FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

All sections must be addressed, or the application will be considered invalid

I. APPLICANT INFORMATION

A. Applicant Name: Christine Brissette, Trout Unlimited

Mailing Address: 312 North Higgins, Suite 200

City: Missoula State: MT Zip: 59801

Telephone: 406-544-9649 E-mail: cbrissette@tu.org

B. Contact Person (if different than applicant):

Address:

City: State: Zip:

Telephone: E-mail:

C. Landowner and/or Lessee Name (if different than applicant): Lee Metcalf National Wildlife Refuge (USFWS)

Mailing Address: 4567 Wild Fowl Lane

City: Stevensville State: MT Zip: 59870

Telephone: 406-777-5552 E-mail: tom_reed@fws.gov

II. PROJECT INFORMATION

A. Project Name: Reconnecting North Burnt Fork Creek on Lee Metcalf National Wildlife Refuge

River, stream, or lake: North Burnt Fork Creek

Location: Township: 09 Range: 20 W Section: 15

Latitude: 47.5398 Longitude: -114.0950 *Within project (decimal degrees)*

County: Ravalli

B. Purpose of Project:

The purpose of this project is to fully reconnect fish passage between the Bitterroot River and 2.5 miles of spawning habitat in North Burnt Fork Creek. Trout Unlimited and partners will accomplish this by removing a relic water control structure that has been a barrier to fish for over 50 years. North Burnt Fork Creek was historically a major spawning tributary in the Bitterroot and is a priority for MFWP, Bitterroot National Forest, USFWS and non-profit partners like Trout Unlimited. Additionally, this project will improve 1/2 mile of riparian habitat educate the public about the value of habitat connectivity.

C. Brief Project Description (attach additional information to end of application):

The Bitterroot River is among the most popular fishing rivers in western Montana and is home to a suite of native and wild trout species. Each year, these fish migrate into smaller streams to spawn and rear before returning to the River. However, migration and successful recruitment from many of these streams has been severely impaired by a combination of fish passage barriers and habitat loss. Trout Unlimited works with MFWP and federal partners to identify key tributaries where restoration projects can most benefit the Bitterroot fishery. North Burnt Fork Creek has consistently ranked among the highest priorities for regional resource managers.

North Burnt Fork Creek was historically a major spawning ground for Bitterroot fish, including Westslope Cutthroat trout and bull trout, but a pair of standpipes near its mouth has blocked year-round access to this habitat for at least 50 years. Our project will replace this barrier with a bridge, fully opening fish passage while maintaining visitor access to a popular ADA-accessible trail system on Lee Metcalf National Wildlife Refuge. Through a major volunteer effort, we will also plant 450 trees and thousands of willows, ensuring that this newly opened habitat has the shade, cover and bank stability that fish and all Refuge wildlife need to thrive. The net impact will be 2.5 miles stream reconnected to the Bitterroot River, and ½ mile of improved riparian habitat.

Selections from the 50% design planset are attached to this application including the barrier removal, bank restoration, bridge construction, construction of a low water crossing and revegetation. One key element to note is that equipment will only be working in the channel and on streambanks within the vicinity of the existing barrier and at the low water crossing. The broader project area (1/2 mile upstream) will not include channel work, but is included in our revegetation efforts (willow trenches and hand planting with weed mat and fencing).

In addition to its fisheries value, this project is an exceptional opportunity for outreach and education. Lee Metcalf National Wildlife Refuge is a beloved Bitterroot property, hosting 200,000+ visitors annually for wildlife viewing, hunting and education. Our project is located on the highly used, ADA-accessible Wildlife Viewing Area trail system. We will engage Refuge visitors and our community through public scoping, volunteer planting events, public meetings, signage, and collaboration with nature education programs for Bitterroot youth. Bitterroot Audubon, Montana Natural History Center and Bitterroot TU are all partners in this outreach effort.

The project is scheduled to break ground in July 2023 if funding is secured. A Future Fisheries grant would support contractor expenses for bridge fabrication, barrier removal and bank restoration. Importantly, these funds would also provide required non-federal match for a $75,000 award from the USFWS fish passage program.

Finally, it is important to note that this project is one significant component of a broader Burnt Fork strategy being developed by MFWP, Bitterroot National Forest, USFWS and watershed partners like Trout Unlimited. This strategy aims to improve recruitment of fish from lower North Burnt Fork Creek, while protecting the valuable bull trout population in its headwaters. Opening passage at the creek's mouth is a critical step in this strategy, and will be followed by subsequent projects to improve habitat and passage upstream.

D. What was the cause of habitat degradation and how will the project correct the cause?

The primary habitat threat that this project will address is a fish passage barrier at the mouth of North Burnt Fork Creek that has prevented year-round passage into this major tributary for over 50 years. Through this project, the barrier will be removed and a bridge built in its place to maintain public access. Additionally, the riparian community upstream of the barrier is dominated by non-native reed canary grass which provides little bank stability or cover. This project will re-establish native trees and shrubs along 1/2 mile of stream.

E. Length of stream or size of lake that will be treated (project extent): 1/2 mile

Length/size of impact, if larger than project extent (e.g., stream miles opened): 2.5 miles opened, 1/2 mile riparian area improved

F. Project Budget Summary:

Grant Request (Dollars):	**$**	39,970.00
Matching Dollars:	**$**	40,000.00
Matching In-Kind Services:*	**$**	

**salaries of government employees are not considered matching contributions*

Other Contributions (not part of this app)	**$**	147,009.50
Total Project Cost:	**$**	226,979.50

G. Attach itemized (line item) budget – *see budget template*

H. Attach project location map(s) that include:

- [x] Extent of the project, including context (relation to major landmark or town)
- [x] Indication of public and private property
- [ ] Riparian buffer locations and widths (if applicable) and grazing locations

I. Attach project plans:

- [x] Detailed sketches or plan views with the location and proposed restoration
- [x] Pre-project photographs (GPS location strongly recommended)
- [ ] If water leasing or water salvage is involved, attach a supplemental questionnaire (*https://myfwp.mt.gov/getRepositoryFile?objectID=36110*)

J. Attach letters or statements of support (e.g., landowner consent, community or public support, and fish biologist support). List any other project partners:

Letters from USFWS (Refuge System), MFWP and Bitterroot Trout Unlimited are included. Additional partners include USFWS (Ecological Services-bull trout), Westslope Chapter of Trout ~~Unlimited, Bitterroot Audubon, River Design Group (engineering) and Jackson Contractor Group~~ (volunteer bridge construction)

III. MAINTENANCE AND MONITORING (attach additional information to end of application):

A. A 20-year maintenance commitment is required*. Please confirm that you will ensure this protection and describe your approach. Attach any relevant maintenance plans. Yes [x] No [ ]

**If it is a water leasing project, describe the length of the agreement.*

The project site will be protected and maintained by the landowner, Lee Metcalf National Wildlife Refuge (USFWS).

B. Will grazing be part of or adjacent to the project? If so, describe or attach land management plans, including short term and long term grazing regimes. If the landowner is not the applicant, please describe their involvement in the project. *If you want assistance with grazing plan development, note your need.*

No

C. Will the project be monitored to determine if goals were met? If so, what are the short-term and long-term plans to assess benefits and lessons learned? Were pre-project data collected? Will monitoring information be shared with FWP?

Yes. Trout Unlimited will monitor planting survival and channel adjustments following the barrier removal. MFWP also maintains fish sampling sites on the Bitterroot River near the project and North Burnt Fork Creek within the Refuge and has committed to continued sampling post-project. Indicators of project success may include increases of migratory fish and juvenile fish within the project reach or changes in species/age class above and below the current barrier.

Like any restoration project, it will be difficult to show the direct, causal effect of removing the Refuge barrier on fish populations in the Bitterroot River. There are simply too many confounding variables to say that an increase or decrease in the River population was related to one project. That said, we are confident that this project is addressing a limiting factor in the system, as identified through robust and long-term sampling by MFWP.

IV. PROJECT BENEFITS (attach additional information to end of application):

A. What species of fish will benefit from this project?

Bull trout, Westslope cutthroat trout, brown trout, rainbow trout, brook trout and many non-trout species.

B. How will the project protect or enhance wild fish habitat?

The project will remove a passage barrier, fully reconnecting 2.5 miles of North Burnt Fork Creek to the Bitterroot River. A major revegetation effort will improve riparian habitat along 0.5 miles. The Burnt Fork was historically a major spawning tributary for the Bitterroot River.

C. What is the expected improvement to fish populations, both short term and long term? How might the project translate to angler success?

In the Bitterroot River, fish numbers near the project site are less than half of those just 40 miles upstream (973 fish/mile in Darby down to 419 fish/mile in Stevensville). Many factors likely contribute to this population not meeting its potential, but limited access to quality spawning and rearing habitat has been identified by MFWP as a core issue. Removing the barrier at the mouth of the Burnt Fork and opening fish passage should result in improved trout numbers in the Bitterroot River, especially when aligned with other habitat improvement projects in the basin.

D. Will the project increase public fishing opportunity for wild fish and, if so, how? Is public fishing allowed onsite? If not, describe how the public would access the project benefits.

Public fishing is allowed on Lee Metcalf National Wildlife Refuge and will be maintained. Fishing opportunity will be enhanced by improved habitat on the Refuge.

E. Aside from angling, what local or large-scale public benefits will be realized from this project?

This project presents a major outreach and education opportunity. The work will take place on an ADA-accessible walking trail that is heavily used by Bitterroot residents, out-of-state visitors and nature education programs. We will take advantage of this opportunity through public tours, signage and collaboration with education programs (e.g. Trout in the Classroom, Montana Natural History Center Visiting Naturalist). Additionally, the riparian restoration will benefit migratory songbirds, a primary goal of the Refuge and partners like Bitteroot Audubon.

F. Will the project interfere with water or property rights of adjacent landowners? (explain):

No

G. Will the project result in the development of commercial recreational use on the site (including paid access)? Explain:

No

H. Is this project associated with the reclamation of past mining activity?

No

Each approved project applicant must enter into a written agreement with Montana Fish, Wildlife & Parks specifying terms and duration of the project. The applicant must obtain all applicable permits prior to project construction. A competitive bid process must be followed when using State funds.

V. AUTHORIZING STATEMENT

I (we) hereby declare that the information and all statements to this application are true, complete, and accurate to the best of my (our) knowledge and that the project or activity complies with rules of the Future Fisheries Improvement Program.

Applicant Signature: Christine Brissette Digitally signed by Christine Brissette DN: cn=Christine Brissette, o=Trout Unlimited, ou, email=cbrissette@tu.org, c=US Date: 2022.11.09 16:09:19 -07'00' Date: 11/9/2022

Submittal: **Applications must be signed and received on or before November 15 and May 15 to be considered for the subsequent funding period**. Late or incomplete applications will be rejected.

Mail to:	FWP Future Fisheries Fish Habitat Bureau PO Box 200701 Helena, MT 59620-0701	Email:	Future Fisheries Coordinator FWPFFIP@mt.gov (electronic submissions must be signed) For files over 10MB, use https://transfer.mt.gov and send to mmcgree@mt.gov

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Both tables must be completed or the application will be returned

PROJECT COSTS					CONTRIBUTIONS			
WORK ITEMS (Itemize by Category)	**NUMBER OF UNITS**	**UNIT DESCRIPTION***	**COST/UNIT**	**TOTAL COST**	**FUTURE FISHERIES REQUEST**	**MATCH (Cash or Services)****	**OTHER (Not part of this application)**	**TOTAL**
Personnel***								
Survey				$ -				$ -
Design				$ -				$ -
Engineering				$ -				$ -
Permitting				$ -			-	$ -
Project Management (Trout Unlimited)	250	hours	$50.00	$ 12,500.00			12,500.00	$ 12,500.00
Oversight (River Design Group)	90	hours	$120.00	$ 10,800.00			10,800.00	$ 10,800.00
				$ -				$ -
			Sub-Total	$ 23,300.00	$ -	$ -	$ 23,300.00	$ 23,300.00
Travel								
Mileage	1000	miles	$0.63	$ 625.00			625.00	$ 625.00
Per diem				$ -				$ -
			Sub-Total	$ 625.00	$ -	$ -	$ 625.00	$ 625.00
Construction Materials****								
Small wood	1	lump sum	$5,000.00	$ 5,000.00			5,000.00	$ 5,000.00
Brush	1	Lump Sum	$2,500.00	$ 2,500.00			2,500.00	$ 2,500.00
Fill (8-inch minus)	225	Cubic yards	$35.00	$ 7,875.00		7,875.00		$ 7,875.00
Rock (12-14 inch	50	EA	$35.00	$ 1,750.00		1,750.00		$ 1,750.00
Willow cuttings	3075	EA	$1.00	$ 3,075.00			3,075.00	$ 3,075.00
Plants	450	EA	$5.50	$ 2,475.00			2,475.00	$ 2,475.00
Fencing (welded wire, 5x100 roll)	30	EA	$180.00	$ 5,400.00		4,500.00	900.00	$ 5,400.00
T-posts	450	EA	$5.49	$ 2,470.50			2,470.50	$ 2,470.50
Weed mat	450	EA	$3.00	$ 1,350.00		1,350.00		$ 1,350.00
				$ -				$ -
			Sub-Total	$ 31,895.50	$ -	$ 15,475.00	$ 16,420.50	$ 31,895.50
Equipment, Labor, and Mobilization								
Mobilization	1	Lump Sum	$5,000.00	$ 5,000.00		-	5,000.00	$ 5,000.00
Standpipe Removal Site Prep and Dewatering	1	Lump Sum	$17,500.00	$ 17,500.00	17,500.00			$ 17,500.00
Levee Removals	1680	cubic yards	$5.25	$ 8,820.00	8,820.00			$ 8,820.00
Construct low water crossing	1	EA	$3,800.00	$ 3,800.00	2,400.00	1,400.00		$ 3,800.00
Remove check dam and culverts	1	EA	$10,000.00	$ 10,000.00			10,000.00	$ 10,000.00
Bank treatments	375	Linear ft	$35.00	$ 13,125.00		13,125.00		$ 13,125.00

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Floodplain microtopography	0.5	acre	$2,500.00	$ 1,250.00	1,250.00			$ 1,250.00
Revegetation Site Prep	16	hours	$195.00	$ 3,120.00			3,120.00	$ 3,120.00
Bridge Fabrication	1	lump sum	$80,000.00	$ 80,000.00	10,000.00	10,000.00	60,000.00	$ 80,000.00
Bridge Construction	1	lump sum	$15,000.00	$ 15,000.00			15,000.00	$ 15,000.00
Planting and fencing (contractor)	72	hours	$55.00	$ 3,960.00			3,960.00	$ 3,960.00
Planting and fencing (volunteers)	320	hours	$29.95	$ 9,584.00			9,584.00	$ 9,584.00
				$ -				$ -
			Sub-Total	$ 171,159.00	$ 39,970.00	$ 24,525.00	$ 106,664.00	$ 171,159.00
			TOTALS	$ 226,979.50	$ 39,970.00	$ 40,000.00	$ 147,009.50	$ 226,979.50

OTHER REQUIREMENTS:

All of the columns in the budget table and the matching contribution table MUST be completed appropriately or the application will be invalid. Please see the example budget sheet for additional clarification.

*Units = feet, hours, inches, etc. Do not use lump sum unless there is no other way to describe the costs.

**Can include in-kind materials. Justification for in-kind labor (e.g. hourly rates used). Do not use government salaries as match. Describe here or in text.

***The Review Panel suggests that design and oversight costs associated with a proposed project not exceed 15% of the total project budget. If design and oversight costs are in excess of 15%, applications must include a justification or minimum of two competitive bids for the cost of undertaking the project.

****The Review Panel recommends a maximum fencing cost of $1.50 per foot. Additional costs may be the responsibility of the applicant and/or partners.

Additional details:

APPLICATION MATCHING CONTRIBUTIONS

(do not include requested funds or contributions not associated with the application)

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
US Fish & Wildlife Service (Fish Passage Program)	$ -	$ 40,000.00	$ 40,000.00	Y
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
	$ -	$ -	$ -	
TOTALS	$ -	$ 40,000.00	$ 40,000.00	

OTHER CONTRIBUTIONS

(contributions not associated with the application)

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
Bitterroot Chapter of Trout Unlimited	$ 9,584.50	$ 20,000.00	$ 29,584.50	Partial
Jackson Contractor Group	$ 15,000.00	$ -	$ 15,000.00	Y
US Fish & Wildlife Service (Fish Passage Program)	$ -	$ 35,000.00	$ 35,000.00	Y
Private donors	$ -	$ 39,925.00	$ 39,925.00	N
Westslope Chapter of Trout Unlimited	$ -	$ 7,500.00	$ 7,500.00	Y
Lee Metcalf National Wildlife Refuge	$ 10,000.00	$ 10,000.00	$ 20,000.00	Y
	$ -	$ -	$ -	
	$ -	$ -	$ -	
TOTALS	$ 34,584.50	$ 112,425.00	$ 147,009.50	

Photopoints: Reconnecting North Burnt Fork Creek on Lee Metcalf National Wildlife Refuge (Trout Unlimited)

This relic water control structure near the mouth of North Burnt Fork Creek, prevents fish passage and obstructs natural sediment and flow processes. This barrier will be removed and replaced with a pedestrian bridge.

View of North Burnt Fork Creek, looking upstream from the water control structure. Sediment accumulated above the structure limits aquatic habitat while reed canary grass prevents recruitment of native trees and shrubs, reducing stream shade and bank stability.

View of North Burnt Fork Creek, looking downstream towards the water control structure. from the water control structure proposed for removal, and the area proposed for intensive revegetation.

The northern channel of North Burnt Fork Creek which dewaters most summers. In this proposal this channel will be recontoured into a series of wetland swales, activated at high flows. Reed canary grass will be removed, and revegetation will occur.

NORTH BURNT FORK CREEK FISH PASSAGE RESTORATION PROJECT
LEE METCALF NATIONAL WILDLIFE REFUGE
50% DESIGN PLAN SET

PROJECT PARTNERS

TROUT UNLIMITED
P.O. BOX 7186
MISSOULA, MT 59807

U.S. FISH & WILDLIFE SERVICE
115 W 3RD ST
STEVENSVILLE, MT 59870

PROJECT DESCRIPTION

LEE METCALF NATIONAL WILDLIFE REFUGE (REFUGE), ESTABLISHED ON FEBRUARY 4, 1964, IS A 2,800-ACRE REFUGE LOCATED IN THE BITTERROOT RIVER VALLEY OF SOUTHWEST MONTANA. THE REFUGE IS KNOWN FOR ITS VARIED HABITAT, INCLUDING PONDS, FLOODPLAINS, RIVERINE WOODLANDS AND GRASSLANDS, WHICH SUPPORT A WIDE RANGE OF WATERFOWL, NEOTROPICAL SONGBIRDS, RAPTORS, REPTILES, AMPHIBIANS, MAMMALS AND FISH SPECIES. THE REFUGE'S WATER RESOURCES ARE AMONG ITS MOST IMPORTANT ASSETS AND INCLUDE A 2-MILE REACH OF NORTH BURNT FORK CREEK AND OVER 5 MILES OF BITTERROOT RIVER FRONTAGE. IN ADDITION TO ITS NATURAL RESOURCE AMENITIES, THE REFUGE PROVIDES OPPORTUNITIES FOR THE PUBLIC TO ENJOY COMPATIBLE WILDLIFE-DEPENDENT PUBLIC USE ACTIVITIES INCLUDING HUNTING, FISHING, WILDLIFE OBSERVATION AND PHOTOGRAPHY, ENVIRONMENTAL EDUCATION, AND INTERPRETATION.

IN 2012, THE U.S. FISH AND WILDLIFE SERVICE ADOPTED THE LEE METCALF NATIONAL WILDLIFE REFUGE COMPREHENSIVE CONSERVATION PLAN (CCP). THE CCP IDENTIFIED THE OVERARCHING VISION FOR THE FUTURE OF THE REFUGE, AND INCLUDED SPECIFIC GOALS TO HELP ACHIEVE THIS VISION, INCLUDING:

- TO MANAGE AND, WHERE APPROPRIATE, RESTORE THE NATURAL TOPOGRAPHY, WATER MOVEMENTS, AND PHYSICAL INTEGRITY OF SURFACE WATER FLOW PATTERNS ACROSS THE BITTERROOT RIVER FLOODPLAIN TO PROVIDE HEALTHY RIPARIAN HABITATS FOR TARGET NATIVE SPECIES.
- TO EDUCATE VISITORS ABOUT THE BENEFITS OF SUSTAINING A MORE NATURAL FLOODPLAIN.
- TO PROVIDE VISITORS OF ALL ABILITIES WITH OPPORTUNITIES TO PARTICIPATE IN AND ENJOY QUALITY, COMPATIBLE WILDLIFE DEPENDENT RECREATION, ENVIRONMENTAL EDUCATION, AND INTERPRETATION PROGRAMS THAT FOSTER AN AWARENESS AND APPRECIATION OF THE IMPORTANCE OF PROTECTING THE NATURAL AND CULTURAL RESOURCES OF THE REFUGE.

TO ACHIEVE THE REFUGE'S VISION, THE U.S. FISH AND WILDLIFE SERVICE IN PARTNERSHIP WITH TROUT UNLIMITED, RETAINED RIVER DESIGN GROUP, INC. TO PREPARE A PRELIMINARY RESTORATION DESIGN WITH THE AIM OF ENHANCING STREAM AND FLOODPLAIN HABITAT, WATER QUALITY, AND FISH PASSAGE NEAR THE WILDLIFE VIEWING AREA IN THE REFUGE'S SOUTHERN EXTENT. THE DRAWINGS CONTAINED IN THIS PLAN SET REPRESENT A 50% DESIGN-LEVEL EQUIVALENT AND IARE INTENDED TO SUPPORT NEXT STEPS INCLUDING PUBLIC OUTREACH, ENVIRONMENTAL COMPLIANCE, FINAL DESIGN, AND REGULATORY PERMITTING.

LEE METCALF NATIONAL WILDLIFE REFUGE VICINITY MAP

LEGAL DESCRIPTION: SW 1/4 NE 1/4 S15 T9N R20W, P.M., M RAVALLI COUNTY, MONTANA

DRAWING INDEX

RDG RIVER DESIGN GROUP
311 SW Jefferson Avenue
Corvallis, OR 97333
541.738.2920
236 Wisconsin Avenue
Whitefish, MT 59937
406.862.4927

COVER SHEET AND NOTES
NORTH BURNT FORK CREEK
FISH PASSAGE RESTORATION PROJECT
NEAR STEVENSVILLE, MT

NO.	DATE	BY	DESCRIPTION	CHK
0	03/30/22	TH	50% DESIGN	JM

PRELIMINARY
NOT FOR CONSTRUCTION

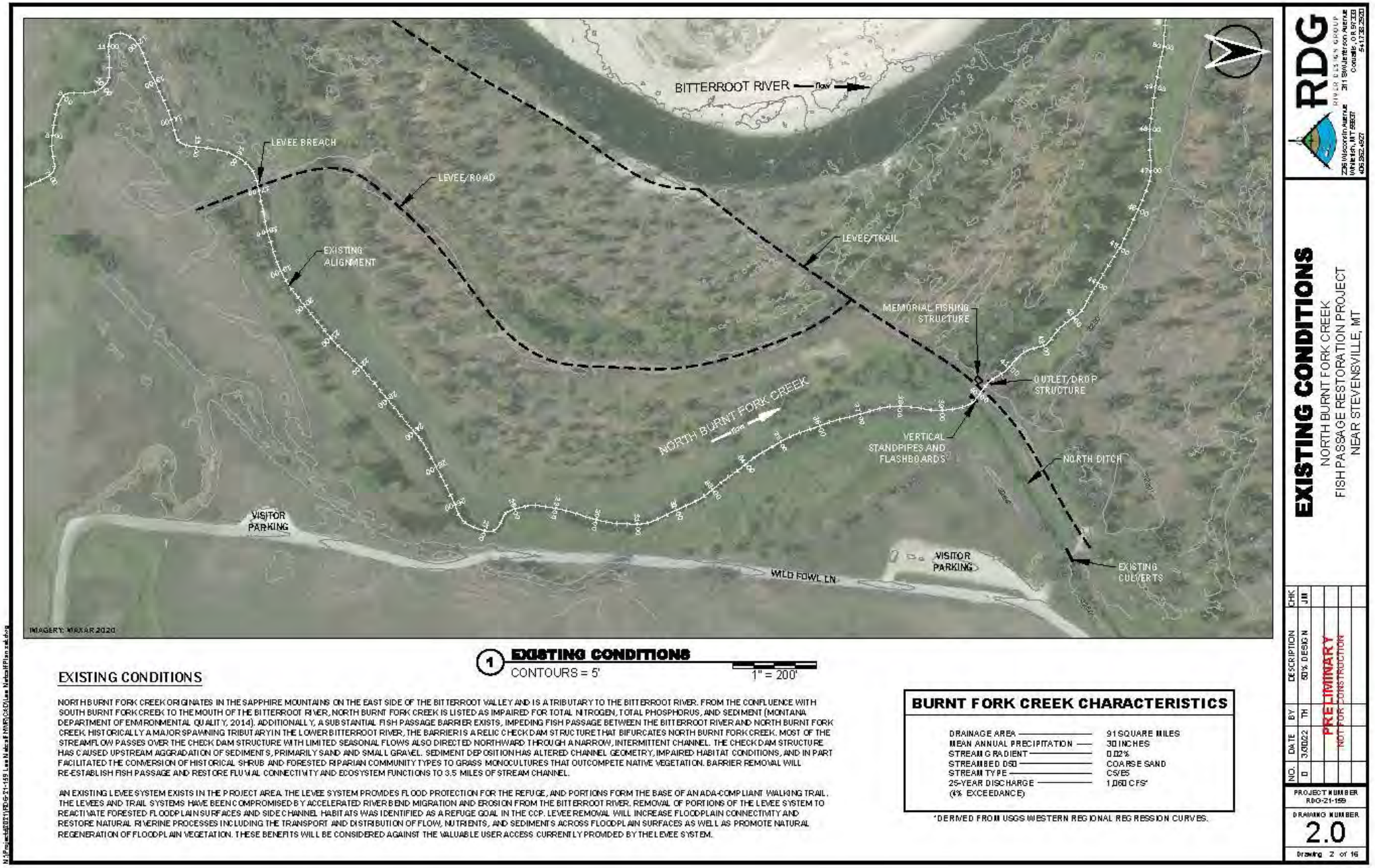
PROJECT NUMBER
RDG-21-159

DRAWING NUMBER
1.0

Drawing 1 of 16

M:\Projects\2021\RDG-21-159 Lee Metcalf NWR\CAD\Lee Metcalf Plan set.dwg

Figure 1. Map of Project Area. Map created by River Design Group



EXISTING CONDITIONS

NORTH BURNT FORK CREEK ORIGINATES IN THE SAPPHIRE MOUNTAINS ON THE EAST SIDE OF THE BITTERROOT VALLEY AND IS A TRIBUTARY TO THE BITTERROOT RIVER. FROM THE CONFLUENCE WITH SOUTH BURNT FORK CREEK TO THE MOUTH OF THE BITTERROOT RIVER, NORTH BURNT FORK CREEK IS LISTED AS IMPAIRED FOR TOTAL NITROGEN, TOTAL PHOSPHORUS, AND SEDIMENT (MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY, 2014). ADDITIONALLY, A SUBSTANTIAL FISH PASSAGE BARRIER EXISTS, IMPEDING FISH PASSAGE BETWEEN THE BITTERROOT RIVER AND NORTH BURNT FORK CREEK. HISTORICALLY A MAJOR SPAWNING TRIBUTARY IN THE LOWER BITTERROOT RIVER, THE BARRIER IS A RELIC CHECK DAM STRUCTURE THAT BIFURCATES NORTH BURNT FORK CREEK. MOST OF THE STREAMFLOW PASSES OVER THE CHECK DAM STRUCTURE WITH LIMITED SEASONAL FLOWS ALSO DIRECTED NORTHWARD THROUGH A NARROW, INTERMITTENT CHANNEL. THE CHECK DAM STRUCTURE HAS CAUSED UPSTREAM AGGRADATION OF SEDIMENTS, PRIMARILY SAND AND SMALL GRAVEL. SEDIMENT DEPOSITION HAS ALTERED CHANNEL GEOMETRY, IMPAIRED HABITAT CONDITIONS, AND IN PART FACILITATED THE CONVERSION OF HISTORICAL SHRUB AND FORESTED RIPARIAN COMMUNITY TYPES TO GRASS MONOCULTURES THAT OUTCOMPETE NATIVE VEGETATION. BARRIER REMOVAL WILL RE-ESTABLISH FISH PASSAGE AND RESTORE FLUVIAL CONNECTIVITY AND ECOSYSTEM FUNCTIONS TO 3.5 MILES OF STREAM CHANNEL.

AN EXISTING LEVEE SYSTEM EXISTS IN THE PROJECT AREA. THE LEVEE SYSTEM PROVIDES FLOOD PROTECTION FOR THE REFUGE, AND PORTIONS FORM THE BASE OF AN ADA-COMPLIANT WALKING TRAIL. THE LEVEES AND TRAIL SYSTEMS HAVE BEEN COMPROMISED BY ACCELERATED RIVER BEND MIGRATION AND EROSION FROM THE BITTERROOT RIVER. REMOVAL OF PORTIONS OF THE LEVEE SYSTEM TO REACTIVATE FORESTED FLOODPLAIN SURFACES AND SIDE CHANNEL HABITATS WAS IDENTIFIED AS A REFUGE GOAL IN THE CCP. LEVEE REMOVAL WILL INCREASE FLOODPLAIN CONNECTIVITY AND RESTORE NATURAL RIVERINE PROCESSES INCLUDING THE TRANSPORT AND DISTRIBUTION OF FLOW, NUTRIENTS, AND SEDIMENTS ACROSS FLOODPLAIN SURFACES AS WELL AS PROMOTE NATURAL REGENERATION OF FLOODPLAIN VEGETATION. THESE BENEFITS WILL BE CONSIDERED AGAINST THE VALUABLE USER ACCESS CURRENTLY PROVIDED BY THE LEVEE SYSTEM.

BURNT FORK CREEK CHARACTERISTICS

DRAINAGE AREA	91 SQUARE MILES
MEAN ANNUAL PRECIPITATION	30 INCHES
STREAM GRADIENT	0.02%
STREAMBED D50	COARSE SAND
STREAM TYPE	C5/E5
25-YEAR DISCHARGE (4% EXCEEDANCE)	1,060 CFS*

*DERIVED FROM USGS WESTERN REGIONAL REGRESSION CURVES.

Figure 2. Map of the Existing Conditions within the project area. Map created by River Design Group

1 RESTORATION PLAN OVERVIEW
CONTOURS = 5'
1" = 300'

RESTORATION ACTIONS

1. NORTHERN LEVEE AND CHECK DAM STRUCTURE REMOVAL
   - CHECK DAM STRUCTURE DECOMMISSION AND REMOVAL
   - FLOODPLAIN CONSTRUCTION
   - BANK STRUCTURE INSTALLATION
   - MEMORIAL FISHING STRUCTURE RELOCATION
   - ADA-COMPLIANT PEDESTRIAN BRIDGE CONSTRUCTION
2. REED CANARY GRASS REMOVAL AND REVEGETATION
   - MECHANICALLY REMOVE REED CANARY GRASS ALONG BANKS OF CHANNEL AND WITHIN FLOODPLAIN
   - TREAT EXPOSED SURFACE WITH FLOODPLAIN ROUGHNESS AND BROADCAST SEED
   - INSTALL WILLOW CUTTINGS AND BLACK COTTONWOOD CONTAINERIZED PLANTS
   - INSTALL INDIVIDUAL BROWSE PROTECTORS OR FENCING UNITS
3. SOUTHERN LEVEE REMOVAL
   - REMOVE REMAINING LEVEE AT EXISTING BREACH LOCATION
   - CONSTRUCT LOW WATER CROSSING

CONSTRUCTION SEQUENCE

1. ESTABLISH SITE ACCESS AND STAGING AREAS
2. MOBILIZE EQUIPMENT
3. DEPLOY ENVIRONMENTAL CONTROLS
4. ACQUIRE AND DELIVER MATERIALS
5. IMPLEMENT WORK AREA ISOLATION PLAN
6. MOVE MEMORIAL FISHING STRUCTURE
7. COMPLETE NORTHERN LEVEE INFRASTRUCTURE REMOVAL AND EARTHWORK
8. INSTALL BANK STRUCTURES
9. PERFORM REED CANARY GRASS REMOVAL, WEED MAT PLACEMENT AND LIVE CUTTING INSTALLATION
10. INSTALL FENCING
11. PERFORM ADDITIONAL LEVEE REMOVAL AT SOUTHERN SITES
12. CONSTRUCT LOW WATER CROSSING
13. SEED AND RECLAIM DISTURBED AREAS
14. DEMOBILIZE EQUIPMENT AND MATERIALS

RDG RIVER DESIGN GROUP
236 Wisconsin Avenue Whitefish, MT 59937 406.862.4927
311 SW Jefferson Avenue Corvallis, OR 97333 541.738.2920

RESTORATION PLAN
NORTH BURNT FORK CREEK
FISH PASSAGE RESTORATION PROJECT
NEAR STEVENSVILLE, MT

NO.	DATE	BY	DESCRIPTION	CHK
0	3/30/22	TH	50% DESIGN	JM
1	7/14/22	TH	50% DESIGN	JM

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NUMBER
RDG-21-159

DRAWING NUMBER
3.0

Drawing 3 of 16

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Figure 3. Proposed Restoration Overview. Figure created by River Design Group

.

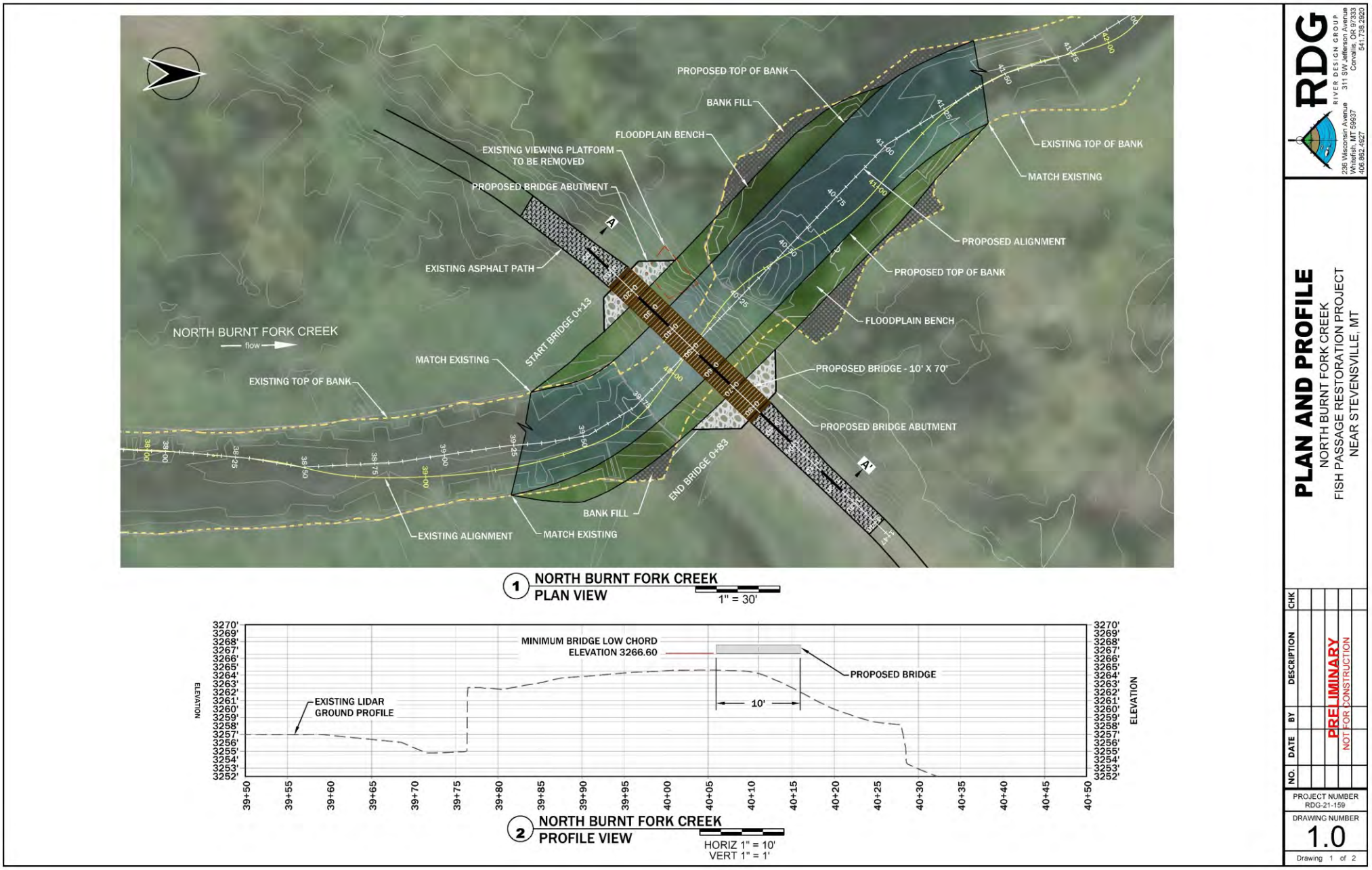
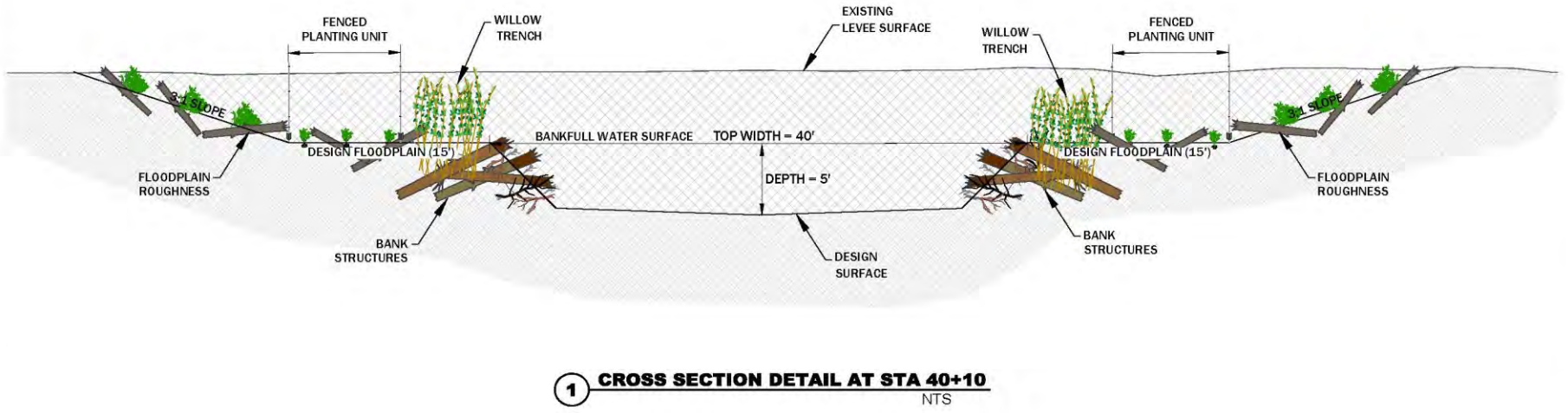


Figure 4. Proposed Restoration at barrier removal location. Figure created by River Design Group



1 CROSS SECTION DETAIL AT STA 40+10
NTS

RDG RIVER DESIGN GROUP
236 Wisconsin Avenue Whitefish, MT 59937 406.862.4927
311 SW Jefferson Avenue Corvallis, OR 97333 541.758.2930

CROSS SECTION DETAIL
NORTH BURNT FORK CREEK
FISH PASSAGE RESTORATION PROJECT
NEAR STEVENSVILLE, MT

NO.	DATE	BY	DESCRIPTION	CHK
0	3/30/22	TH	50% DESIGN	JM

PRELIMINARY
NOT FOR CONSTRUCTION

PROJECT NUMBER
RDG-21-159

DRAWING NUMBER
6.0

Drawing 11 of 16

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Figure 5. Cross section detail at the proposed bridge location (also the site of the water control structure removal,(station 40+10). Figure created by River Design Group

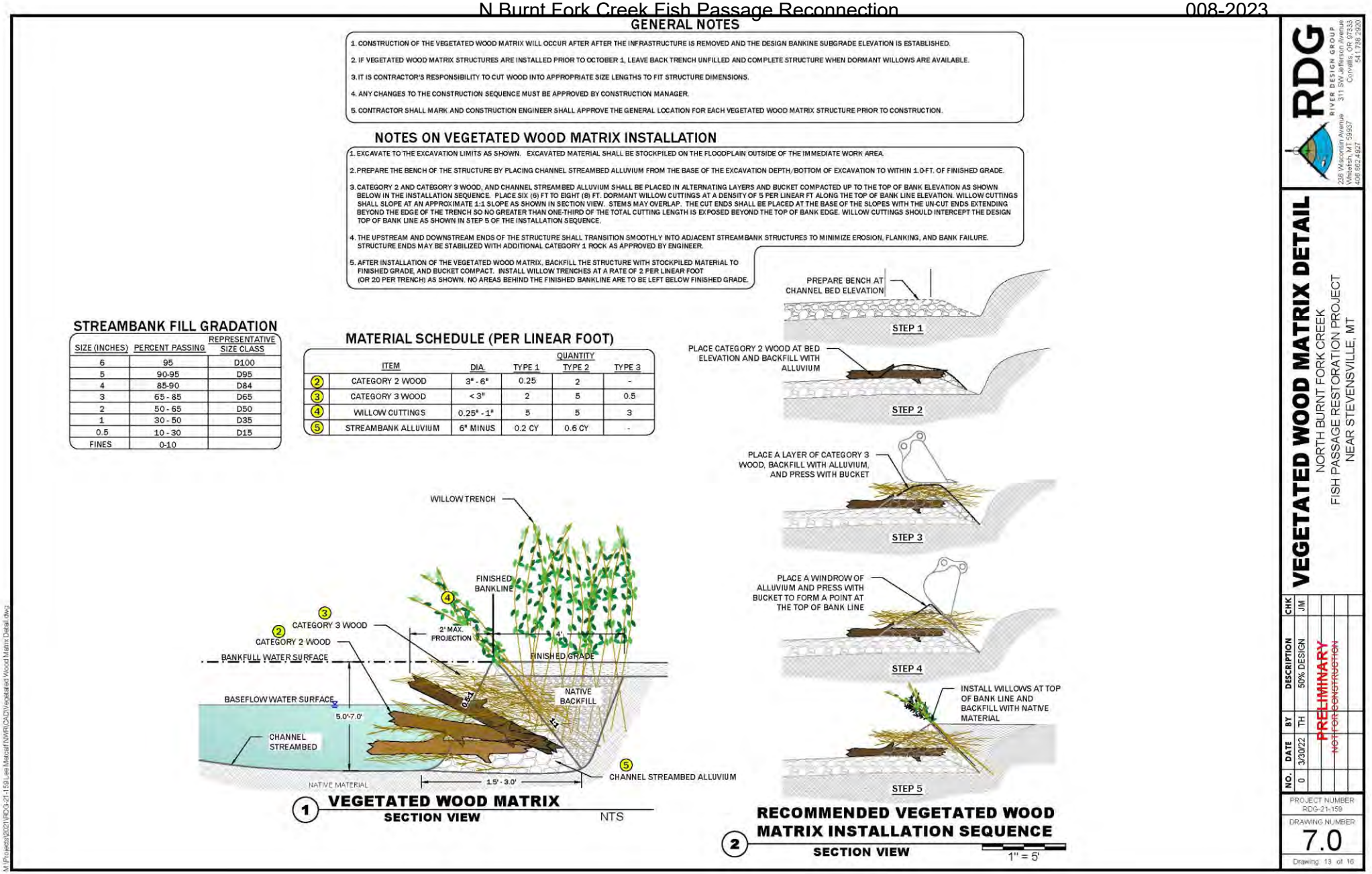

Figure 6. Vegetated wood matrix bank treatment. Figure created by River Design Group

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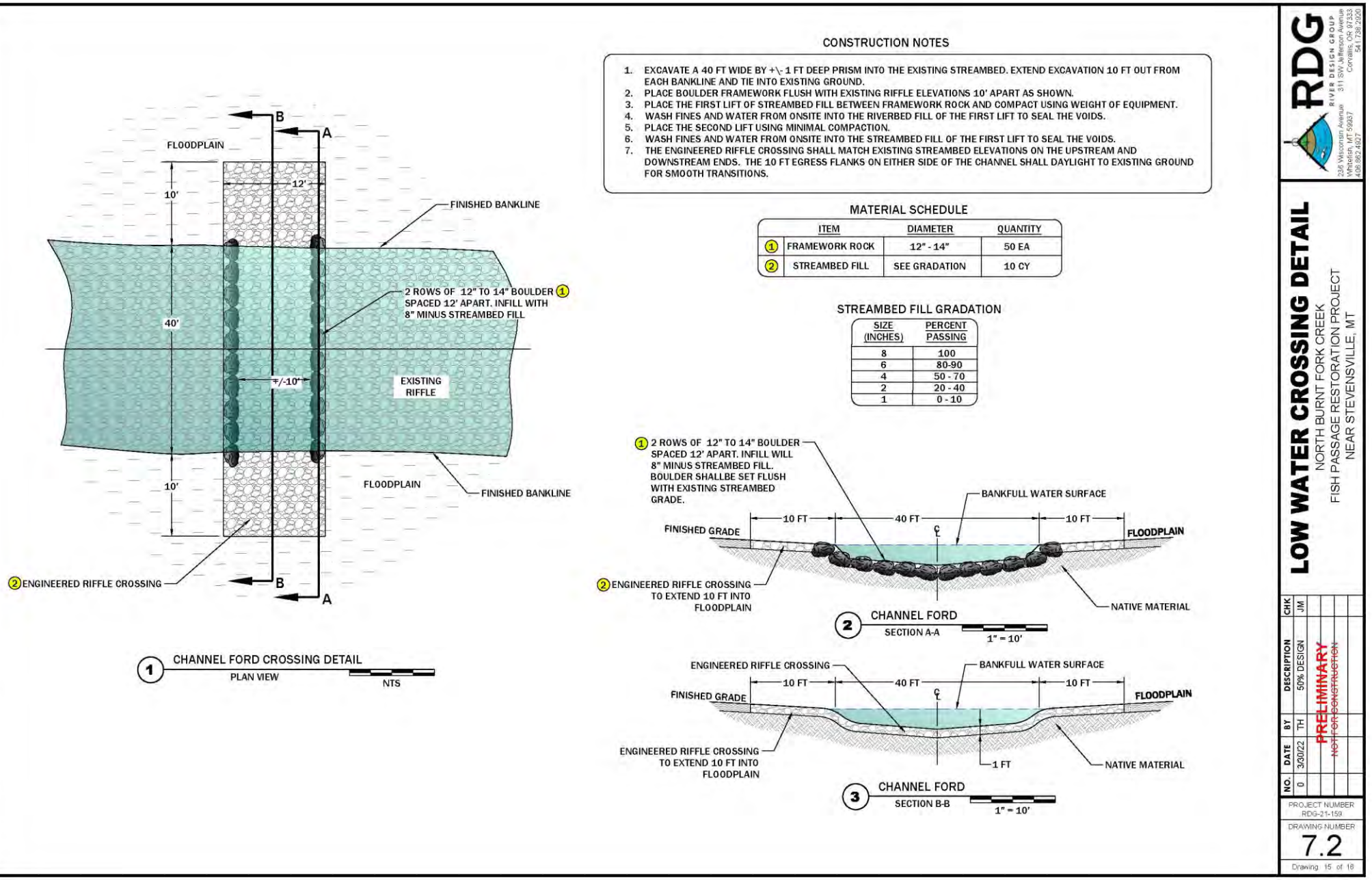
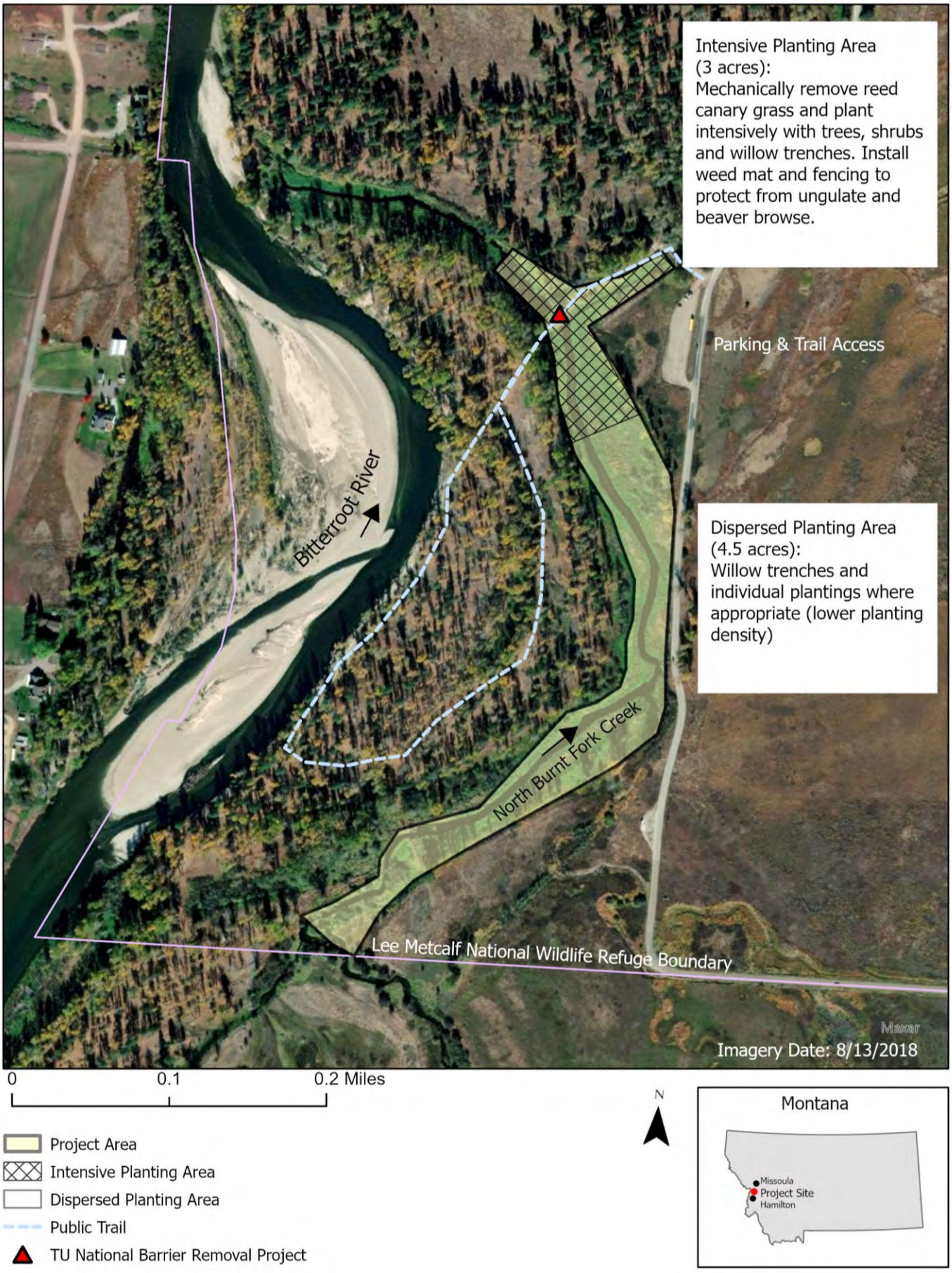


Figure 7. Low Water Crossing detail at Station 17+00. Figure created by River Design Group

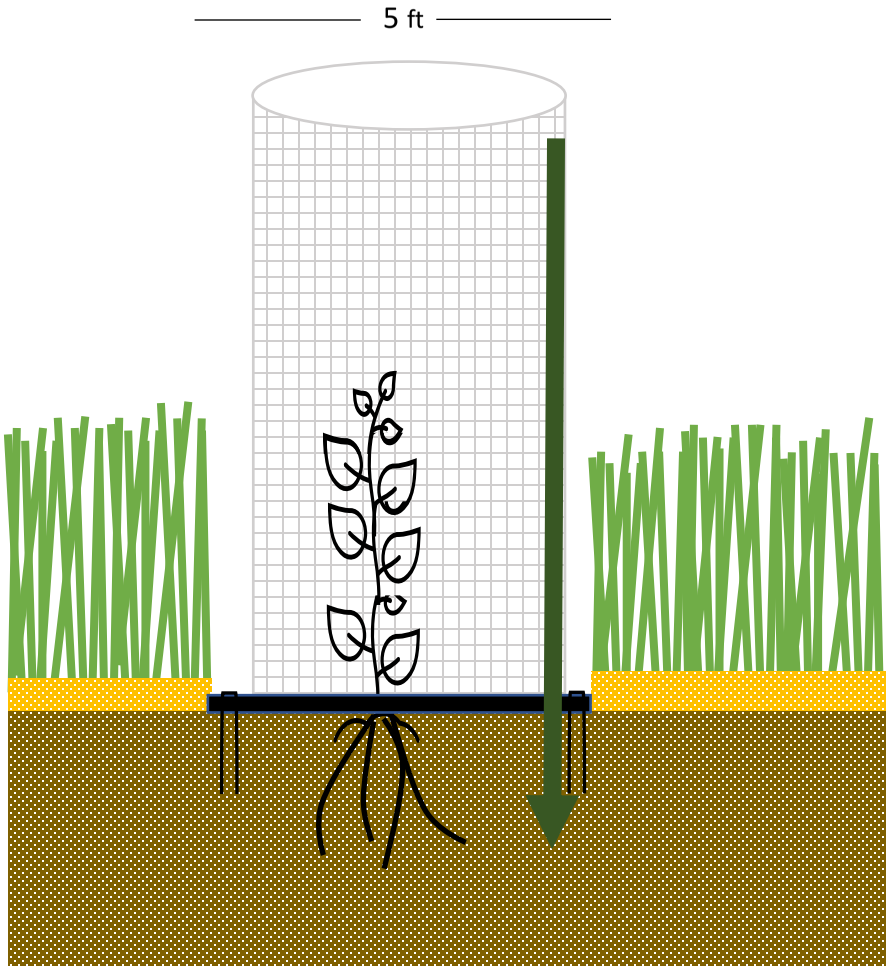


N Burnt Fork Creek Fish Passage Reconnection

008-2023

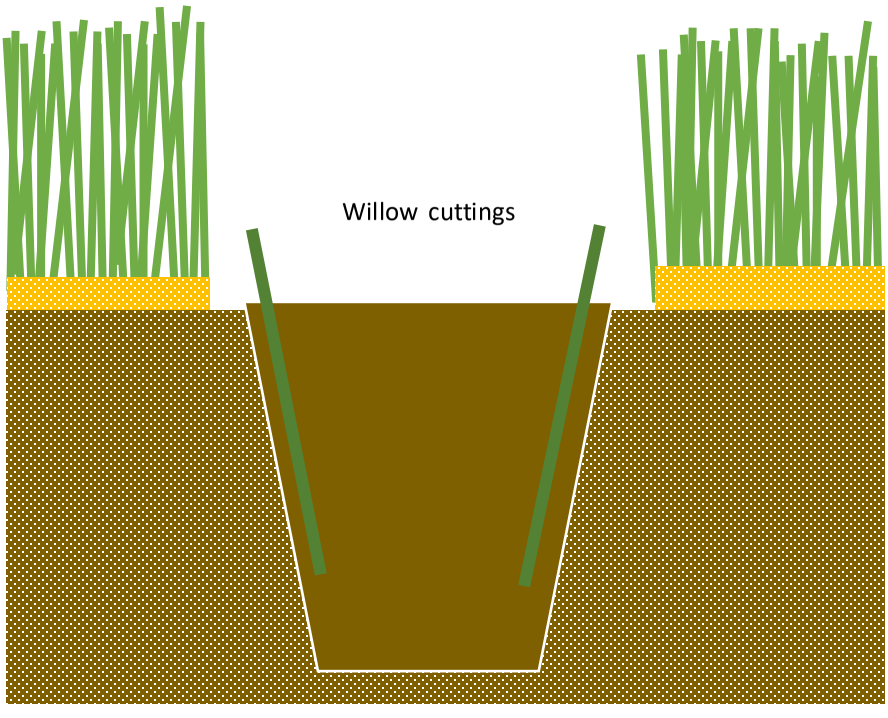
Figure 8. Revegetation Detail. Figure created by Trout Unlimited

Planting Detail for North Burnt Fork Creek Revegetation



Tree and shrub planting and protection

1. Clear grass and roots in planting area (mini excavator or similar)
2. Plant tree
3. Lay weed fabric (5'x5') and secure with staples and protect with welded wire fence and T-post.
4. Plant in groups of 5-10 plants with 10-foot spacing between plants.



Willow cutting trenches

1. Clear grass and roots in planting area (mini excavator or similar)
2. Excavate a trench perpendicular to creek flow (3'W x 6'L x 3' D)
3. Set willow cuttings in trench along both edges. Apx. 10 cuttings/ft
4. Backfill trench with soil

Figure 9. Planting Detail. Figure created by Trout Unlimited

N Burnt Fork Creek Fish Passage Reconnection

008-2023

FWP.MT.GOV

THE OUTSIDE IS IN US ALL.

Region 2 Headquarters
3201 Spurgin Road
Missoula, MT 59804
Phone 406-542-5500

November 7, 2022

Future Fisheries Improvement Program
c/o Michelle McGree
Montana Fish, Wildlife & Parks
P.O. Box 200701
1420 E. 6th Avenue
Helena, MT 59620-0701

RE: Reconnecting North Burnt Fork Creek on Lee Metcalf National Wildlife Refuge

Dear Future Fisheries Panel:

I am writing in support of the *Reconnecting North Burnt Fork Creek on the Lee Metcalf National Wildlife Refuge* application submitted by Christine Brissette of Trout Unlimited. This barrier removal and habitat enhancement project is an important step toward improving connectivity and fish habitat conditions in lower North Burnt Fork Creek. This work will complement other completed and planned restoration actions in the Burnt Fork drainage and is expected to provide a number of public benefits.

North Burnt Fork Creek was historically an important spawning tributary for trout occupying the middle Bitterroot River, including native westslope cutthroat trout and bull trout. However, the man-made barrier present on the Lee Metcalf National Wildlife Refuge a few hundred feet from the stream mouth has effectively blocked fish passage and altered ½ mile of habitat for over 50 years. The investment into restoring connectivity and habitat conditions at this site will not only contribute to restoring the quality of aquatic resources in North Burnt Fork Creek, but it will also help improve trout recruitment to the Bitterroot River by opening access to an additional 2.5 miles of spawning and rearing habitat. The middle Bitterroot is considered to be recruitment limited, which is a direct result of the lack of quality spawning and rearing tributaries in the reach. Improving connectivity and habitat conditions in larger streams like North Burnt Fork Creek is one of the most attainable solutions we have to help improve recruitment of fish to this portion of the river.

In addition to having direct fisheries benefits, this project also offers a great opportunity for public outreach regarding riparian health and the importance of tributaries as critical spawning and rearing habitat. The location of this project is within a public recreation area on the Lee

Metcalf National Wildlife Refuge that sees numerous visitors each and every day. Outreach and interpretive signage will be educational for many of the visitors frequenting the site. This will create a more informed public in an area of the state that is seeing rapid population growth and increased development pressures placed on our stream and riparian resources.

Please contact our Fisheries Biologist, Jason Lindstrom, with any questions for FWP regarding this project.

Jason Lindstrom, Fisheries Biologist
Montana Fish, Wildlife & Parks
Phone: (406) 529-8058
Email: Jason.Lindstrom@mt.gov

Thank you for considering funding this application.

Sincerely,

Randy Arnold
Fish, Wildlife & Parks
Regional Supervisor, Region 2
rarnold@mt.gov
(406) 542-5504

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Lee Metcalf Wildlife Refuge
4567 Wildfowl Lane
Stevensville MT, 59870
(406) 777-5552

November 9, 2022

Montana Fish, Wildlife, and Parks
Future Fisheries Review Panel
1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620

Dear Future Fisheries Review Panel:

I am writing to you in support of Trout Unlimited's (TU) grant application for the:North Burnt Fork Creek Culvert Removal and Restoration project. Lee Metcalf National Wildlife Refuge (Refuge) has worked with TU for the past three years in planning for this fish passage removal in an important bull trout (*Salvelinus confluentus*) spawing tributary to the Bitterroot River. Trout Unlimited identified historic channel migration and modification of the Bitterroot River and North Burnt Fork Creek near the confluence of these two watersheds and has identified the historic alignment for reconnection of North Burnt Fork Creek. The Refuge fully supports the proposed project as it accomplishes a number of the resource goals identified in our 2012 Comprehensive Conservation Plan. Specifically, the project would:

1) Restore natural topography, surface water flow patterns, and channel integrity across the Bitterroot floodplain within the Refuge;

2) Remove relic infrastructure that stores sediment, impedes natural hydrology, and impedes fish passage up North Burnt Fork Creek for 2 ½ miles from its mouth with the Bitterroot River;

3) Provide excellent opportunities to interpret to the public the value of natural river migration and ecological processes;

4) Enhance native fisheries habitat, including cutthroat (*Oncorhynchus clarkia*) and bull trout habitat on lower North Burnt Fork Creek as well as enhance the public's fishing opportunities through this portion of the Refuge.

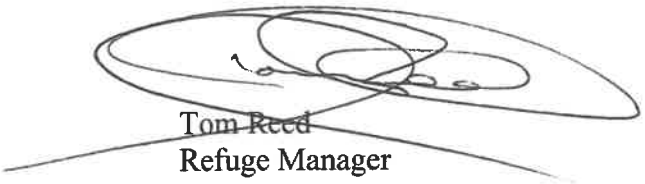
5) Provide an opportunity to restore and enhance the riparian corridor along the historic channel of North Burnt Fork Creek and interpret that restoration to the public.

The completed project would enhance native fish habitat on lower North Burnt Fork Creek and serve as a demonstration area for further riparian restoration upstream and off of public land.

The Refuge fully supports this grant application and is enthusiastic about the prospects of restoring this section of riparian habitat on the Refuge.

Please contact me if I can provide any additional information. Thank you.

Sincerely,



Tom Reed
Refuge Manager

MONTANA TROUT UNLIMITED
BITTERROOT CHAPTER

P. O. Box 262

Hamilton, MT 59840

November 2, 2022

Future Fisheries Review Panel
Montana Fish Wildlife and Parks
1420 East 6th Avenue
PO Box 200701
Helena, MT 59620-070

RE: Future Fisheries Grant

Greetings:

I am the president of the Bitterroot Chapter of Trout Unlimited. This is a letter of support for a Future Fisheries Grant by Christine Brissette of Trout Unlimited. Bitterroot TU supports Trout Unlimited's efforts to remove a fish passage barrier and improve habitat on North Burnt Fork Creek. Over the past three years, we have provided funding for the initial development of this project. Our chapter has been very involved in helping to plan and fundraise for this important project. We have volunteers lined up who will execute the more than 300 hours that will be needed to do the planting related to this project.

BRTU has a long history of involvement in education programs in the Bitterroot Valley. Our Buggers program has been conducted annually for nearly 30 years. The program helps young students learn the basics of stream entomology, fly tying, and fly fishing. Hundreds of people in our area have completed this program over the years.

This year we have expended our Trout in the Classroom (TIC) program to four high schools in the Bitterroot Valley. Trout in the Classroom exposes science classes to the science involved in successfully hatching and raising trout from fertilized to a releasable size. Management of the water quality and chemistry is a major part of the effort. At the end of the school year the fish are released into a local pond under supervision of the local FWP biologist.

We plan to have the TIC classes visit the Lee Metcalf Wildlife Preserve and see the details and impacts of the project.

Regards,

David Ward

David Ward, President
Bitterroot Trout Unlimited