

Upper Browns Gulch

Riparian Restoration Project Profiles

26 September, 2014

For: Doug Martin, Natural Resource Damage Program

By: Watershed Restoration Coalition



BG-00 Site with dead timber

**Table 1: POTENTIAL NRDP RIPARIAN RESTORATION/PROTECTION PROJECTS:
Upper Browns Gulch (above Hail Columbia) 2014**

Reach Code	Property Owner	Primary Land Use	Reach Length (mi)	2005/13 NRCS Score (%)	PROJECT OPPORTUNITIES:	PROJECT:
BG_00	HV	Forest, grazing	0.71	62	Grazing management/passive restoration—SEE PROJECT PROFILE	YES.
BG_01	DJ	Forest	0.41	87**	Weed control, road drainage—No access granted.	No
BG_02	DJ	Irrigated hay/pasture	0.30	58**	Grazing management—No access granted	No
BG_03	US Forest Service	Forest	0.21	97**	REFERENCE SITE (beaver activity): Preservation w/ USFS-MONITORING	YES.
BG_04	AW	Irrigated hay/pasture	0.32	75**	Riparian grazing management/enlarge corridor—SEE PROJECT PROFILE	YES.
BG_05	AW	Irrigated hay/pasture	0.40	52**	Riparian grazing management/enlarge corridor.—See PROJECT PROFILE	YES
BG_06	CB	Range	0.27	60**	Already fenced.—MONITORING.	YES
BG_07	CB	Irrigated hay/pasture	0.55	57**	Riparian grazing management. Bank stabilization ,off-stream water underway. MONITORING.	YES
BG_08	CC	Irrigated hay/pasture	1.15	63**	Riparian grazing management, enlarge riparian corridor, install or upgrade crossings/renaturalize channel in lower end.-Landowner did not grant permission to proceed.	No
BG_09	JB	Irrigated hay/pasture	0.66	58**	Channel stabilization/revegetation—SEE PROJECT PROFILE.	YES.
BG_10	DD	Irrigated hay/pasture	1.42	58**	Riparian grazing management/enlarge riparian corridor, renaturalize straightened channels. Install crossings-Landowner did not grant permission to proceed.	No
BG_11	DD	Irrigated hay/pasture	0.36	38**	Riparian grazing management, renaturalize straightened channels. Install crossings-LANDOWNER REFUSED TO PARTICIPATE	No
BG_12	DM,S	Irrigated hay/pasture	0.73	63**	Remove culvert, renaturalize short channel segment-PROJECT DESIGNED—See PROFILE	YES

**Table 2: Summary of Estimated Costs for Riparian Restoration
Upper Browns Gulch (above Hail Columbia) 2014**

Reach Code/Owner:	Project Type:	Est. Cost \$:
BG-00 HV	Passive restoration/grazing mngmt.	\$9,375
BG-03 USFS	Protection/monitoring	0
BG-04/5 AW	Riparian grazing/fencing	\$19,205
BG-06 CB	Monitoring existing (2009) grazing project	0
BG-07 CB	Monitoring existing (2013) channel stabilization/water project	0
BG-09 JB	Channel stabilization/revegetation	\$17,537
BG-12 DM	Culvert removal/channel stabilization	\$13,484
Total:		\$59,601.00

PROFILES: The following profiles outline the potential restoration projects identified through a series of discussions and site inspections with the landowners. Landowners have confirmed that they would like to pursue NRDP funding for these activities. Most of the activities are inexpensive activities on small properties used for small-scale hay production, seasonal grazing, or recreation. Two recently established existing projects installed by Mile High Conservation District/NRCS EQIP/WRC need further monitoring, and the USFS property BG-03 has an active beaver complex and extremely high quality habitat deserving protection.

None of these projects requires further engineering, and the BG-12 project already has a set of engineering plans prepared by Mile High CD funding. These projects are ready for development of landowner agreements once NRDP and other stakeholders have reviewed the profiles, budgets have been reviewed, and stakeholder comments are incorporated. Once landowner agreements are in place, the projects can move into preparation of bid packages.

Browns Gulch Aquatic Restoration, Natural Resource Damage Program, 2014

PROJECT PROFILE: BG-00 Heavens Valley Ranch Riparian Corridor Restoration

*Type of Project: Riparian habitat restoration and protection through addition of large woody debris by directional felling of dead lodgepole pine over stream (passive restoration).	
*Landowner: Land Use: Summer grazing/recreation.	
*Location: Upper Browns Gulch at Lat. /Long. 46.1405, -112.5606	Assessment Status: Reach BG-00 scored 62% in NRCS-2013. Bank erosion in 2013 was 6% of reach.
<p>*Description of Project: The landowner is open to improving fish and riparian wildlife habitat while maintaining a small grazing lease, but does not want to cross-fence or riparian fence. Yet cattle impact on streambanks and vegetation needs to be addressed if fish habitat is to improve. Since the property has numerous beetle-killed lodgepole pine, an option is to place larger dead trees (LWD) in a criss-cross overlapping pattern above the stream and banks. This will provide physical exclusion of cattle from the stream banks and bed, and foster woody plant recovery, provide shade, cover and aquatic habitat complexity (as LWD deteriorates).</p> <p>This would be an experimental passive restoration strategy, one which was recommended by Steve Gerdes, the fish biologist on this Ranger District for many years. The work will need to be done by experienced tree fellers, facilitated by logging equipment, although some can be done by hand. Suitable material is available in many places very near the channel; in a few instance felled trees would need to be dragged (preferably in winter). Gaps in the LWD complexes will allow cattle and wildlife to easily move through the stream corridor.</p> <p>Activities: Felling and placing large trees along channel in a criss-cross pattern to protect banks and young vegetation from ungulates, as well as provide shade, cover for fishery.</p> <p>Distinctive Characteristics: Experimental low-cost passive habitat enhancement approach with a willing landowner. Reaches are adjacent to National Forest grazing allotments above and below this site, so if successful, the approach can be replicated and expanded on public land.</p> <p>Dimensions: Total of approximately 1700 ft. of streambank with 8-10 30ft. logs per 100 ft.</p>	
*Specific Restoration Benefits/Connection to Limiting Factors: Improves native riparian woody vegetation cover in a reach which is suffering physical impact to floodplain, banks and stream bed in a headwater reach with good stream temperatures and some fair quality habitat. Will improve bank stability, sediment supply, habitat quality.	
*Other Benefits, landowner incentives: Provides better wildlife habitat.	
*Next Steps in Project Development/Implementation: Review concept with Conservation District and Montana FWP to determine acceptability of the proposed treatment. Review USFS	

interest and explore enlarging project onto adjacent public land.			
*Budget:	Logging equipment: mobilization, 3 days work @ \$1500/day		\$7500
	Contingency, project Coordination, permitting, contracting.		25 %
	TOTAL:	=	\$9375
*Funders/Status: Landowner will not provide match.			

Map/diagram of Heavens Valley proposed LWD passive restoration reaches.



Yellow line denotes areas where LWD might be placed to promote passive restoration of banks. Property immediately upstream and downstream is USFS ownership.

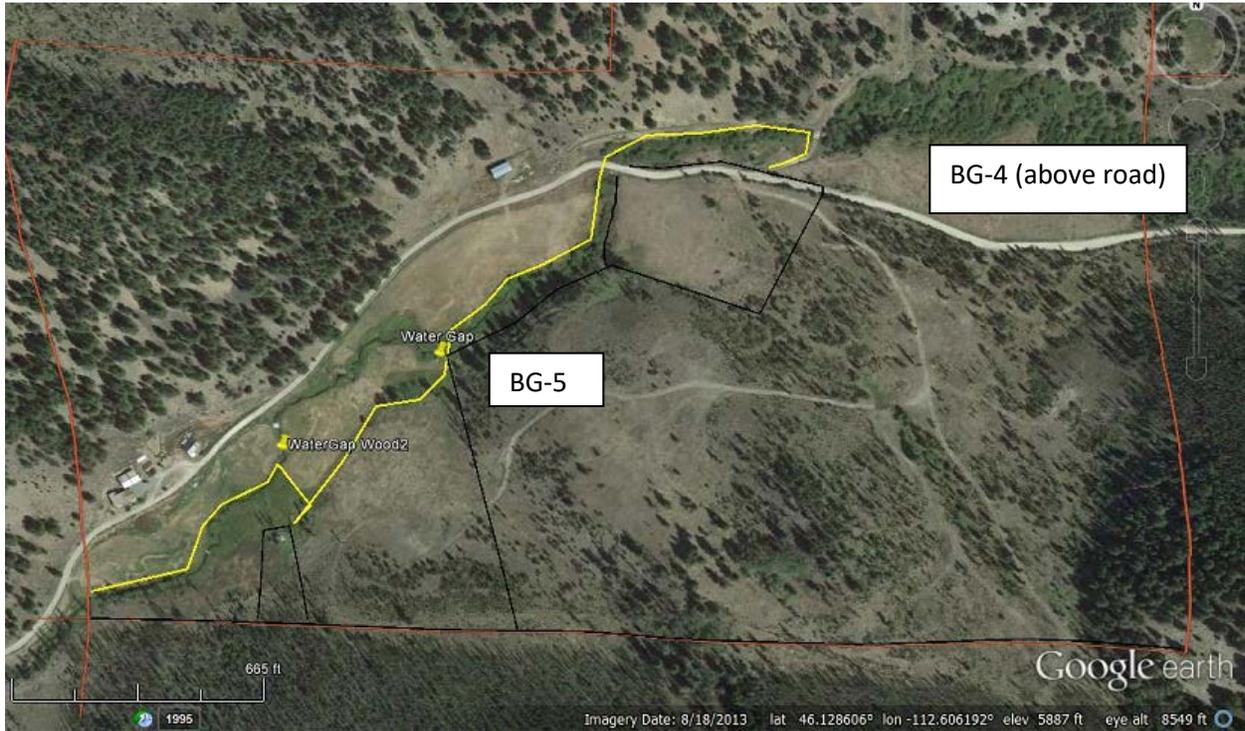
Browns Gulch Aquatic Restoration, Natural Resource Damage Program, 2014

PROJECT PROFILE: BG-04/05 Wood Ranch Riparian Corridor Restoration

<p>*Type of Project: Riparian habitat restoration through grazing management in the riparian zone—use of riparian fencing and revegetation.</p>																
<p>*Landowner: <u>Grazing Leasee:</u></p>																
<p>*Location: Upper Browns Gulch Lat. /Long. 46.1280 -112.6094</p>	<p>Assessment Status: Reaches BG-4/5 scored 75, 52 in 2005. Bank erosion 4-5% in 2011. Poor woody veg in BG5</p>															
<p>*Description of Project:</p> <p><u>Activities:</u> Create two riparian exclosures below the road, and one above the road, that protect the Browns Gulch mainstem riparian corridor as it traverses a large hayfield (BG-5). The exclosures will be three-wire high-tensile electric fence with a solar charger. Two double water gaps (crossing-gaps) hardened with gravel-cobble will allow the livestock to drink, and to cross the stream in a designated area. Flood irrigated hay production and early fall aftermath grazing of cattle will continue. Current grazing pressure is light, but willows were physically removed in past, and sporadically present.</p> <p><u>Distinctive Characteristics:</u> One section of the creek will remain unfenced due to logistical issues, but there the riparian revegetation can be compared between fenced and unfenced sections. Exclosures also protect some springs and associated native vegetation. Grazing plan may allow sheep for weed control as necessary.</p> <p><u>Dimensions:</u> The upper exclosure protects 630 feet of channel and the lower exclosure protects 680 feet. The middle unprotected section is about 500 feet in length.</p>																
<p>*Specific Restoration Benefits/Connection to Limiting Factors: Improves native riparian woody vegetation cover in a reach which was stripped of woody plants historically, providing additional shade, bank stability, and riparian habitat.</p>																
<p>*Other Benefits, including landowner incentives: Landowners are supportive if grazing lease income not diminished. Provides crossing for cattle and hay machinery.</p>																
<p>*Next Steps in Project Development/Implementation: Design, detailed cost estimate, possible integration into EQIP contract grazing plan.</p>																
<table> <tr> <td>*Budget:</td> <td>High-tensile 3-wire @ \$1.20/ft x 6000 feet =</td> <td>\$7,200</td> </tr> <tr> <td></td> <td>Double crossing water gap (installed) @ \$4000 x 2 =</td> <td>\$8,000</td> </tr> <tr> <td></td> <td>Reveg with 2-yr old containerized stock @\$15 x 100 =</td> <td>\$1,500</td> </tr> <tr> <td></td> <td>Project Coordination, permitting, contracting.</td> <td>15 %</td> </tr> <tr> <td></td> <td>TOTAL:</td> <td>= \$ 19,205</td> </tr> </table>		*Budget:	High-tensile 3-wire @ \$1.20/ft x 6000 feet =	\$7,200		Double crossing water gap (installed) @ \$4000 x 2 =	\$8,000		Reveg with 2-yr old containerized stock @\$15 x 100 =	\$1,500		Project Coordination, permitting, contracting.	15 %		TOTAL:	= \$ 19,205
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	Reveg with 2-yr old containerized stock @\$15 x 100 =	\$1,500														
	Project Coordination, permitting, contracting.	15 %														
	TOTAL:	= \$ 19,205														

*Funders/Status: No funding secured. Landowner funding not an option. Not signed up in EQIP.

Map/diagram of Wood Ranch proposed riparian exclosures and water gaps:



Proposed fences in YELLOW. Existing fences are BLACK.

Browns Gulch Aquatic Restoration, Natural Resource Damage Program, 2014

PROJECT PROFILE: BG-09 Brothers Ranch Riparian Corridor Restoration

<p>*Type of Project: Riparian habitat restoration and protection through stream bank stabilization/re-vegetation.</p>	
<p>*Landowner: Land Use: Grass hay, light grazing.</p>	
<p>*Location: Upper Browns Gulch at Lat. /Long. 46.0979, -112.62222</p>	<p>Assessment Status: Reach BG-12 scored 58% in NRCS-2005. Bank erosion in 2011 was 4% of reach.</p>
<p>*Description of Project: The landowner would like to reduce bank erosion and maintain a stable boundary between stream corridor and hayfield by doing some minor bank stabilization. This is a channelized reach, probably since the 1960s. The family formerly installed some small rock in the bank toe in much of the ranch to reduce under-cutting and channel meander. From their perspective, this has worked well, and habitat, though restricted to a narrow corridor, is not in bad shape given the situation. The rock toes are entirely overgrown with grass/sedges/willows, and barely noticeable. Some pools and runs exist. Willows, including many healthy mature specimens, have re-established in about 60% of the ranch's 0.66 mile-long reach, and are providing some bank stability, shade, and cover for the fishery. The channelized reach has evolved to a fairly stable state. Sites without rock toes, have continued to laterally erode into hayfields, through undercutting and caving. These are the sites where the landowner would like to install more rock toe (6"-10" rock, flat to angular) by peeling back sod, placing rock toes, then replacing sod and replanting willows.</p> <p>Activities: Construct 600 ft. of stabilized bank using rock toe and in situ sod, and re-vegetate with native willows.</p> <p>Distinctive Characteristics: Innovative landowner experience in bank stabilization with in situ sod for small-scale commercial agricultural land. Grazing is very light and does not appear to be major impact on the stream banks or willow community. Provides some habitat improvement where agriculture is destined to continue, and stream conservation corridor can not widen. Landowner would like to construct the project personally.</p> <p>Dimensions: The project would affect two reaches, one about 450 ft. in length at north end of property, and one of 150 ft. at south end. Coverage approximately 50% of banks where existing willows are not sufficient to stabilize banks.</p>	
<p>*Specific Restoration Benefits/Connection to Limiting Factors: Improves native riparian woody vegetation cover in a reach which was partially stripped of woody plants historically, providing additional shade, bank stability, and riparian habitat.</p>	
<p>*Other Benefits, landowner incentives: Provides relief from erosion of hayfield.</p>	
<p>*Next Steps in Project Development/Implementation: Review concept with Conservation District and Montana FWP to determine acceptability of the proposed treatment.</p>	

* Budget: Rock at \$30/yd.x 10 yds/45 ft. x 600 feet (135 yds)	=	\$ 4,000
Installation, \$1500/day heavy equipment x 7 days	=	\$ 10,500
Willows, installed @\$15/plant 2 gal. containers	=	\$ 750
Project Coordination, permitting, contracting.		15 %
TOTAL:	=	\$17,537

*Funders/Status: Landowner will provide some time/heavy equipment match funding.

Map/diagram of Brothers Ranch proposed bank stabilization:



Yellow line denotes areas where landowner wishes to install rock toe to stabilize and revegetate banks.

Browns Gulch Aquatic Restoration, Natural Resource Damage Program, 2014

PROJECT PROFILE: BG-12 Malyevac Ranch Riparian Corridor Restoration

<p>*Type of Project: Riparian habitat restoration and protection through use of culvert removal, stream bank stabilization/revegetation, fencing.</p>																			
<p>*Landowner: Land Use: Some grass hay, several horses graze aftermath.</p>																			
<p>*Location: Upper Browns Gulch at confluence with Hail Columbia. Lat. /Long. 46.0702, -112.6138</p>	<p>Assessment Status: Reach BG-12 scored 63% in NRCS-2005. Bank erosion in 2011 was 1% of reach (reach included downstream property owner as well).</p>																		
<p>*Description of Project: This channelized reach has evolved to a fairly stable state. There is an undersized culvert no longer used as a crossing, just upstream of Hail Columbia. This has caused locally severe bank erosion at downstream side. Removing the culvert and stabilizing the stream bank is a small-scale activity which could benefit aquatic habitat. There is also a non-functional irrigation diversion for this property on upstream neighbor ground, which could be removed/modified.</p> <p>Activities: Remove undersized culvert, renaturalize channel, then construct 150 ft. of stabilized/revegetated bank downstream. Use electric fence to protect new bank work, confluence of Hail Columbia and the wetland on east side of creek. Build a small water gap for livestock use below Hail Columbia.</p> <p>Distinctive Characteristics: Very small-scale project. Not commercial agriculture.</p> <p>Dimensions: The total size of pasture system is about 12 acres, which includes 0.3 miles (1600 linear feet) of Browns Gulch channel. Only 150 ft. of channel would be actively treated, with electric fencing protecting a total of 600 ft. of channel and riparian wetland.</p>																			
<p>*Specific Restoration Benefits/Connection to Limiting Factors: Improves native riparian woody vegetation cover in a reach which was partially stripped of woody plants historically, providing additional shade, bank stability, and riparian habitat.</p>																			
<p>*Other Benefits, landowner incentives: Provides water gap for horses.</p>																			
<p>*Next Steps in Project Development/Implementation: Final design completed already by KC Harvey. Detailed cost estimate needed.</p>																			
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	TOTAL:	= \$13,484																	
<p>*Funders/Status: Did have DEQ funding--insufficient. Landowner will not match funding.</p>																			

Map/diagram of Malyevac Ranch proposed riparian pasture and water gap:

