

FFIP PROJECT & LAND USE MONITORING FORM

Project #:	004-08	Project Title:	Cottonwood Creek Irrigation Diversion
Date:	8/23/2017	Evaluator:	Kyrsten Wolterstorff
Waterbody Name:	Cottonwood Creek	Project Type:	Irrigation Diversion

Riparian, channel re , bank stabilization, passage, (Some projects may have multiple types)

Land Use Information (all projects)

	Yes	No	Unk.	NA
Does the project have a signed project agreement?	✓			
Land use type (Livestock, Residential, Public, Recreational, Agriculture, Timber, Other)	Other			
Was a PFC assessment conducted?		✓		
Has the trend in riparian condition improved since last visited or last photo?	✓			
Is project in overall compliance with project agreement?		✓		
Comments	Denil fish ladder and screw gate never installed. Check boards still leak.			

Photo Points

Frame #	Lat	Long	Facing?	Scene description/Previous Photo
1	45.938925	-110.542305	North	Looking upstream at check dam
2	45.938925	-110.542305	South	Looking downstream from check dam
3	45.938960	-110.542380	East	Looking at diversion intake from ditch
4	45.938920	-110.542317	East	Looking across check dam
5	45.938920	-110.542317	East	Looking across check dam
6	45.938920	-110.542317	East	Pool below check dam
7	45.938920	-110.542317	North	Looking across diversion intake
8	45.938960	-110.542380	West	Water in ditch with diversion intake closed
9	45.938832	-110.544121	North	Bear above ditch

Riparian (Fencing) Projects

Does the project agreement include grazing stipulations?(No, Exclosure, Grazing plan, Unk, NA)	Yes	No	Unk	NA
Was fencing installed to exclude livestock?				
If fenced, is the fencing in functional condition?				
If fenced, has grazing occurred within the fenced area?				
If grazed, is grazing in compliance with submitted mngt plans?				
Level of observed browsing on riparian shrubs. (None, Sparse, Moderate, Heavy, NA)				
Density of riparian shrubs present. (None, Sparse, Common, Abundant, NA)				
Age classes of riparian shrubs present. (None, One, Several, All, NA)				
Channel Stability? (Stable, Unstable, Aggrading, Degrading, Unknown)				
Channel Conditions? (Over-widened&shallow; Narrow&deep; Intermediate; Multi-thread)				

Streambank Stabilization Projects

Current length of stream bank protected. (# Feet or Unknown)	
Type of stabilization used. (Root wads, Soil wrap, Willow plantings, Rip rap, Other-describe)	
Current condition of stream bank. (Stable, Unstable, Eroding, Percent stable/unstable)	
Has stream bank migrated. (No, Into stream, Into bank, Unknown)	
Is any infrastructure (fence, etc.) in danger of being compromised. (No, Yes-describe)	
Predominant bank angle within stabilization. (Under cut, 90°-45°, <45°)	

Channel Restoration Projects

Channel stability? (Stable, Unstable, Aggrading, Degradating, Unknown)	
Channel Conditions? (Over-widened & shallow; Narrow & deep; Intermediate, Multi-thread)	
Condition of habitat enhancement structures. (Stable, Eroding, NA)	
Complexity of stream channel? (Pool-riffle, No pools, Wood forced pools, Lateral scour pools)	
Percent of stream reach in pools. (~total pool length/total stream length)	
Habitat enhancement structures involved? (LWD, Rootwads, Cross vanes, Other)	
Condition of habitat structures? (Stable, Eroded, Unknown)	

Comments:

(Existing land use?;Weeds?; Beneficial to fishery?; Public access?; Needs? What did we learn? ;etc.)

Deep pools formed below diversion and above on west side (see project sketch).
 Moderate/heavy sedimentation, does not impede function of diversion or fish ladder.
 Diversion and ladder appear to be in good, working condition with the exception of some leakage into the ditch when check boards are in place (2-5 inches of water throughout ditch). Although it is mostly functional, this is not what the application described.
 No fish seen in ditch

Denil fish ladder was never installed, but it appears that adult fish can pass over the diversion.
 Screw gate never installed, check boards used instead.

Good spawning gravel near diversion
 Black bear seen near ditch, three moose in front yard. Elk sign present.

Access from Logan Guest Ranch. Go through gate by shed in northwest corner and follow road up to ditch. Walk along ditch for about 0.5 miles to reach head gate.

Land Owner Comments: Bruce Arthun 1855 HWY 89 N Wilsall, MT 59086 Home: (406) 686-4679 Cell: (406) 220-3705

Has this project been beneficial to you?	
Has project improved stream/riparian conditions?	
Effects on land use?	
Weeds?	
Noticable change in fishery?	
Thoughts for future work?	

Cottonwood Creek Diversion Replacement (004-08)

Image 1



Cottonwood Creek Diversion Replacement (004-08)



Image 2

Cottonwood Creek Diversion Replacement (004-08)



Image 3



Cottonwood Creek Diversion Replacement (004-08)



Image 5

Cottonwood Creek Diversion Replacement (004-08)

Image 6





Cottonwood Creek Diversion Replacement (004-08)



Image 8

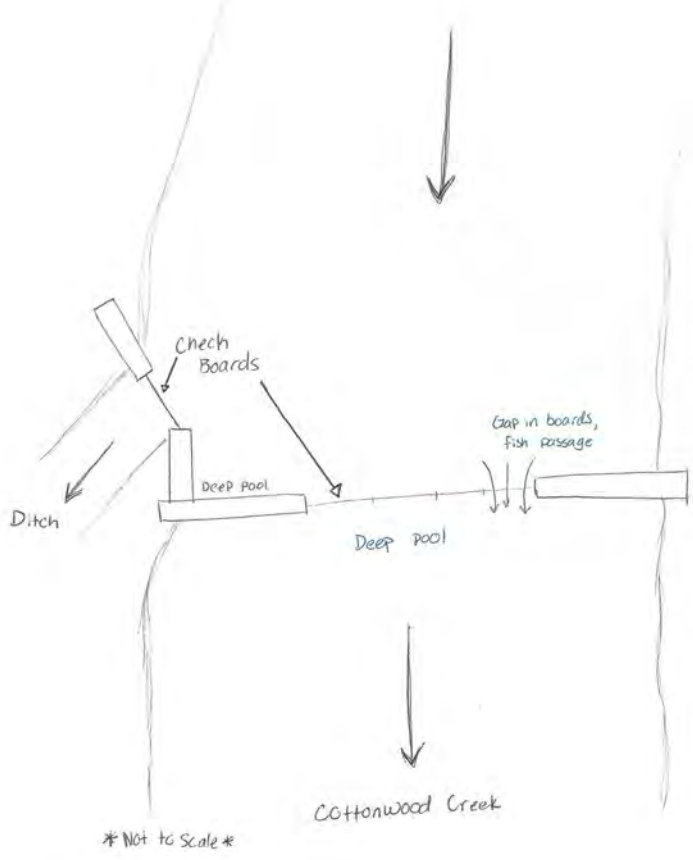
Cottonwood Creek Diversion Replacement (004-08)



Image 9

Cottonwood Creek Diversion Replacement (004-08)

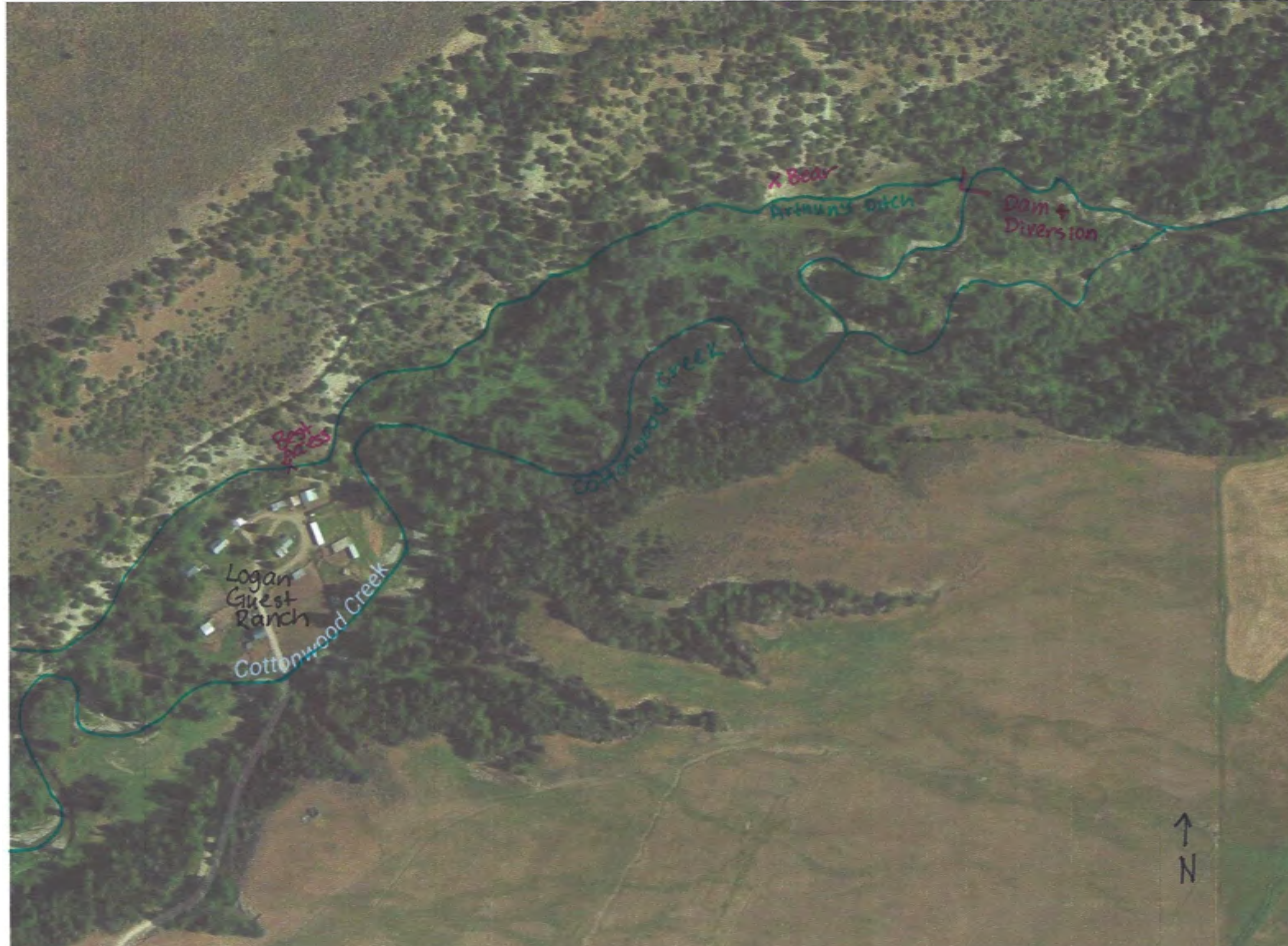
Sketch of diversion/dam structure



Cottonwood Creek Diversion Replacement (004-08)

Close up aerial





FFIP PROJECT & LAND USE MONITORING FORM

Project #:	008-02	Project Title:	East Boulder River (Deegan off stream livestock watering)
Date:	8/16/2017	Evaluator:	Kyrsten Wolterstorff
Waterbody Name:	East Boulder River	Project Type:	Riparian

Riparian, channel re , bank stabilization, passage, (Some projects may have multiple types)

Land Use Information (all projects)

	Yes	No	Unk.	NA
Does the project have a signed project agreement?	✓			
Land use type (Livestock, Residential, Public, Recreational, Agriculture, Timber, Other)	Livestock			
Was a PFC assessment conducted?		✓		
Has the trend in riparian condition improved since last visited or last photo?	✓			
Is project in overall compliance with project agreement?	✓			
Comments				

Photo Points

Frame #	Lat	Long	Facing?	Scene description/Previous Photo
1	45.60772	-110.11956	North	Downstream from road by house
2	45.60772	-110.11956	South	Upstream from road by house
3	45.60776	-110.11957	North	Grazing impact
4	45.60811	-110.11932	East	Downstream from road by river
5	45.60811	-110.11932	West	Upstream from road by river
6	45.60943	-110.12096	North	Livestock waterer #1
7	45.60916	-110.12113	North	Livestock waterer #2
8	45.60855	-110.12143	West	Livestock waterer #3
9	45.60890	-110.12125	North	Old creek bed
10	45.60933	-110.12085	South	Old creek bed

Riparian (Fencing) Projects

Does the project agreement include grazing stipulations?(No, Exclosure, Grazing plan, Unk, NA)	Exclosure			
	Yes	No	Unk	NA
Was fencing installed to exclude livestock?	✓			
If fenced, is the fencing in functional condition?	✓			
If fenced, has grazing occurred within the fenced area?		✓		
If grazed, is grazing in compliance with submitted mngt plans?				✓
Level of observed browsing on riparian shrubs. (None, Sparse, Moderate, Heavy, NA)	None in fence, sparse/			
Density of riparian shrubs present. (None, Sparse, Common, Abundant, NA)	Sparse			
Age classes of riparian shrubs present. (None, One, Several, All, NA)	One			
Channel Stability? (Stable, Unstable, Aggrading, Degrading, Unknown)	Stable			
Channel Conditions? (Over-widened&shallow; Narrow&deep; Intermediate; Multi-thread)	Narrow/Deep			

Streambank Stabilization Projects

Current length of stream bank protected. (# Feet or Unknown)	
Type of stabilization used. (Root wads, Soil wrap, Willow plantings, Rip rap, Other-describe)	
Current condition of stream bank. (Stable, Unstable, Eroding, Percent stable/unstable)	
Has stream bank migrated. (No, Into stream, Into bank, Unknown)	
Is any infrastructure (fence, etc.) in danger of being compromised. (No, Yes-describe)	
Predominant bank angle within stabilization. (Under cut, 90°-45°, <45°)	

Channel Restoration Projects

Channel stability? (Stable, Unstable, Aggrading, Degrading, Unknown)	
Channel Conditions? (Over-widened & shallow; Narrow & deep; Intermediate, Multi-thread)	
Condition of habitat enhancement structures. (Stable, Eroding, NA)	
Complexity of stream channel? (Pool-riffle, No pools, Wood forced pools, Lateral scour pools)	
Percent of stream reach in pools. (~total pool length/total stream length)	
Habitat enhancement structures involved? (LWD, Rootwads, Cross vanes, Other)	
Condition of habitat structures? (Stable, Eroded, Unknown)	

Comments:

(Existing land use?;Weeds?; Beneficial to fishery?; Public access?; Needs? What did we learn? ;etc.)

Cattle have no access to creek.
 Not much riparian shrub recruitment, but the few that are present appear to be healthy and with no grazing.
 Off-site livestock waterers had no water at the time of visit, but there were no cattle on the property. They appear to be in good condition.
 Old creek channel still very green and some standing water/mud behind barn, no flowing water though.

Land Owner Comments: Deegans (406) 932-6134 148 E Boulder Rd, McLeod, MT

Has this project been beneficial to you?	
Has project improved stream/riparian conditions?	
Effects on land use?	
Weeds?	
Noticable change in fishery?	
Thoughts for future work?	

East Boulder Spring Creek Stream Relocation and Off-Channel Stock Water (008-02)



Photo 1



Photo 2

East Boulder Spring Creek Stream Relocation and Off-Channel Stock Water (008-02)



Photo 3



Photo 4

East Boulder Spring Creek Stream Relocation and Off-Channel Stock Water (008-02)



Photo 5



Photo 6



Photo 7



Photo 8

East Boulder Spring Creek Stream Relocation and Off-Channel Stock Water (008-02)



Photo 9



Photo 10

X = off-site water - - - = Fence



FFIP PROJECT & LAND USE MONITORING FORM

Project #:	039-02	Project Title:	East Gallatin River
Date:	6/29/2017	Evaluator:	Kyrsten Wolterstorff
Waterbody Name:	East Gallatin River	Project Type:	Bank Stabilization

Riparian, channel re , bank stabilization, passage, (Some projects may have multiple types)

Land Use Information (all projects)

	Yes	No	Unk.	NA
Does the project have a signed project agreement?			✓	
Land use type (Livestock, Residential, Public, Recreational, Agriculture, Timber, Other)	Agriculture			
Was a PFC assessment conducted?		✓		
Has the trend in riparian condition improved since last visited or last photo?			✓	✓
Is project in overall compliance with project agreement?	✓			
Comments	Image 11 (45.73833, 111.06898) Looking downstream towards site 2 and bridge			

Photo Points

Frame #	Lat	Long	Facing?	Scene description/Previous Photo
1	45.73852	111.06915	South	Looking upstream towards site 1
2	45.73803	111.06922	North	Looking downstream towards site 1
3	45.73833	111.06898	South	View of gravel bar at site 1
4	45.73871	111.06893	West	View of site 2
5	45.73871	111.06893	South	Looking upstream from bridge
6	45.73871	111.06893	North	Looking downstream from bridge
7	45.73958	111.06961	North	Cottonwoods at Site 3
8	45.73951	111.06973	North	Fence falling in at site 3
9	45.73958	111.06976	South	View upstream of site 3
10	45.73951	111.06973	Southwest	View downstream of site 3

Riparian (Fencing) Projects

Does the project agreement include grazing stipulations?(No, Exclosure, Grazing plan, Unk, NA)	Yes	No	Unk	NA
Was fencing installed to exclude livestock?				
If fenced, is the fencing in functional condition?				
If fenced, has grazing occurred within the fenced area?				
If grazed, is grazing in compliance with submitted mngt plans?				
Level of observed browsing on riparian shrubs. (None, Sparse, Moderate, Heavy, NA)				
Density of riparian shrubs present. (None, Sparse, Common, Abundant, NA)				
Age classes of riparian shrubs present. (None, One, Several, All, NA)				
Channel Stability? (Stable, Unstable, Aggrading, Degrading, Unknown)				
Channel Conditions? (Over-widened&shallow; Narrow&deep; Intermediate; Multi-thread)				

Streambank Stabilization Projects ✓

Current length of stream bank protected. (# Feet or Unknown)	700
Type of stabilization used. (Root wads, Soil wrap, Willow plantings, Rip rap, Other-describe)	Other (see below)
Current condition of stream bank. (Stable, Unstable, Eroding, Percent stable/unstable)	Stable,Eroding
Has stream bank migrated. (No, Into stream, Into bank, Unknown)	Into bank
Is any infrastructure (fence, etc.) in danger of being compromised. (No, Yes-describe)	Yes, fences
Predominant bank angle within stabilization. (Under cut, 90°-45°, <45°)	Under cut, 90-45

Channel Restoration Projects □

Channel stability? (Stable, Unstable, Aggrading, Degradating, Unknown)	
Channel Conditions? (Over-widened & shallow; Narrow & deep; Intermediate, Multi-thread)	
Condition of habitat enhancement structures. (Stable, Eroding, NA)	
Complexity of stream channel? (Pool-riffle, No pools, Wood forced pools, Lateral scour pools)	
Percent of stream reach in pools. (~total pool length/total stream length)	
Habitat enhancement structures involved? (LWD, Rootwads, Cross vanes, Other)	
Condition of habitat structures? (Stable, Eroded, Unknown)	

Comments:

(Existing land use?;Weeds?; Beneficial to fishery?; Public access?; Needs? What did we learn? ;etc.)

Plan: banks re-sloped at sites 1 and 2, erosion mat at site 1, soil lifts at site 2, revegetate sites 1 and 2 with shrubs and grasses, straw bales or juniter trees attached to cottonwood logs at site 3

Reed canary grass and leafy spurge present along banks and in pasture. Few willows and dogwoods present
 Banks still steep with a 10+ inch 90 degree drop off to water level at sites 1 and 2. Banks stable until drop off, then slightly undercut. Owner says she is unsure if they were ever re-sloped as described in plans.
 Owner reports erosion mats were installed at sites 1 and 2, but plants have taken root now and they are no longer visible
 Cottonwoods at site 3 have mostly washed away, cannot tell if straw bales were ever attached as planned. Banks about 5 feet tall and undercut.
 Rock bar at site 1 has reformed

Part of stream cuts across pasture in high water (not related to the restoration, but landowner commented on it)

Land Owner Comments: Donna Hoffman (406) 579-7071

Has this project been beneficial to you?	Sites 1 and 2 yes. Site 3 no, lose ground every year even in low water.
Has project improved stream/riparian conditions?	yes
Effects on land use?	Bank at site 3 still erodes badly, fences need moved back
Weeds?	N/A
Noticable change in fishery?	N/A
Thoughts for future work?	N/A



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Site 3

Bridge

Site 2

Site 1

East Gallatin River

Churn Creek

FFIP PROJECT & LAND USE MONITORING FORM

Project #:	009-02	Project Title:	Elk Creek spring corral bypass
Date:	8/16/2017	Evaluator:	Kyrsten Wolterstorff
Waterbody Name:	Elk Creek	Project Type:	Riparian

Riparian, channel re , bank stabilization, passage, (Some projects may have multiple types)

Land Use Information (all projects)

	Yes	No	Unk.	NA
Does the project have a signed project agreement?	✓			
Land use type (Livestock, Residential, Public, Recreational, Agriculture, Timber, Other)	Livestock			
Was a PFC assessment conducted?		✓		
Has the trend in riparian condition improved since last visited or last photo?	✓			
Is project in overall compliance with project agreement?	✓			
Comments				

Photo Points

Frame #	Lat	Long	Facing?	Scene description/Previous Photo
1	45.58310	-110.10901	North	Pipe inlet
2	45.58310	-110.10901	North	Pipe inlet
3	45.58324	-110.10892	South	Pipe outlet
4	45.58321	-110.10912	West	Automatic stock waterer
5	45.58321	-110.10896	East	Corral
6	45.58321	-110.10896	South	Corral above pipeline
7	45.58333	-110.10912	West	Riparian fence section

Riparian (Fencing) Projects

Does the project agreement include grazing stipulations?(No, Exclosure, Grazing plan, Unk, NA)	No			
	Yes	No	Unk	NA
Was fencing installed to exclude livestock?	✓			
If fenced, is the fencing in functional condition?	✓			
If fenced, has grazing occurred within the fenced area?				✓
If grazed, is grazing in compliance with submitted mngt plans?				✓
Level of observed browsing on riparian shrubs. (None, Sparse, Moderate, Heavy, NA)	NA			
Density of riparian shrubs present. (None, Sparse, Common, Abundant, NA)	Abundant			
Age classes of riparian shrubs present. (None, One, Several, All, NA)	All			
Channel Stability? (Stable, Unstable, Aggrading, Degrading, Unknown)	Stable			
Channel Conditions? (Over-widened&shallow; Narrow&deep; Intermediate; Multi-thread)	Intermediate			

Streambank Stabilization Projects

Current length of stream bank protected. (# Feet or Unknown)	
Type of stabilization used. (Root wads, Soil wrap, Willow plantings, Rip rap, Other-describe)	
Current condition of stream bank. (Stable, Unstable, Eroding, Percent stable/unstable)	
Has stream bank migrated. (No, Into stream, Into bank, Unknown)	
Is any infrastructure (fence, etc.) in danger of being compromised. (No, Yes-describe)	
Predominant bank angle within stabilization. (Under cut, 90°-45°, <45°)	

Channel Restoration Projects

Channel stability? (Stable, Unstable, Aggrading, Degrading, Unknown)	
Channel Conditions? (Over-widened & shallow; Narrow & deep; Intermediate, Multi-thread)	
Condition of habitat enhancement structures. (Stable, Eroding, NA)	
Complexity of stream channel? (Pool-riffle, No pools, Wood forced pools, Lateral scour pools)	
Percent of stream reach in pools. (~total pool length/total stream length)	
Habitat enhancement structures involved? (LWD, Rootwads, Cross vanes, Other)	
Condition of habitat structures? (Stable, Eroded, Unknown)	

Comments:

(Existing land use?;Weeds?; Beneficial to fishery?; Public access?; Needs? What did we learn? ;etc.)

Water flows through pipe under corral. No runoff through corrals.
 Some trees/shrubs in front of pipe ends, but does not impede flows in any way.
 No cattle access to creeks from corrals. Fences within corral in slight disrepair, but nothing so bad livestock could access creeks.
 Automatic stock waterer had water in it. Ranch hand says it occasionally plugs up, but we think there may be something stuck in the drain pipe. This did not seem to be of much importance and could probably be remedied with routine maintenance.

Land Owner Comments: Walter Snodell (406) 932-5572

Has this project been beneficial to you?	
Has project improved stream/riparian conditions?	
Effects on land use?	
Weeds?	
Noticable change in fishery?	
Thoughts for future work?	



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



FFIP PROJECT & LAND USE MONITORING FORM

Project #:	047-03	Project Title:	Fridley Creek
Date:	6/30/2017	Evaluator:	Kyrsten Wolterstorff
Waterbody Name:	North Fork Fridley Creek	Project Type:	Passage, Channel Restoration

Riparian, channel re , bank stabilization, passage, (Some projects may have multiple types)

Land Use Information (all projects)

	Yes	No	Unk.	NA
Does the project have a signed project agreement?	✓			
Land use type (Livestock, Residential, Public, Recreational, Agriculture, Timber, Other)	Livestock			
Was a PFC assessment conducted?		✓		
Has the trend in riparian condition improved since last visited or last photo?	✓			
Is project in overall compliance with project agreement?	✓			
Comments				

Photo Points

Frame #	Lat	Long	Facing?	Scene description/Previous Photo
1	45.36004	110.73633	West	Looking upstream rock weir (matches old photo)
2	45.35995	110.73661	East	Looking downstream rock weir (matches old photo)
3	45.35971	110.73763	North	Looking downstream (matches old photo)
4	45.36039	110.73972	North	Center pivot (matches old photo)
5	45.35920	110.74084	Northeast	Looking downstream (matches old photo)
6	45.35987	110.73650	Northeast	Culvert going under canal (matches old photo)
7	45.35986	110.73557	West	Culvert discharge (matches old photo)
8	45.35991	110.73607	Northeast	Looking downstream culvert discharge (matches old photo)
9	45.35986	110.73577	Northeast	Looking downstream culvert discharge (matches old photo)
10	45.35986	110.73874	East	Pump station

Riparian (Fencing) Projects

	Yes	No	Unk.	NA
Does the project agreement include grazing stipulations?(No, Exclosure, Grazing plan, Unk, NA)				
Was fencing installed to exclude livestock?				
If fenced, is the fencing in functional condition?				
If fenced, has grazing occurred within the fenced area?				
If grazed, is grazing in compliance with submitted mgmt plans?				
Level of observed browsing on riparian shrubs. (None, Sparse, Moderate, Heavy, NA)				
Density of riparian shrubs present. (None, Sparse, Common, Abundant, NA)				
Age classes of riparian shrubs present. (None, One, Several, All, NA)				
Channel Stability? (Stable, Unstable, Aggrading, Degrading, Unknown)				
Channel Conditions? (Over-widened&shallow; Narrow&deep; Intermediate; Multi-thread)				

Streambank Stabilization Projects

Current length of stream bank protected. (# Feet or Unknown)	
Type of stabilization used. (Root wads, Soil wrap, Willow plantings, Rip rap, Other-describe)	
Current condition of stream bank. (Stable, Unstable, Eroding, Percent stable/unstable)	
Has stream bank migrated. (No, Into stream, Into bank, Unknown)	
Is any infrastructure (fence, etc.) in danger of being compromised. (No, Yes-describe)	
Predominant bank angle within stabilization. (Under cut, 90°-45°, <45°)	

Channel Restoration Projects

Channel stability? (Stable, Unstable, Aggrading, Degrading, Unknown)	Stable
Channel Conditions? (Over-widened & shallow; Narrow & deep; Intermediate, Multi-thread)	Intermediate
Condition of habitat enhancement structures. (Stable, Eroding, NA)	
Complexity of stream channel? (Pool-riffle, No pools, Wood forced pools, Lateral scour pools)	Pool-riffle
Percent of stream reach in pools. (~total pool length/total stream length)	
Habitat enhancement structures involved? (LWD, Rootwads, Cross vanes, Other)	Cross vanes (only at w
Condition of habitat structures? (Stable, Eroded, Unknown)	Stable

Comments:

(Existing land use?;Weeds?; Beneficial to fishery?; Public access?; Needs? What did we learn? ;etc.)

Hotwire fence installed to keep cattle out, but they still have access. Hoof prints and feces present.
 Abundant cottonwood trees, alder trees, range grasses, and some willows
 Stream bed a mix of silt and gravel of all clasts, majority silt
 Area above bridge and below culvert mostly unshaded and banked by range grasses and scattered trees, area in middle densely wooded.
 No fish seen. 3 redds seen 7/24

Land Owner Comments: Sean Murphy (406) 640-1112

Has this project been beneficial to you?	Yes
Has project improved stream/riparian conditions?	yes
Effects on land use?	Less water used
Weeds?	N/A
Noticable change in fishery?	Yes, Yellowstone Cutthroat Trout immediately started migrating up channel and spawning. Fry found summer after completion.
Thoughts for future work?	N/A, happy with project



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11



Pivot 2

Pivot 1

Park Branch Canal

Rock Weir

Yellowstone River

North Fridley Creek

Well Site

Siphon