Presentation of Clark Fork Coalition Abstracts to the NRDP Advisory Committee 8.8.12



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Overview

- Our Approach
- Description of Developed Projects
- Considerations for Implementing Flow Projects
- Overview of Conceptual Proposals



Our Approach

- Response to NRDP priorities and fishery driven
- Project Types: Primarily Flow Augmentation
- Partners
- Cost/Benefit



West Side and Whalen Ditch Water Conservation Project #17

Project Location:



West Side and Whalen Ditch Water Conservation Project #17

- <u>Who:</u> West Side Ditch Company and Whalen Ditch
- What: Pipe 13 miles of canal
- Why: 20 cfs instream flow
- <u>Cost:</u> \$10.75 Million
 - NRDP \$10.4 Million



Racetrack Irrigation Efficiency Project #15

Project Location:



Racetrack Irrigation Efficiency Project #15

- <u>Who:</u> Racetrack Water Users
- What: Pipe 3 sections of ditch
- Why: 20 cfs instream flow
- Cost: \$9 Million
 - NRDP \$7.4 Million



Pauley Ranch Flow Enhancement #13

Project Location:





Pauley Ranch Flow Enhancement #13

- <u>Who:</u> Pauley Ranch
- What: Partial Season Water Lease
- Why: 8 cfs Warm Springs Creek and 1 cfs Lost Creek
- Cost: \$601,897
 NRDP \$596,871



Helen Johnson Ditch Flow Enhancement #9

Project Location:



Helen Johnson Ditch Flow Enhancement #9

- <u>Who:</u> Dry Cottonwood Creek Ranch
- What: Point of Diversion Change and Sprinkler Irrigation Conversion
- Why: 5 cfs Upper Clark Fork
- <u>Cost:</u> \$529,448
 NRDP \$420,448



Clark Fork Meadows Land and Water Conservation #7

Project Location:





Clark Fork Meadows Land and Water Conservation #7

- Who: Clark Fork Meadows Ranch
- What: Land and instream flow acquisition
- <u>Why:</u> Wetland conservation and 2.7 cfs Dempsey Creek
 <u>Cost:</u> \$780,148*
 NRDP \$778,148*



Flow Restoration Programmatic Considerations #57,58,59

RACE TRACK CREEK





Flow Concept Proposals #6,10-12,14,16,18-20

> Purpose: Develop and **Implement Flow Projects** Locations: NRDP Priority 1 and 2 Aquatic Areas Goals: Fishery restoration Project Types: Flow Augmentation Cost: Varied and Scalable



Flint Creek Aquatic Habitat Conservation #8 > Who: Granite Headwaters Watershed Group <u>Purpose</u>: Identify, Develop, **Implement Projects** Goals: Aquatic restoration Project Types: Flow, Passage, Screening, Habitat <u>Cost:</u> \$2.3 Million NRDP \$2.2 Million

Comments, Questions, Insights

interesting The

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UPPER CLARK FORK MIGRATION TROUT HATCHERY AND FISHERIES RESEARCH CENTER



• Three miles west of Anaconda, Montana

O Adjacent to Warm Springs Creek



Water Source

• Collected from underground springs

• Captured and delivered by 16" pipe

• 800gpm-2000gpm available

• Owned by Butte Water

Compatibility of Hatchery and Butte Water

Pre-collected Spring Water



Proposed Fish Hatchery Location



Fish Hatchery Site

West of Reservoir & Pump House Hatchery Building
Initial rearing tank
Isolation allowing incubation of wild
Up to 6 outside raceways
Discharge into settling basin





- 47 Degrees
- 800 2,000gpm
- Collected and delivered to site
- Fish production: 150,000 to 460,000 westslope cutthroat trout, depending on actual flow

Meyer's Dam Fish Migration Barrier and Trap Site



Bull Trout spawning migrations can be monitored by tagging individual fish .



Bull Trout from Warm Springs Creek will help recover the species in the Upper Clark Fork Basin.



Meyer's Dam Fish Migration Barrier and Trap Site

- Monitor spawning migration
- Allows upstream Bull Trout migration
- Collects data from Brown Trout
- Pit and radio tag Bull Trout to allow monitoring of migration

Stops upstream migration of undesirable species

Non-native brown trout can be trapped on their spawning runs, marked and released down stream.



In Conclusion

• The Upper Clark Fork Trout Mitigation Hatchery and Fish Trap will provide conservation recovery programs for native westslope cutthroat trout and the threatened native bull trout while limiting upstream migration of non-native species.



Aquatic Resource Management Mark Sweeney, 2012



WARM SPRINGS CREEK, ANACONDA WASHOE PARK & HAFNERS DAM

Washoe Park Foundation/Anaconda-Deer Lodge County

Hafners Dam

2 miles

Washoe Park

NOTE This property may in board of a poper sameth of continues records only. Openin of Record using found in Basis of Page
A HOLISTIC AND COMPREHENSIVE PLAN





Reservoir: 4.42 acres (existing = .21 acres)

	Possible Cliff House/Flume/Upper Trails	30 Washoe Park Road	2	
- Contraction (Contraction)				23
			20 mm	A COMPANY OF
Future Countries 5 Do	6 6 6 6	3 3 9		23 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1
any Trail Connection		0 6		2
Stamp	Wryp.	Possible Overflow Parking Shared with Hospital	(1) Possible Entry restlanded	

Element	Existing	Proposed	
Unmanicured (acres)	10.3	15.6	
Stream Length + Buffer (miles)	.23	1.56	
Trail (miles)	1.42	3.19	
Duck Pond (acres)	.48	.62	
Roads (miles)	.98	.57	+

WASHOE PARK – BEFORE AND AFTER **1. PARK ENTRANCE**



GENERAL GOALS:

Bruce Ebody landsuper Achipet, hu. 10.06.10

- ·ENHANCE ENTRY EXPERIENCE AT ENTRY POINTS AROUND PARK.
- . ENHANCE VISUAL APPEAL OF PARE FROM SUFFOUNDING ROADWAYS + PROPERTIES.
- · EXPAND GREEN SPACE
- · IMPROVE WATER QUALITY & PISHERIES BY PESTORIAL SUPPONE WATER FEATURE
- · PARK ARCHITECTURAL PEATURES TO PEFERENCE HISTORIC CHARACTER

WASHOE PARK BEFORE AND AFTER 2. DUCK POND



GENERAL GOALS:

NOREASE WATER FLOW to DUCK POND to IMPROVE WATER QUALITY PESSORE VEGISTATION to BONKS FOR WATER QUALITY & HABITAT CONNECT PONDS to PARK VISUALLY & PHYSICALLY "EXPAND GREEN SPACE ENHANCED PEDESTRIAN EXPERIENCE "UNK PARK to THE HISTORIC FISH HATCHERY

HISTORIC INTERPRETATION

WASHOE PARK - BEFORE AND AFTER 3. BRIDGE



CIENERAL GOALS:

- · ENHANCE PEDESTRIAN TRAILS THROUGHOUT PARK
- · ENHANCE & INCREASE ALLESS POINTS TO PARK · BRIDGES AS A SIGNIFICANT PARK FEATURE. MEET FLOODPLAND & ADA REGS. HISTOPIC IN CHORACTER. · RESTORE/REVEGETATE STREAM BANKS THROUGHOUT PARK

WASHOE PARK – BEFORE AND AFTER 4. Reflection Pond



EXPECTED NEXT STEPS

Conduct studies to support final master plan.

Develop final master plan.

Create phases, construction plans & cost estimates.

Implement project in phases.



NRDP OPPORTUNITIES

- Stream Buffer Erosion, Shade, Habitat
 - Bridges to 100 yr flood standards
 - Replace buffer vegetation
 - Move trails out of buffer region
- Fisheries Life Stages, Habitat
 - Extend habitat
 - Pool/riffle improvement
- Recreation
 - Improve/new trails
 - Interpretation
 - Accessibility
 - Fishing opportunity
- Water Quality
 - Shade
 - Remove contaminated soil (?)
 - Improve pond
 - Storm water management
 - Irrigation off public water supply











August 8, 2012

Project 1: Storm Water Project

Project 1: Storm Water Project

Objective:

• To reduce sedimentation in Warm Springs Creek from (4) Anaconda storm water outlets which discharge directly into the creek.



Warm Springs Creek is a Priority 1 stream.



Sediment in Storm Drain



Outlet to Warm Springs Creek



Storm Water Project Cost Estimate

Storm Water Project Breakdown	Cost
Sediment Capture System	\$50,000
Engineering Design	\$50,000
Dewatering System Design	\$100,000
Construction Oversight	\$100,000
Cost Per System	\$300,000
\$300,000 x 4 Systems	\$1,200,000

Project 2: Re-vegetation of Uplands Areas

Project 2: Re-vegetation of Uplands Areas

Objectives:

- Enhance remedy with restoration of Uplands vegetation.
- Decrease sedimentation in area surface waters.
- Decrease metal concentrations in downgradient water resources.
- Provide consistency in Uplands revegetation effort.

Issues

- Uplands remedy is not completed.
- Design not completed for some RDU areas.
- Difficult to assess restoration needs until remedy is completed.
- Remaining restoration funding will be allocated before these future needs can be assessed.

Gateway to Anaconda



Highly Visible



Barren Hills



Project Benefits

- Potential cost savings for integrated restoration and remediation in Uplands.
- Project would be highly visible.
- Restoration of vegetation improves aquatic and terrestrial resources in this area (i.e. keeping sediment on the hills protects the fishery.)

Estimate of Restoration Funds required for Uplands

- 4845 acres of property in RDUs that currently has been designated for remediation only, some of which falls within the Priority 2 Terrestrial Area.
- 1879 acres of County property adjacent to or within the RDU which is not designated for remediation, and falls within the Priority 2 Terrestrial Area.
- Restoration estimated at \$1,000/acre.
- Estimated cost for 6724 acres is \$6.72M.

Project 3: Stream Restoration

Project 3: Stream Restoration

Objectives:

- Enhance priority fisheries with restoration of area streams, i.e. Warm Springs Creek (Priority 1), Mill Creek (Priority 2) and Willow Creek (Priority 2).
- Decrease sedimentation, increase flow and functionality, and improve vegetation along area streams.

Project Benefits

- Potential cost savings for integrated restoration and remediation.
- Projects would be highly visible.
- Restoration would improve aquatic resources of major tributaries to the Upper Clark Fork River.
- Restoration would help restore fishery in Clark Fork River.

Issues

- Remedy is not completed.
- Difficult to assess restoration needs until remedy is completed.
- Remaining restoration funding will be allocated before these future needs can be assessed.

Estimated Stream Restoration Costs

- There are over 35 miles of priority streams within the within the Anaconda Superfund Planning District (Warm Springs Creek-14.8 miles, Willow Creek-7.4 miles, and Mill Creek-13.6 miles).
- Assuming a minimal \$0.5M/mile, an estimated \$18M is needed for restoration work on these priority streams.

Summary

- Interception of sediment from Anaconda's storm water system.
- Restoration of Uplands which were directly damaged by Anaconda Smelter.
- Restoration of priority streams within the Superfund site.

Questions?





Granite County Wildlife Winter Range Replacement Proposal








Idea #40 Rocker Storm Water Controls

Mike Flanick

Overview From Submittal



Tailings Along Blue Bird Road



Tailings Along Blue Bird Road



Tailings Along Blue Bird Road



Asphalt Plant Material in Main Drainage



Typical Rocker Street



Example of abandoned railroad track in Rocker Street



View of Street and old RR in Rocker



Summary Notes

- Protect the watershed and investment in reclamation.
- Completely missed by county storm water proposal or county ordinances.
- View in parts if necessary
- Tie to long term protection of watershed.

Questions

Idea #42 Bridge on Pony Express Trail

Mike Flanick

View of road crossing stream. Looking SE toward Interstate.



Downstream Side Three Culverts



Downstream Side of Culvert



Downstream Side



Upstream Side of Culverts.



Upstream Side of Culvert



Goals

- Provide a natural stream bed.
- Improve fish recruitment.

Questions

Drummond Riverside Park Project

Drummond Kiwanis Club Town of Drummond

GoogleEarth_Placemark

Image USDA Farm Service Agency © 2012 Google



Google ea

Tract T and a Portion of Tract R In Section 31 Township 11 West Range 12 North

8/22/2007

DRUMMOND KIWANIS CLUB TOWN OF DRUMMOND

DRUMMOND RIVERSIDE PARK PROJECT

Estimated Project Costs

Appraised Fair Market Value Gravel Parking Lot Gravel Entrance Road Gravel Walking Trail—1 Mile Signage Survey and Legal Costs Engineering and Miscellaneous \$58,985.00 3,000.00 5,000.00 14,800.00 2,500.00 5,000.00 5,000.00

Total Projected Costs

\$94,285.00

RESTORING NATIVE PLANT DIVERSITY—CONTINUING

SUBMITTED BY Mt Tech Kriss Douglass, Research Prof.

SUCCESSES

- Forb sods
- Dispersal islands—forb sods plus shrubs and sprinkled seeds
- Seed Collection—forbs, shrubs, grasses
- Forb orchard
- Shrub nursery
- Watering systems-- innovative, mobile, cheap
- Monitoring results
- Cooperation with local govt.—BSB and EPA

Dispersal Island just built, rectangle, shrubs in center and edges



Same DI one year later



DI, 1 yr. old, circle with shrubs in the center



GM 1, built 5 July 2012



GM 1, 5 August 2012 3 wk.s later, root tight, diversity established



Foreman's Park DI, 2nd yr



Syndicate DI, 3rd year



Eggers Hill DI, mostly seeded, 2009



Eggers hill, dispersal occurring


Eggers Hill, row of forbs along rake furrow—still green



Forb Orchard, also shrubs!



Temporary water systems



Monitoring

- In general:
- 70 species of 'wildflowers'
- 20 species of shrubs
- Forbmats are doing great after 3 years
- Shrubs show good survival rate and growth rate
- Dispersal is occurring

Cooperation with BSB, EPA



BROADEN SCOPE

- Increasing supply of collected seed with orchard
- Seeds available for downstream projects
- Start a nursery from which shrubs can be transplanted. Shrubs important component of veg system, we have 20 some shrub species in our collection.

Request for funding \$2.5 M over 10 years

- A bit of \$\$ from this pot; a bit of \$\$ from BNRC; and a bit of money from MT Tech
- From 'demonstration' to application': from being managed by volunteers to paying a fulltime restoration ecologist
- Continue full-time funding for Seed Collecting Specialist

Mt Tech Match

- Kriss and Rick Douglass time ~ ½ time position
- Greenhouse, utilities
- Krystal's office, phone, computer, support
- 2 hoop houses/greenhouses: overwintering
- Land for orchard, water, use of dirt moving equip: bobcat, loader, dump truck, flatbed trailer and truck for moving forbmats plus operator for this equipment; water tank plus pump for temporary water systems.
- Accounting office

Mapping Suitable Beaver Habitat for Passive Restoration of Tributaries of the Upper Clark Fork Basin





Jeff Burrell, Wildlife Conservation Society Amy Chadwick, Watershed Consulting, LLC

Angel or Devil?



Benefits of beaver activity

- Water storage
- Elevate groundwater table
- Smooth stream flow fluctuation
- Increase riparian vegetation
- Trap sediments
- Improve wildlife habitat







Project Objectives: Develop information to gain benefits and limit costs

- Map suitable habitat for re-colonization by beaver in tributary headwaters and riparian sites
- Identify stream reaches most likely to benefit from beaver re-colonization
- Identify sites where beaver are causing or would cause management problems and develop solutions



Priority areas for projects in tributaries to the Upper Clark Fork River drainage



Study Area: Reach A and Silver Bow Creek Priority Area



Deliverables

- GIS-based maps and report identifying stream reaches most suitable to support beaver
- Identification of cost-effective projects on tributaries for meeting NRD water quality and habitat objectives
- Identification of sites and solutions for addressing land management conflicts with beaver



Developing a blueprint For nature's engineers







Avoiding management conflicts

- This project team is sensitive to fish and wildlife management concerns and will work with managers to avoid conflicting sites or projects.
- Solutions include careful siting of beaver restoration projects and solutions such as flow management devices to avoid private land mgt conflicts.
- Focus on beaver restoration in higher elevations and tributaries to allow relocation of problem beaver from project sites on the main river and reduce flood pressure on lower project sites.





Beaver Deceivers Demonstration Sites

Thank you



