

**FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION***All sections must be addressed, or the application will be considered invalid***I. APPLICANT INFORMATION**A. Applicant Name: Jarrett PayneMailing Address: 730 N Montana StreetCity: Dillon State: Montana Zip: 59725Telephone: 406-560-7103 E-mail: Jarrett.Payne@mt.gov

B. Contact Person (if different than applicant): _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ E-mail: _____

C. Landowner and/or Lessee Name (if different than applicant): Harrington Ranch CompanyMailing Address: P.O. Box 834City: Jackson State: MT Zip: 59736Telephone: 406-660-3500 E-mail: n/a**II. PROJECT INFORMATION**A. Project Name: Daniel Ditch Grayling Nursery and Connectivity ProjectRiver, stream, or lake: Big Hole RiverLocation: Township: 3S Range: 16W Section: 18Latitude: 45.709542 Longitude: -113.425940 *within project (decimal degrees)*County: Beaverhead County

B. Purpose of Project: _____

The purpose of this project is to reduce mortality for Arctic grayling young-of-the-year (YOY) in the Daniel's Ditch on the upper Big Hole River. The project will provide a safe return channel for entrained Arctic Grayling young-of-the-year (YOY) once irrigation shuts off, and a screen will prevent grayling from entering the lower ditch where mortality occurs. Arctic grayling YOY regularly use the upper $\frac{3}{4}$ mile of the Daniel's ditch as predator-free rearing habitat. However, if grayling move to the lower ditch or do not exit prior to irrigation shut-off, they are lost to the population. This project will install a Corrugated Water Screen (CWS) with a return path to the Big Hole River for entrained YOY.

The Objectives of the project include the following:

1. Maintain or improve diversion system efficiency;
2. Control flow into the ditch by installing an operable headgate just upstream of the CWS
3. Allow grayling to enter the ditch and return to the river by installing a fish screen and return bypass that requires minimal maintenance

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

Big Hole Arctic grayling spawn in the spring and fry emerge in mid-May as weak swimmers. Newly emerged fry rely on lateral habitats along stream margins and side-channels to avoid predation. Concurrent with fry emergence, flood irrigation on the Big Hole River is at peak withdrawal and fry can be displaced into irrigation ditches and isolated from mainstem habitat. When irrigation flows are reduced or shut off in late summer, entrained fry typically die in the ditches. Because Arctic Grayling fry size at emergence is so small (10-20 mm), screening to prevent entrainment has been challenging and largely unsuccessful.

The Daniels Ditch is located within the primary grayling spawning section of the Big Hole River and is the only source of consistent grayling entrainment in southwest Montana. As a result, FWP annually surveys the ditch in mid-July and conducts a fish salvage in early-fall to return entrained grayling to the mainstem river. Salvage missions cannot capture all entrained grayling due to capture inefficiencies associated with vegetation in the ditch and because fish which enter the lower ditch are typically lost in agricultural fields. By late-September, salvaged grayling YOY are typically 5-6" in length and are much more likely to survive in the mainstem Big Hole River.

The upper $\frac{3}{4}$ mile of the Daniel's Ditch functions as a predator-free (i.e., lacks brown trout) rearing channel during irrigation season for grayling and other native fish (e.g., burbot, mountain whitefish). In this upper section, the channel is deep and vegetated with adequate cover. However, the lower ditch channel becomes very wide and shallow and water is directed into agricultural fields. Grayling which remain in the ditch past irrigation season or move into the lower ditch are typically lost. This project will 1) maintain the productive rearing habitat in the upper Daniels Ditch, 2) prevent grayling from entering the lower ditch by installing a CWS at the $\frac{3}{4}$ mile mark, 3) install a return pipe to the Big Hole River which will allow YOY to leave the Daniels Ditch when irrigation flows are reduced or turned off, and 4) install a new headgate at the point of diversion to improve the irrigator's ability to accurately divert flow and use their water right. Other screen types were considered but were not chosen as the preferred alternative due to higher costs and increased maintenance requirements.

Scope of Work:

- Replace headgate at POD (36 "x 60" x 60" slide headgate)
- Install 1-14 cfs steel frame Corrugated Water Screen
- Install 130 feet 10" HDPE return pipe with 12" slide gate

This project builds on a watershed scale restoration effort for Arctic Grayling in the Big Hole River through the Big Candidate Conservation Agreement with Assurances Program (CCAA). The CCAA works with private landowner to address threats and implement conservation measures that benefit it Arctic grayling and other native fish species.

- D. Length of stream or size of lake that will be treated (project extent): 3,960'
 Length/size of impact, if larger than project extent (e.g. stream miles opened): n/a

E. Project Budget:

Grant Request (Dollars):	\$ 34,000
Matching Dollars:	\$ 62,462
Matching In-Kind Services:*	\$ 0.00
<i>*salaries of government employees are not considered matching contributions</i>	
Other Contributions (not part of this app)	\$ 0.00
Total Project Cost:	\$ 96,462

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

- G. **Insert** or **attach** a project location map showing the project area in relation to a major landmark or town. Please indicate if the project location is on public or private property.

- Please find attached Project Concept and Preliminary Designs
- Project Map
- Project Budget

The project is located on private land but benefits a public fishery (the Big Hole River). The landowner allows fishing with permission.

- H. **Attach** specific project plans (e.g. detailed sketches, plan views [showing location and type of channel modifications], example photographs), current condition photographs, and maps. **If project involves water leasing or water salvage complete and attach a supplemental questionnaire (fwp.mt.gov/habitat/futurefisheries/supplement2.doc).*

- I. **Attach** letters or statements of support. This includes landowner consent, community or public support, and fish biologist support.

- J. The project agreement includes a 20-year maintenance commitment. Please indicate (yes or no) that you will ensure project protection for 20 years. Discuss your ability to meet this commitment.

Yes ☒ No ☐

This project is part of the Landowners Site Specific Conservation Plan (SSP) through the Big Hole Arctic Grayling CCAA. The SSP address threats to Arctic Grayling on the landowner's property including entrainment. The SSP are 10-year agreements that will in all likelihood be renewed in 2026 by the landowner. The CCAA Program is a 20-year program scheduled to be renewed in 2026. The landowner has implemented numerous conservation projects for Arctic Grayling in good faith and successfully improved habitat, stream flows and connectivity that have benefited Arctic grayling and other native and sportfish. The landowner has signed both MFWP and USFWS landowner agreements (20 and 10-year agreements, respectively).

- K. **Describe** or **attach** land management & maintenance plans, including changing to grazing regimes, that will ensure protection of the restored area.

This project will be monitored and maintained by FWP, USFWS and the landowner. The landowner annually diverts water for irrigation and will maintain the ditch and fish screen. FWP and USFWS will annually monitor the fish screen and determine effectiveness of screen and rearing habitat through periodic electrofishing surveys. FWP and the USFWS will help the landowner find solutions to any major fish screen maintenance issues.

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

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

Arctic Grayling, a Montana species of concern.

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

This project will improve survival of Arctic Grayling by continuing to provide access to productive rearing habitat in the upper Daniel's Ditch, installing a screen to prevent entrainment into lower Daniel's Ditch, and providing a return (bypass) pipe to the Big Hole River. Arctic grayling will have unrestricted access to the beneficial rearing habitat and will not be entrained in the ditch system.

- C. Will the project improve fish populations and/or fishing? To what extent?

This project will improve the grayling population in the Big Hole River. Despite low capture efficiencies in the ditch, salvage missions in some years result in 50-100 grayling YOY being returned to the Big Hole River in the fall. Fish which are missed during salvage missions or have entered the lower ditch are mortalities. This project will decrease mortality which will improve population abundance and fishing opportunities. The recent population increase of the Big Hole grayling is due to conservation efforts within the CCAA and has resulted in increased angler reports of grayling throughout the Big Hole River.

- D. Will the project increase public fishing opportunity for wild fish and, if so, how?

This project will increase public opportunity for a unique native fishery. The Big Hole River has the only remaining fluvial population of Arctic grayling in the coterminous United States. Coincident with a documented population increase of Big Hole Arctic grayling in recent years, anglers have also reported catching more grayling.

- E. What was the cause of habitat degradation in the area of this project and how will the project correct the cause?

The Daniel's ditch is the only consistent source of grayling entrainment in the Big Hole River. This project will continue to provide beneficial rearing habitat in the upper Daniel's Ditch, while preventing access to the lower ditch where mortality occurs. Additionally, a return pipe will allow grayling to return to the mainstem river once irrigation has ended.

- F. What public benefits will be realized from this project?

Improved survival of grayling equates to improved population abundance, more opportunity for the public to appreciate and catch a unique Montana species, and lastly a stable and healthy grayling population eliminates need to protect Arctic Grayling under the Endangered Species Act (ESA) and maintains management by FWP.

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

No. Project will not interfere with any water rights or property rights. Water rights holder will be able to utilize their appropriated rights.

H. Will the project result in the development of commercial recreational use on the site? (explain):

No. Project is located on working ranch. There will be no development of commercial recreational use.

I. 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.

IV. 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: _____ Date: 5/17/21

Sponsor (if applicable): _____

Submittal: Applications must be *signed and received before December 1 and June 1 of each year 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>

Applications may be rejected if this form is modified.

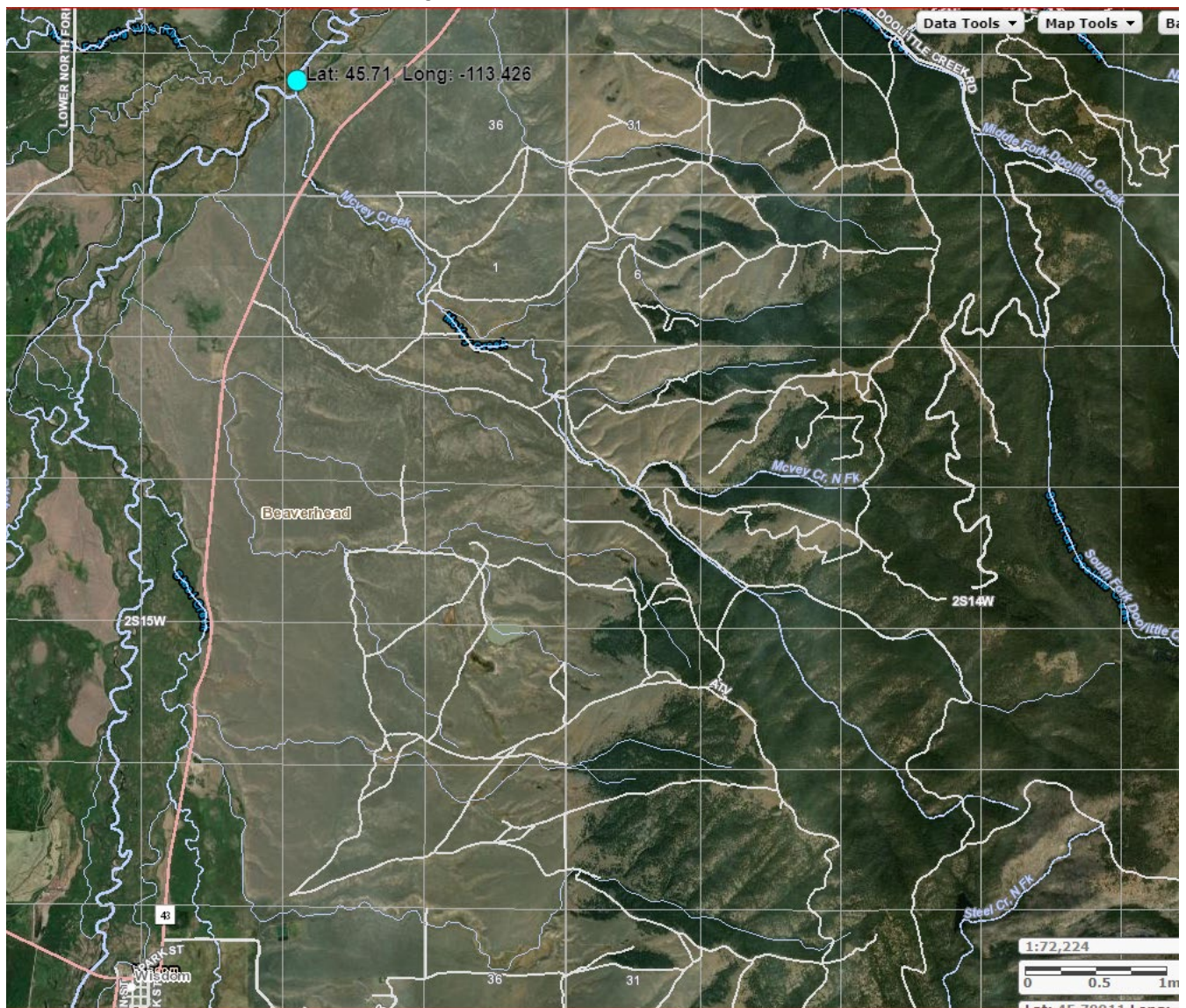
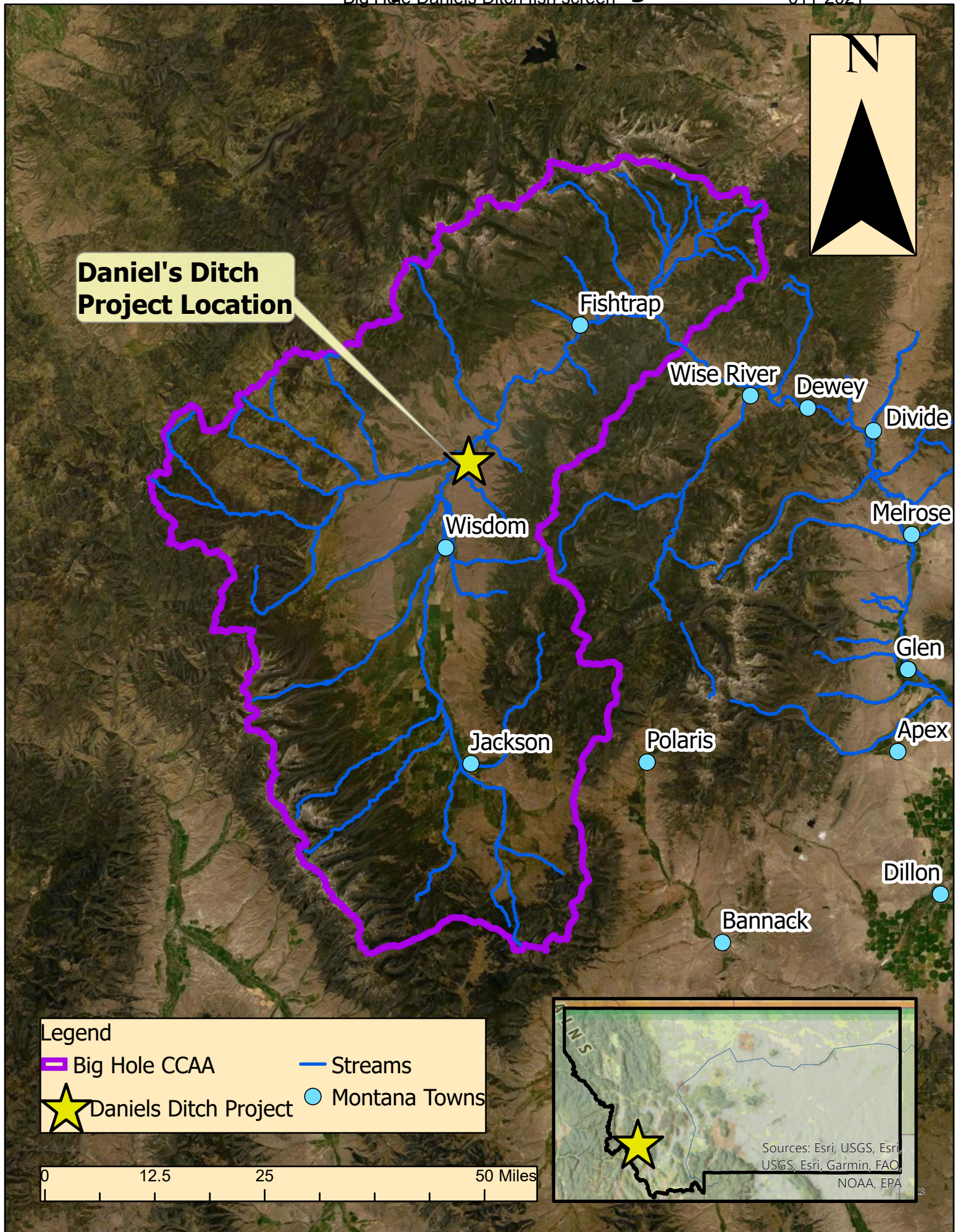


Figure 1. Project Location (blue dot, top of map), north of Wisdom MT.

Daniels Ditch Project Location in Big Hole CCAA

Big Hole Daniels Ditch fish screen

011-2021





Date: May 28, 2021

To: James Magee
US Fish and Wildlife Service

From: Chris Nelson, P.E.
River Design Group, Inc.

Subject: Conceptual Design for Daniels Ditch Fish Screen

This memo summarizes work completed to date to develop a conceptual design for the Daniels Ditch Fish Screen Project. Existing conditions were surveyed in April 2021. Water rights data were reviewed and a concept level design for improvements to the diversion including a headgate and fish screen was developed. A conceptual design drawing and preliminary cost opinion was prepared.

The Daniels Ditch is located on the Big Hole River approximately 6 miles north of Wisdom, MT. The existing diversion is comprised of a channel spanning rock check structure and wooden plank headgate on the right bank of a distributary channel of the Big Hole River.

The goal of this project is to allow Arctic Grayling to use a portion of the existing ditch for rearing and then return to the river via a screen equipped with a fish return. Specific objectives include:

- Maintain or improve diversion system efficiency;
- Control flow into the ditch by installing an operable headgate;
- Minimize sediment delivered to ditch by installing an operable sluice pipe extending from the headgate back to the main channel downstream of the diversion; and,
- Allow grayling to enter the ditch and return to the river by installing a fish screen that requires minimal maintenance.

After considering two alternatives, a preferred alternative was selected to meet project objectives. Screens considered include a sloping corrugated screen (Corrugated Water Screen), a horizontal flat plate screen (Farmers Screen), and a roll drum screen. The Corrugated Water Screen was chosen for this project due to its lack of moving parts and minimal maintenance requirements (Figure 1).



Figure 1. Example of Corrugated Water Screen.

Estimated costs are summarized in Table 1. A preliminary plan and profile design and cost opinion are attached.

Table 1. Fish screen design and installation cost opinion summary.	
Design Option	Corrugated Water Screen
Single screen	\$ 96,545

Daniels Diversion - Concept 2

Concept Level Cost Opinion for a 14 cfs Corrugated Water Screen

Prepared by Chris Nelson (RDG) 8/7/2020

Item	Quantity	Units	Unit Cost	Cost
1. Mobilization & Site Prep				
Labor				
Mobilization/demobilization	1	lump sum	\$ 3,000	\$ 3,000
Site preparation	4	hours	\$ 240	\$ 960
Trash pump operation	1	weeks	\$ 425	\$ 425
Materials stockpile & distribution; BMP installation; site reclamation	8	hours	\$ 240	\$ 1,920
Construct and decommission temporary water diversions	4	hours	\$ 240	\$ 960
<i>Subtotal</i>				\$ 7,265
2. Diversion Reconstruction				
Labor				
Diversion construction (1000 ft)	0	hours	\$ 240	\$ -
Trash pump operation	0	weeks	\$ 425	\$ -
Materials stockpile and distribution	0	hours	\$ 150	\$ -
Materials				
Floodplain fill	0	cubic yards	\$	\$ -
Plants	0	each	\$	\$ -
<i>Subtotal</i>				\$ -
3. Side Channel Enhancement				
Labor				
Channel construction	0	hours	\$ 240	\$ -
Revegetation	0	hours	\$ 240	\$ -
Materials				
12-inch double wall (smooth) HDPE pipe	0	linear feet	\$ 12	\$ -
<i>Subtotal</i>				\$ -
4. Fish Screen				
Labor				
Screen installation	32	hours	\$ 240	\$ 7,680
Bypass pipe installation	8	hours	\$ 240	\$ 1,920
Headgate installation (incl. sluice pipe)	8	hours	\$ 240	\$ 1,920
Materials				
3/4" minus gravel for pipe & screen bedding	30	cubic yards	\$ 30	\$ 900
Filter fabric - Amoco 4553 or equivalent	400	linear feet	\$ 1	\$ 400
36-in height x 60-in wide x 60-in tall slide gate (headgate)	1	each	\$ 2,500	\$ 2,500
12-inch dia. slide gate (sluice pipe entrance)	1	each	\$ 700	\$ 700
1-14 cfs CWS screen w/ steel frame	1	each	\$ 40,000	\$ 40,000
10-inch double wall (smooth) HDPE fish return pipe	130	linear feet	\$ 5	\$ 650
12-inch double wall (smooth) HDPE sluice pipe	40	linear feet	\$ 12	\$ 480
<i>Subtotal</i>				\$ 57,150
6. Construction Management				
Construction oversight	40	hours	\$ 115	\$ 4,600
Project management	4	hours	\$ 115	\$ 460
Lodging and per diem	4	days	\$ 118	\$ 470
Mileage	1,280	miles	\$ 0.50	\$ 640
<i>Subtotal</i>				\$ 6,170
Construction Subtotal				\$ 64,500
Final Design (15% of Construction Subtotal)				\$ 9,675
Construction Management (Item 6 above)				\$ 6,170
Contingency (25% of Construction Subtotal)				\$ 16,200
<i>Total Project Cost</i>				\$ 96,545

Notes:

1. This planning level construction cost opinion is for preliminary alternatives analysis only and is not binding.
2. Costs are based on conceptual designs dated May 2021.
3. The 25 percent contingency is included to address uncertainty in material and labor costs.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Montana Partners for Fish & Wildlife
420 Barrett Street, Dillon, MT 59725



Michelle McGree
Future Fisheries Improvement Program
1420 E 6th Avenue
PO Box 200701
Helena Montana
59620-0701

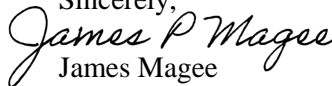
May 17, 2021

Dear Michelle,

Please accept this letter of support for Montana Fish, Wildlife & Parks' Daniels Ditch Future Fisheries proposal for the upper Big Hole River submitted by Jarrett Payne. I have had the pleasure of working with Montana Fish, Wildlife & Parks for over two decades and appreciate their stewardship and accomplishments to enhance the Big Hole Watershed and conserve Arctic grayling. This proposal continues those efforts by addressing entrainment of juvenile Arctic grayling in an irrigation ditch. The Daniels Ditch has recorded the highest numbers of entrained grayling in the Big Hole Watershed. The proposed project will improve the irrigation infrastructure so the water user can better manage diverted flows, install a fish screen and a return pipe to providing Arctic grayling access back to the river and reduce mortality of in the ditch.

Since 2006 we have implemented a watershed conservation strategy through the Big Hole Arctic Grayling Candidate Conservation Agreement with Assurances Program (CCAA). Through landowner stewardship, diverse partnerships, and resources we are enhancing Arctic grayling habitat, riparian vegetation, stream flows and temperatures and reducing entrainment. To continue those efforts and as a Partner in this project the USFWS is committing \$35,545 for design and ground work towards this project. Additionally PFW has secured a landowner agreement and will complete ESA Section 7, the 106 National Historic Preservation Act and NEPA requirements.

The USFWS Montana Partners for Fish & Wildlife Program (PFW) has collaborated with private landowners and the MFWP for many years to implement watershed scale conservation and identify long-term strategies that protect and maintain resiliency in our watersheds. We have identified the Big Hole watershed as a conservation focus area due to its unique assemblage of wildlife species including Arctic grayling, intact habitats and potential to implement conservation at a landscape scale. I am confident as a partner that your support for these efforts are building a better future for SW Montana. Thank you for considering this proposal.

Sincerely,

James Magee
Fish and Wildlife Biologist
MT Partners for Fish and Wildlife Program
U.S. Fish and Wildlife Service

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	1	Lump	\$9,675.00	\$ 9,675.00		9,675.00		\$ 9,675.00
Engineering				\$ -				\$ -
Permitting				\$ -				\$ -
Oversight	40	Hours	\$115.00	\$ 4,600.00		4,600.00		\$ 4,600.00
Project Managment	4	Hours	\$115.00	\$ 460.00		460.00		\$ 460.00
			Sub-Total	\$ 14,735.00	\$ -	\$ 14,735.00	\$ -	\$ 14,735.00
Travel								
Mileage	1,280	miles	\$0.50	\$ 640.00		640.00		\$ 640.00
Per diem	4	Days	\$118.00	\$ 472.00		472.00		\$ 472.00
			Sub-Total	\$ 1,112.00	\$ -	\$ 1,112.00	\$ -	\$ 1,112.00
Construction Materials****								
3/4 Gravel	30	Cubic Yards	\$30.00	\$ 900.00		900.00		\$ 900.00
Filter Fabric	400	Linear Feet	\$1.00	\$ 400.00		400.00		\$ 400.00
Headgate	1	Each	\$2,500.00	\$ 2,500.00		2,500.00		\$ 2,500.00
12" Slide Gate	1	Each	\$700.00	\$ 700.00		700.00		\$ 700.00
CWS Screen	1	Each	\$40,000.00	\$ 40,000.00	34,000.00	6,000.00		\$ 40,000.00
10" HDPE Pipe	130	Feet	\$5.00	\$ 650.00		650.00		\$ 650.00
12" HDPE Sluice Pipe	40	Feet	\$12.00	\$ 480.00		480.00		\$ 480.00
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 45,630.00	\$ 34,000.00	\$ 11,630.00	\$ -	\$ 45,630.00
Equipment, Labor, and Mobilization								
Mobilization\De mob	1	Lump	\$3,000.00	\$ 3,000.00		3,000.00		\$ 3,000.00
Site Prep	4	Hours	\$240.00	\$ 960.00		960.00		\$ 960.00
Trash Pump Operation	1	Week	\$425.00	\$ 425.00		425.00		\$ 425.00
Material Distribution	8	Hours	\$240.00	\$ 1,920.00		1,920.00		\$ 1,920.00
Temp water Divesions	4	Hours	\$240.00	\$ 960.00		960.00		\$ 960.00
Screen Installation	32	Hours	\$240.00	\$ 7,680.00		7,680.00		\$ 7,680.00
Bypass Pipe Installation	8	Hours	\$240.00	\$ 1,920.00		1,920.00		\$ 1,920.00

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

Headgate Installation	8	Hours	\$240.00	\$ 1,920.00		1,920.00		\$ 1,920.00
Contingency	100%	Each	\$16,200.00	\$ 16,200.00		16,200.00		\$ 16,200.00
				\$ -				\$ -
				\$ -				\$ -
				\$ -				\$ -
			Sub-Total	\$ 34,985.00	\$ -	\$ 34,985.00	\$ -	\$ 34,985.00
TOTALS				\$ 96,462.00	\$ 34,000.00	\$ 62,462.00	\$ -	\$ 96,462.00

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)
USFWS	\$ -	\$ 35,545.00	\$ 35,545.00	Yes
MFWP (SWG)	\$ -	\$ 31,000.00	\$ 31,000.00	Yes
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
TOTALS	\$ -	\$ 66,545.00	\$ 66,545.00	

OTHER CONTRIBUTIONS

(contributions not associated with the application)

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

	\$	-	\$	-	\$	-	
	\$	-	\$	-	\$	-	
	\$	-	\$	-	\$	-	
	\$	-	\$	-	\$	-	
	\$	-	\$	-	\$	-	
TOTALS	\$	-	\$	-	\$	-	