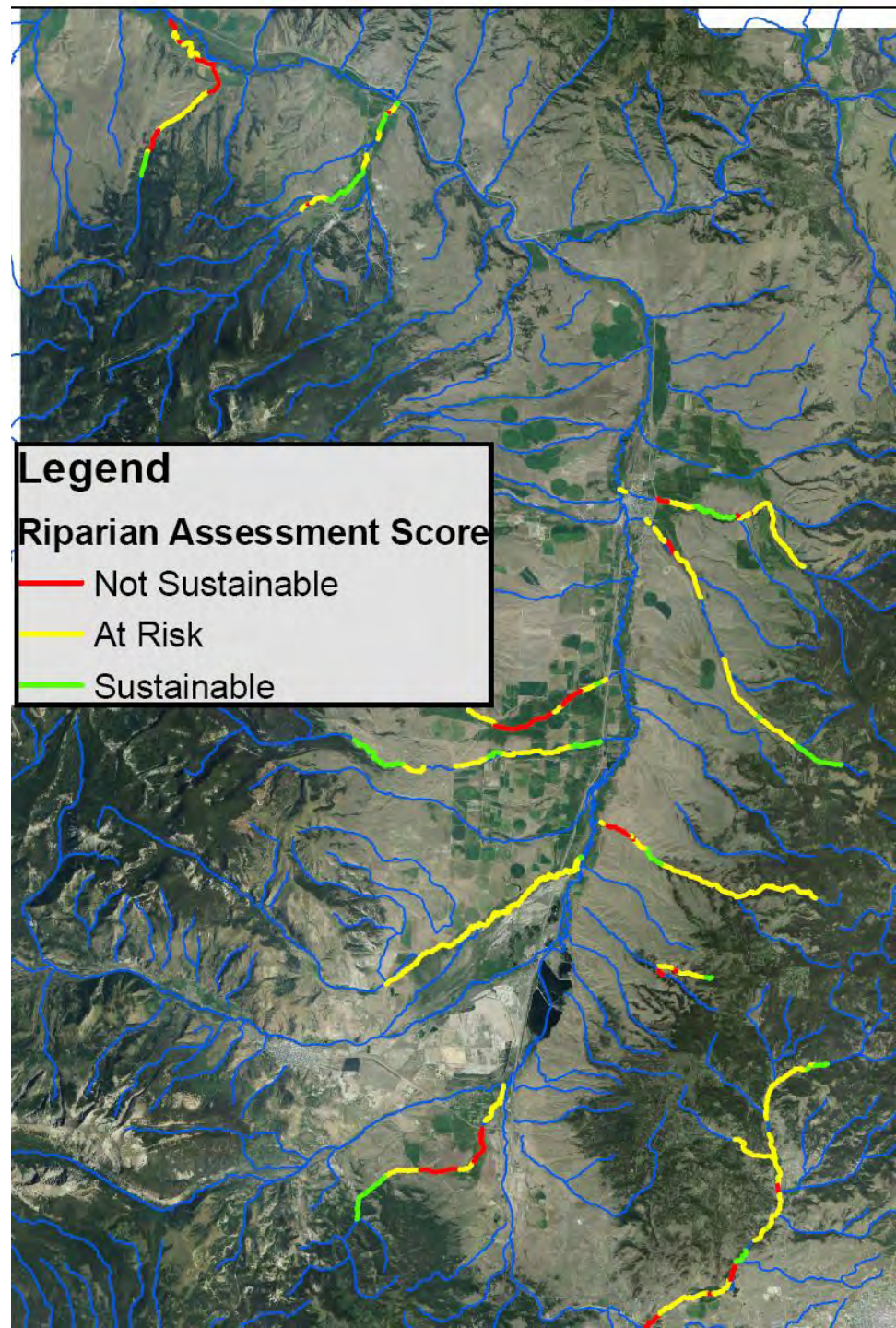


- Qualitative
  - NRCS Riparian Assessments
- Quantitative
  - Stream Stability
  - Riparian Vegetation
  - Fish Habitat
  - Flow



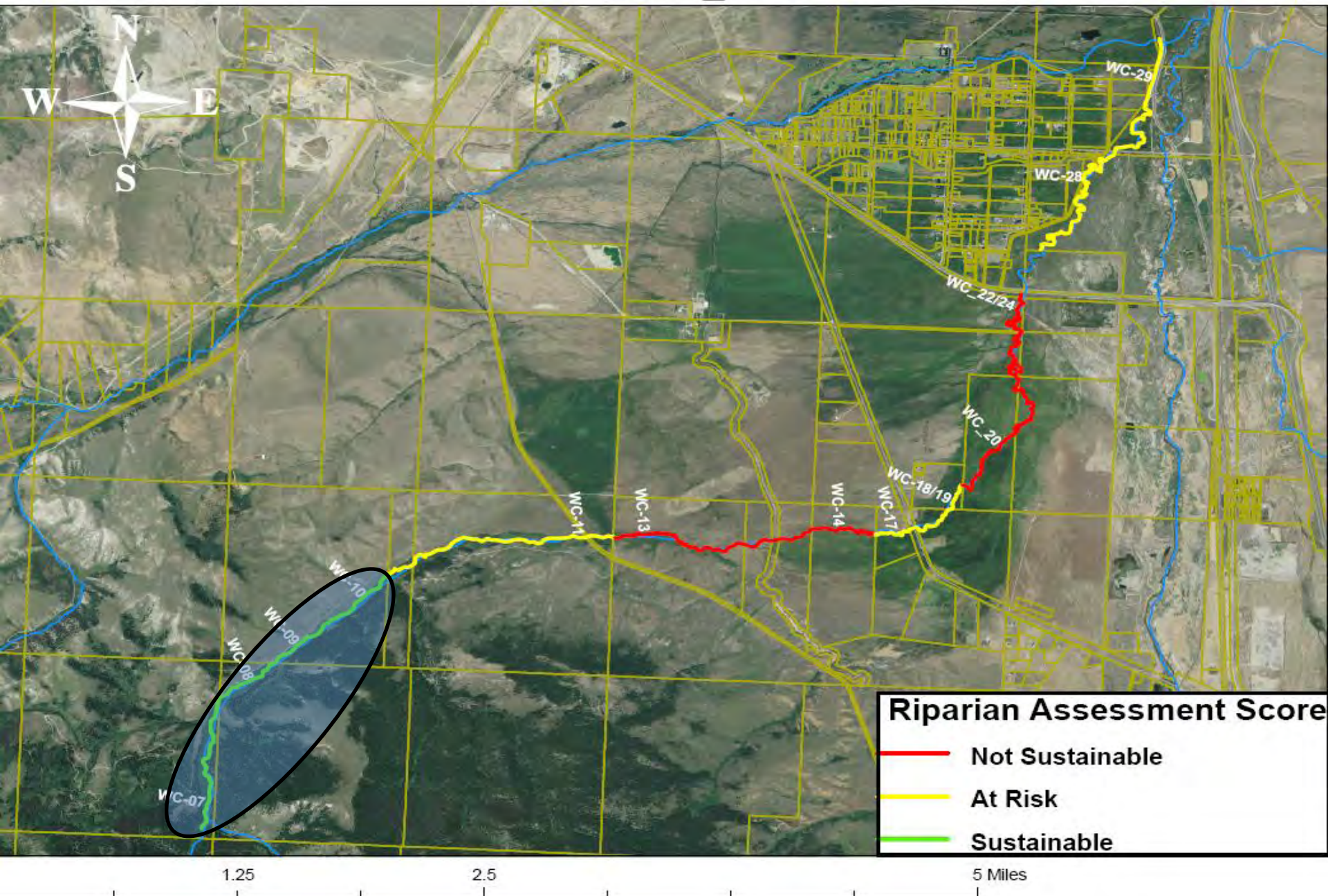
# NRCS Assessments

- “First cut” evaluation
- Components
  - Stream stability
  - Riparian health
  - Functionality
- Assessment Scores
- Reports
  - Stream trend
  - Potential projects





# Willow Creek\_2011 \_NRCS Riparian Assessment WRC\_CFC





# NRCS Assessments

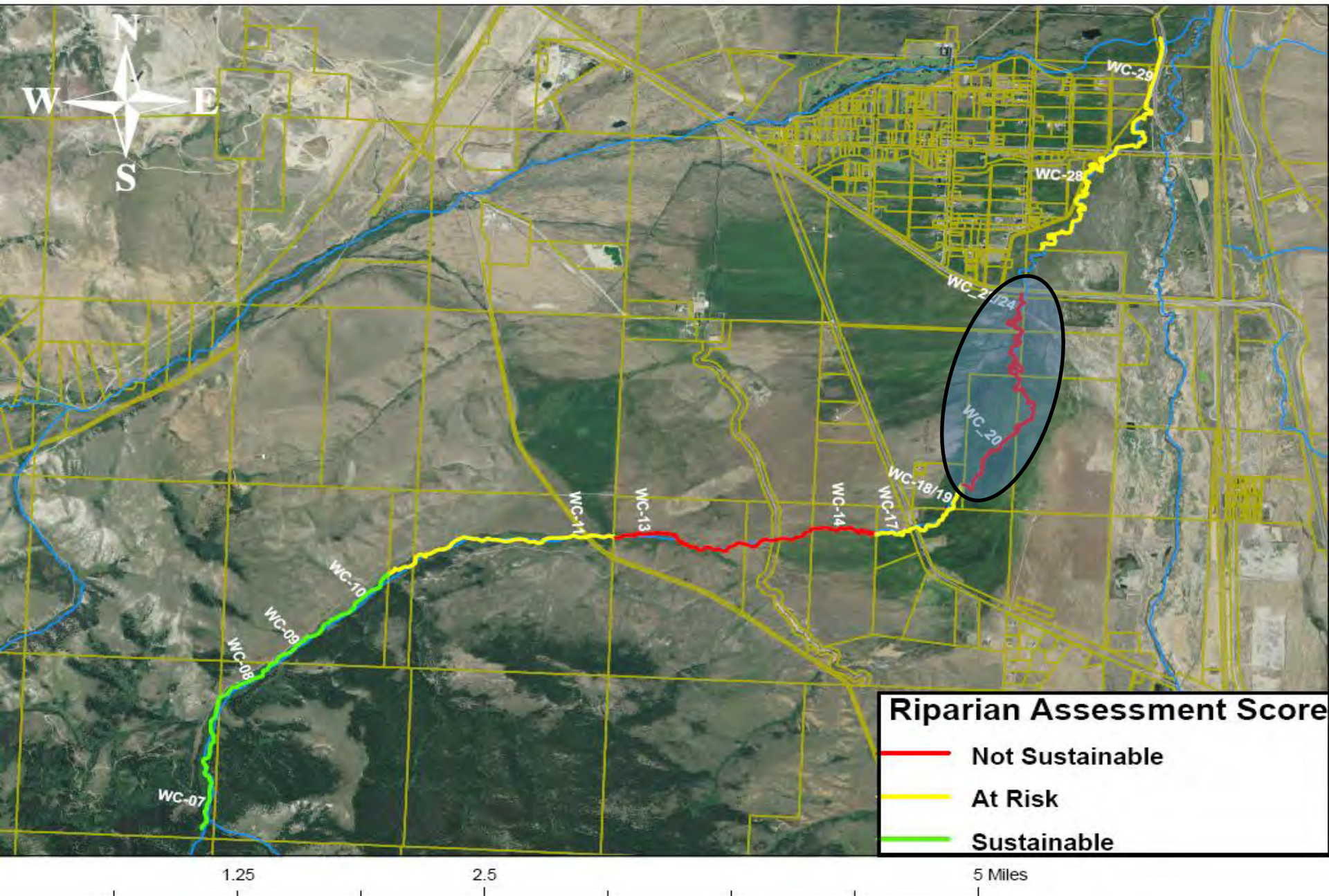
## – Willow Creek

- Sustainable Reaches





# Willow Creek\_2011 \_NRCS Riparian Assessment WRC\_CFC





# NRCS Assessments

- Willow Creek
  - Non-Sustainable Reaches





# Quantitative Assessments

- **Fish Passage (TU contract)**
- **Geomorphic & Habitat:**
  - Reference (healthy) Reach
  - Non-reference (unhealthy) Reach
- **Measurements**
  - Long Profile
  - Cross-section
  - Pebble count
  - Vegetation survey
  - Fish habitat



# Example Vegetation Survey: Gold Creek



- Reference Reach:
  - 5 taxa riparian shrubs
  - 241 plants

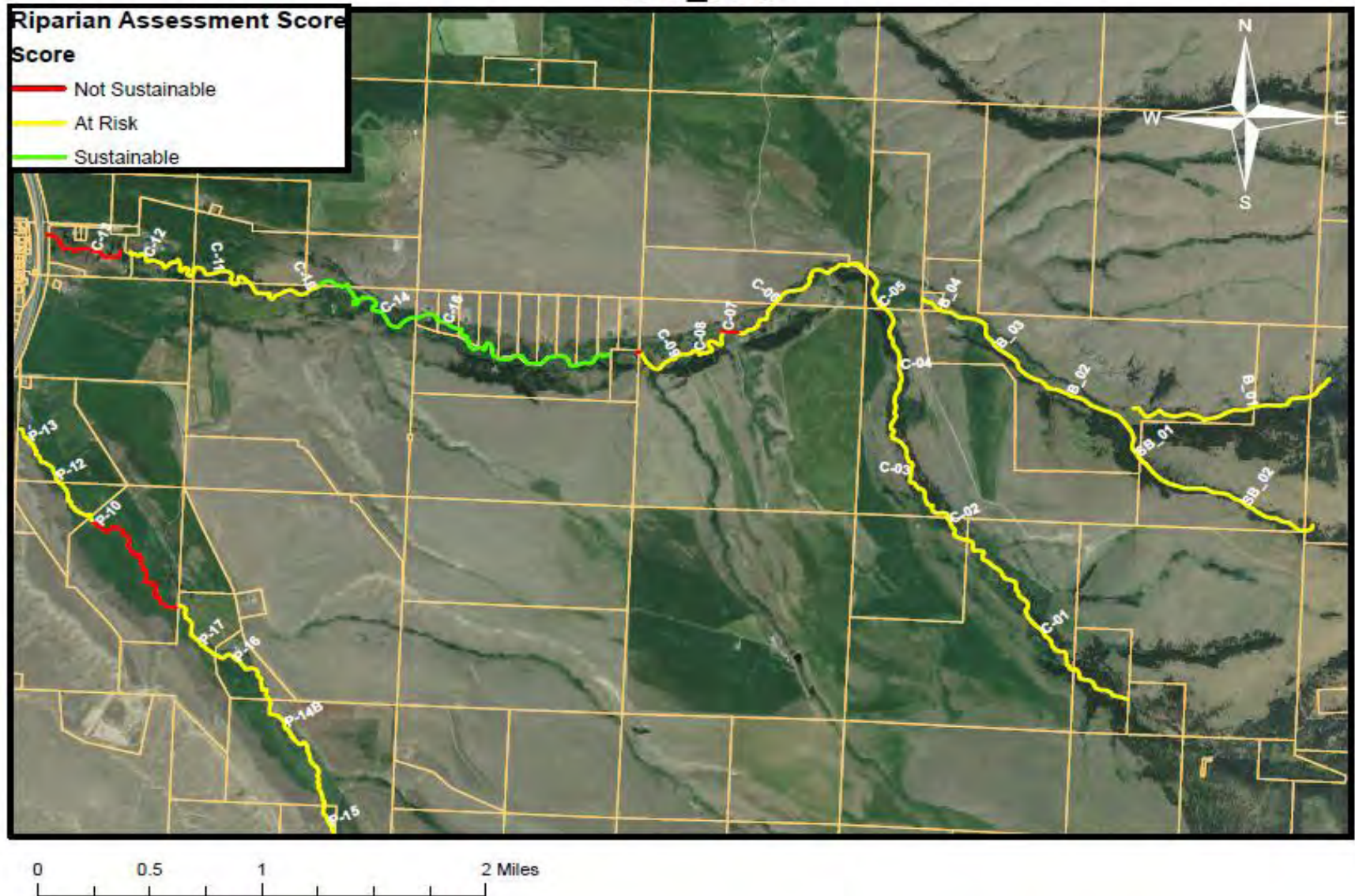


- Non-Reference Reach:
  - 1 taxa riparian shrubs
  - 92 plants



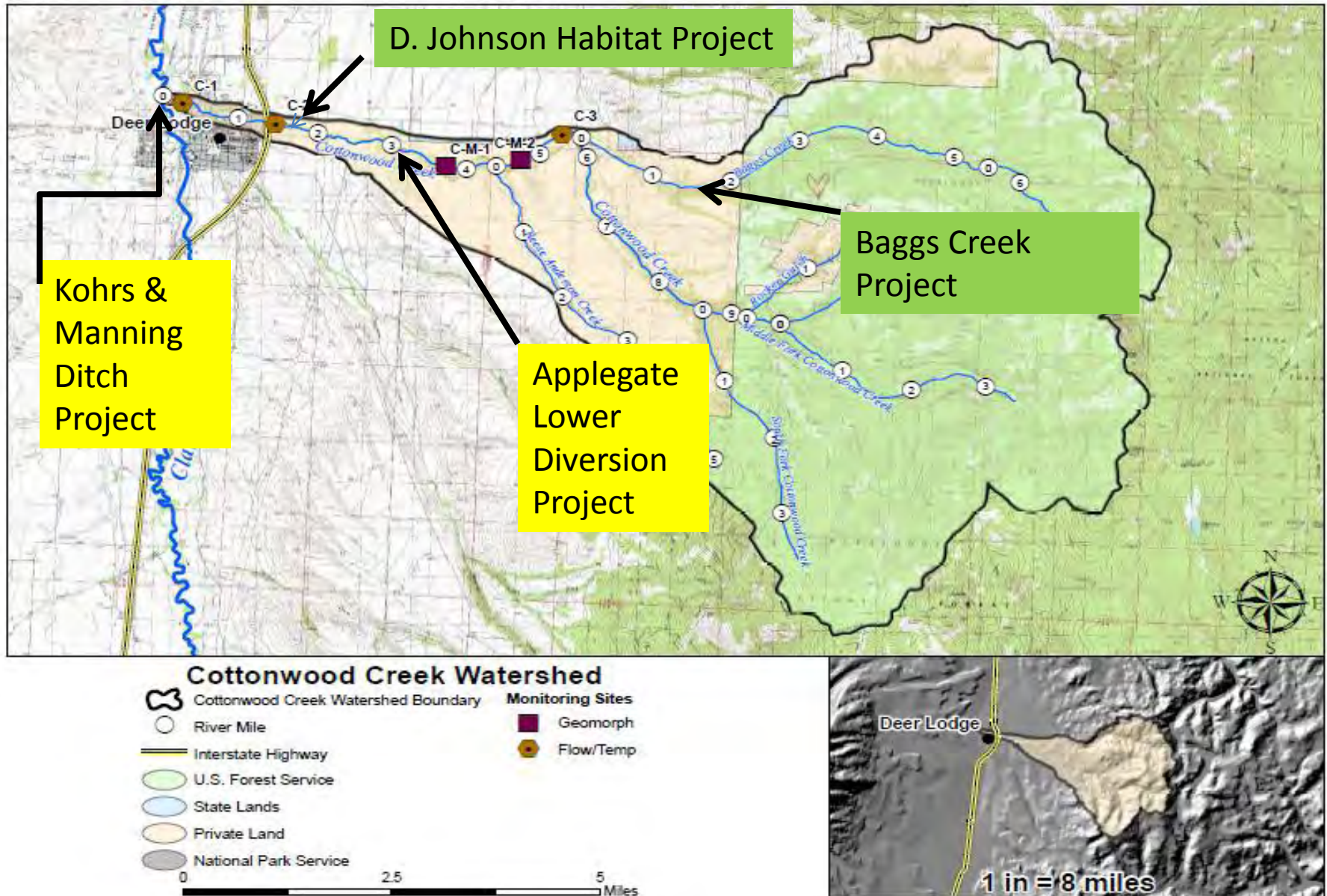
# Stream reaches assessed & scored

Cottonwood Creek\_NRCS Assessment\_2010  
CFC\_WRC





# Project Identification:





# WRC STRATEGY FOR AQUATIC RESTORATION PROJECTS:

- \*look at the whole watershed**
- \*find the limiting factors**
- \*build complementary restoration activities**  
**.....not isolated projects**
- \*partner with other organizations/funders**

**MIDDLE RACETRACK PROJECT AREA: what does this creek need?**



Lower Browns Gulch:  
Project engineers on site for  
design





A= Project engineering/funding underway    B= Project landowners/concept developing    C= Project opportunity identified

| TRIBUTARY:                      | RANK<br>: | PROJECT DESCRIP:                              | STATUS: | LEAD: | Partner:    | NRDP<br>request: | Match:    | TOTAL:    |
|---------------------------------|-----------|---|---------|-------|-------------|------------------|-----------|-----------|
| Cottonwood                      | 2         | Applegate diversion/scr                       | A.      | WRC   |             | \$83,200         | \$800     | \$84,000  |
| Browns Gulch                    | 1         | Upstream<br>habitat/channel                   | A.      | WRC   | Mi Hi CD    | \$311,900        | 54,000    | 365,900   |
| Browns Gulch                    | 1         | Ueland habitat/channel                        | A.      | WRC   | MiHi CD     | \$356,100        | 76,000    | 422,100   |
| Cottonwood-DJ                   | 2         | D Johnson-<br>Habitat/Riparian                | A.      | WRC   | FutFish FWP | \$71,000         | 87,500    | 156,700   |
| Cottonwood/C<br>F River         | 2         | Kohrs & Manning crossing<br>+ river diversion | A.      | WRC   | TU          | \$534,190        | \$107,435 | \$641,625 |
| Racetrack-<br>below I90         | 1         | Habitat-off-stream<br>water/passage           | A.      | CFC   | FutFish FWP | \$65,850         | 26,300    | 92,150    |
| Little Blackfoot<br>mainstem    | 1         | Habitat-ranch planning                        | B.      | WRC   |             | \$1,035,000      | 204,500   | 1,240,000 |
| L. Spotted Dog<br>Cr.           | 2         | Irrigation eff., grazing                      | B.      | WRC   | NRCS        | \$170,750        | 2,000     | 172,750   |
| Dempsey Cr.-<br>lower           | 2         | Habitat/planning/passage                      | B.      | WRC   | TU          | \$521,500        | \$94,000  | \$615,500 |
| Blacktail Cr.                   | 1         | Habitat                                       | B.      | WRC   | Mi Hi CD    | \$580,500        | 94,000    | 674,500   |
| Habitat/passag<br>e maintenance |           | Manage/ help maintain<br>projects             | B.      | WRC   | TU          | \$486,000        | 30,000    | 510,000   |
| Dog Creek                       | 2         | Sediment/habitat/passag<br>e                  | C.      | WRC   | DNRC        | \$279,600        | 35,000    | 314,600   |
| Cottonwood-<br>Baggs            | 2         | Habitat/passage                               | C.      | WRC   | TU/ DNRC    | \$262,550        | 15,500    | 278,050   |
| Willow Creek                    | 2         | Habitat and passage                           | C.      | WRC   | TU          | \$263,000        | 9,000     | 272,000   |

# Trestle Park Proposal

## Natural Resource Damage Program Restoration Concept Abstract

Submitted By: Powell County / Great West Engineering



August 1, 2012





# TRESTLE PARK

LOCATION MAP



# Park Location

- ❖ Former Milwaukee Rail Road Roundhouse
- ❖ Bordered by the Clark Fork River & Tin Cup Joe Creek
- ❖ Trestle Over the River





# Project History

- ❖ Milwaukee Roundhouse
  - ❖ Clark Fork River
- 

- ❖ Powell County
- ❖ DEQ
- ❖ EPA
- ❖ DNRC
- ❖ NRDP





# Project Purpose & Benefits

- ❖ Create a Park on 14-acres of County-Owned Land
- ❖ Provide Public Access to the Clark Fork River
- ❖ Continue the Site's Remediation & Restoration
- ❖ Promote Educational Opportunities
- ❖ Add Recreational & Sport Facilities



# Park Land Use Plan





# Project Phases

- ❖ Phase 1: Focus on the area to the north of the existing fence and along the Clark Fork River
- ❖ Phase 2: Pedestrian Bridge, Boat Ramp, Repairs to Trail
- ❖ Phase 3: Cleanup of Roundhouse Site (DNRC assisted project)
- ❖ Phase 4: Sportsfield complex following cleanup efforts



# Project Costs

| OPINION OF PROBABLE COST   |  |      |          |           |                    |
|--|--|------|----------|-----------|--------------------|
| Trestle Park Phase 1 & Phase 2   |  |      |          |           |                    |
| Item No.   | Description                                      | Unit | Quantity | Price     | Amount             |
| <b>Phase 1 - Trestle Park Area</b>   |  |      |          |           |                    |
| 1  | Mobilization (10%)                               | LS   | 1        | \$78,600  | \$78,600           |
| 2  | Install Gravel and Asphalt - Parking Lot         | LS   | 1        | \$135,000 | \$135,000          |
| 3  | Road Improvements to W. College Ave.             | LS   | 1        | \$120,000 | \$120,000          |
| 4  | Solar Powered Lighting                           | LS   | 1        | \$165,000 | \$165,000          |
| 5  | Site Grading                                     | LS   | 1        | \$30,000  | \$30,000           |
| 6  | 6" Topsoil                                       | LS   | 1        | \$55,000  | \$55,000           |
| 7  | Irrigation Installation & Vegetation             | LS   | 1        | \$40,000  | \$40,000           |
| 8  | Paved Trails by Kiosk                            | LS   | 1        | \$64,000  | \$64,000           |
| 9  | Main Kiosk Building                              | LS   | 1        | \$35,000  | \$35,000           |
| 10   | Vault Toilet                                     | LS   | 1        | \$30,000  | \$30,000           |
| 11   | Vehicular Gate                                   | LS   | 1        | \$3,000   | \$3,000            |
| 12   | Interpretive Signage                             | LS   | 1        | \$7,500   | \$7,500            |
| 13   | Water (Well & Treated, also used for irrigation) | LS   | 1        | \$15,000  | \$15,000           |
| 14   | Historic/Ecologic Consultant & Sign Design       | LS   | 1        | \$7,500   | \$7,500            |
| <b>PHASE 1 CONSTRUCTION COST</b>   |  |      |          |           | <b>\$785,600</b>   |
| <b>Engineering/Construction Management (22%)</b>                           |  |      |          |           | <b>\$172,832</b>   |
| <b>Administration (3%)*</b>  |  |      |          |           | <b>\$23,568</b>    |
| <b>PHASE 1 TOTAL</b>   |  |      |          |           | <b>\$982,000</b>   |
| <b>Phase 2 - Pedestrian Bridge, Boat Ramp &amp; Trestle Bridge Repairs</b> |  |      |          |           |                    |
| 1  | Mobilization (10%)                               | LS   | 1        | \$33,800  | \$33,800           |
| 2  | Clark Fork River Boat Ramp w/Approach            | LS   | 1        | \$20,000  | \$20,000           |
| 3  | Clark Fork River - Pedestrian Bridge             | LS   | 1        | \$220,000 | \$220,000          |
| 4  | Pedestrian Bridge Approach Work                  | LS   | 1        | \$5,000   | \$5,000            |
| 5  | Trestle Bridge Repairs                           | LS   | 1        | \$45,000  | \$45,000           |
| 6  | Off Site Trails (Decomposed Granite)             | LS   | 1        | \$4,000   | \$4,000            |
| 7  | Permit Acquisition Services                      | LS   | 1        | \$1,500   | \$1,500            |
| 8  | Geotechnical Investigation                       | LS   | 1        | \$8,000   | \$8,000            |
| <b>PHASE 2 CONSTRUCTION COST</b>   |  |      |          |           | <b>\$337,300</b>   |
| <b>Engineering/Construction Management (25%)</b>                           |  |      |          |           | <b>\$84,325</b>    |
| <b>Administration (3%)*</b>  |  |      |          |           | <b>\$10,119</b>    |
| <b>PHASE 2 TOTAL</b>   |  |      |          |           | <b>\$431,744</b>   |
| <b>PHASE 1 &amp; 2 TOTAL COST</b>  |  |      |          |           | <b>\$1,413,744</b> |



# Project Schedule

- ❖ Phases 1&2:
  - ❖ Design 2013
  - ❖ Construction Summer 2014
- ❖ Phase 3:
  - ❖ 2012-2013 on-going cleanup with EPA/DEQ
  - ❖ Winter 2012-2013 Complete EA on Roundhouse Site
  - ❖ Fall/Winter 2013 Complete VCP
  - ❖ 2014-2015 Cleanup
- ❖ Phase 4:
  - ❖ Design 2015
  - ❖ Construction 2016



# Questions?

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