



FUTURE FISHERIES IMPROVEMENT PROGRAM GRANT APPLICATION

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



I. APPLICANT INFORMATION

A. Applicant Name: Trout Unlimited (Contact – Morgan Case)

Mailing Address: PO Box 412

City: Helena State: MT Zip: 59624

Telephone: 208.407.6862 E-mail: Morgan.case@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): See Attachment I.C

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ E-mail: _____

II. PROJECT INFORMATION

A. Project Name: Murphy Spring Creek Instream Flow Restoration Renewal

River, stream, or lake: Murphy Spring Creek

Location: Township: 15N Range: 11W Section: 16

Latitude: 47.0560 Longitude: -112.9983 *within project (decimal degrees)*

County: Powell

B. Purpose of Project:

The purpose of the project is to secure 2.2 cfs of instream flow in Murphy Spring Creek (MSC) to improve spawning and rearing conditions for Westslope Cutthroat Trout and improve rearing opportunities for juvenile Bull Trout.

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

Murphy Spring Creek is a first-order spring creek tributary to the North Fork of the Blackfoot River entering at river mile 9.9. The North Fork is a primary fluvial bull trout spawning tributary and "core area" for the recovery of the species. Based on Montana Department of Fish, Wildlife and Parks (FWP) population surveys, the spring creek supports juvenile bull trout rearing near the mouth and westslope cutthroat trout throughout the stream. DFWP's restoration prioritization ranks Murphy Spring Creek as a "high" priority, based on its native fish values.

Baseline studies of the creek found that a number of human-induced impairments have limited the creek's availability as spawning, rearing, and resident habitat for native fish. The impairments included barriers to fish passage at a perched culvert and at the lone diversion on the stream, dewatering from the diversion to the mouth of the stream in late summer, and entrainment in the ditch. The Big Blackfoot Chapter of Trout Unlimited (BBCTU) and other restoration partners (FWP and the US Fish and Wildlife Service) have expended considerable effort to correct these impairments.

In 1999, and again in 2010, the perched culvert was replaced with a more fish-friendly culvert. In 1998, an irrigation diversion was retrofitted with a fish ladder and a new headgate at stream mile 1.7. In 2006, BBCTU and its restoration partners, with funding from a Future Fisheries grant, installed a Coanda fish screen on the diversion. In addition, in 2010, BBCTU and its partners restored 800 feet of stream bank and initiated a 20-year grazing agreement with the riparian landowner on the lowest reach of the creek.

This irrigation diversion serves two irrigators. The diversion conveys water from Murphy Spring Creek to a small reservoir, Doney Lake; from there, a ditch conveys water to Warren Creek, from which irrigators divert it to irrigate lands near Ovando. Previous to 2005, low flow measurements below the diversion have ranged from zero to ½ cfs. For the last 16 years, TU and the irrigators entered a series of single season in-stream flow agreements and then a ten-year lease that protected 2.2 cfs instream flow in the spring creek after July 1. The 2.2 cfs target is based on an instream flow model generated for basin-fed streams in the watershed. Since the agreements have been in place, low flows in the reach below the diversion have been at or near 2.2 cfs. In some years, when inflows above the headgate have dropped below 2.2 cfs, flows in the reach below the headgate have likewise dropped below 2.2 cfs.

FWP population data gathered through 2007 show a steady increase in native fish populations in the reach below the diversion in the early years of the single-season agreements, with a leveling off in recent years have been in place (Attachment II.C).

This project will maintain the benefits resulting from the previous 16 years of flow protection, by renewing the lease for an additional 10 years.

- D. Length of stream or size of lake that will be treated (project extent): 1.7 miles
 Length/size of impact, if larger than project extent (e.g. stream miles opened): _____

E. Project Budget:

Grant Request (Dollars): \$ 15,000

Matching Dollars: \$ 66,200

Matching In-Kind Services:* \$ _____

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

Other Contributions (not part of this app) \$ 932.20

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.

See Attachment II.G

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 ☒

Instream flow leases in Montana are limited to 10-year terms. The water right owners have signed a 10-year extension of the original lease. Trout Unlimited is committed to monitoring instream flows and ensuring compliance during the term of the lease. At the end of the term, Trout Unlimited will pursue another renewal.

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

Trout Unlimited and the water right owners will monitor the stream flow in MSC at the Haul Road using a staff plate and rating curve, as well as a recently installed stage logger. When flows approach 2.2 cfs, the irrigators will reduce their diversion to maintain the 2.2 cfs flow.

The riparian vegetation and structure is protected on the lowest section of the creek under a 20-year grazing management plan. Above that reach the creek runs through the Lolo National Forest, the Blackfoot Clearwater Wildlife Management Area, and a section of State Land.

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

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

Westslope Cutthroat Trout (all life stages) and juvenile Bull Trout.

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

The project will protect and enhance wild fish habitat by securing critical minimum instream flows in Murphy Spring Creek. These flows will provide connectivity to the North Fork Blackfoot River and cold-water refugia for Westslope Cutthroat Trout and juvenile Bull Trout. (See Attachment III.B for evidence of cold-water inputs to NFBB River.)

C. Will the project improve fish populations and/or fishing? To what extent? What are the expected short term and long term benefits to the fishery?

Yes, by increasing wild trout habitat in the Blackfoot River drainage. The project is expected to increase fishing opportunities by improving instream flows in Murphy Spring Creek, thereby increasing recruitment to the North Fork Blackfoot River and mainstem Blackfoot River- river sections that receive high angler use. This project is expected to benefit primarily westslope cutthroat trout a species more readily caught by anglers than other species. This project also has the potential to benefit bull trout populations and aid in future ESA delisting.

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

Yes, by providing downstream recruitment to the North Fork of the Blackfoot River. The project will enhance populations of native species in an area of high angling pressure.

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

The habitat degradation was caused by dewatering of the lower stream due to the irrigation diversion. This project will prevent dewatering by maintaining a minimum flow between the diversion and the mouth of the creek.

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

This project involves the continuation of the Blackfoot River Restoration program and the restoration of a bull trout and westslope cutthroat stream. Public benefits include: 1) recruitment of recreational fisheries to the Blackfoot River, 2) an increase in the amount of fishable water, 3) improved water quantity on-site and downstream, and 4) contribute to the recovery of bull trout and delisting of bull trout from the ESA.

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

No. The project simply requires the reduction of diversion at the Murphy Spring Irrigators' headgate. As a result, there is no change experienced by landowners upstream. Downstream, there will be an increase in flow to the mouth of the stream in mid-to-late summers, when flows decline. This flow increase poses no threat to other landowners.

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

No. The primary instream flow reach, from the Murphy ditch to the confluence with the North Fork Blackfoot River, is remote and difficult to access. It does not lend itself to commercial recreational development.

- 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: Morgan Case Date: 10/25/2021

Sponsor (if applicable): _____

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
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Applications may be rejected if this form is modified.

FUTURE FISHERIES IMPROVEMENT PROGRAM

SUPPLEMENTAL INFORMATION SHEET FOR WATER LEASING OR WATER SALVAGE PROJECTS

The following additional information is requested to supplement the Future Fisheries Application for projects associated with water leasing or water salvage. Please complete this supplemental form and submit it as part of the Future Fisheries Grant Application.

- 1. Please complete the following table describing the water right(s) associated with the proposed project.** Note: Much of this information can be obtained either from your own water rights records or online at <http://www.dnrc.state.mt.us/wrd/home.htm> (choose “water rights” and then select an index to look up applicable claims)

RIGHT NUMBER; WATER SOURCE	POINT OF DIVERSION	QUANTIFIED FLOW (CFS)/ VOLUME (AF)/ IRRIGATED ACRES	PRIORITY DATE; PERIOD OF USE	RELATIVE PRIORITY ON WATER SOURCE	PURPOSE OF WATER RIGHT	OTHER CLAIMED ON THE STREAM SENIOR TO YOUR LISTED CLAIMS
76F 132521-00	SESENW Sec. 16; T15N; R11W	3.5 cfs / 365 AF / 248 irrigated acres (1.37 cfs and 152.6 AF to be protected instream)	5/29/1894; April 1 - October 15	Together with 76F 132522-00 2nd of 9 claims: However, the senior right has been retired.	Irrigation	None
76F 132522-00	SESENW Sec. 16; T15N; R11W	14 cfs / 1,462 AF / 386 irrigated acres (0.83 cfs and 92.4 AF to be protected instream)	5/29/1894; April 1 - October 15	Together with 76F 132521-00 2nd of 9 claims: However, the senior right has been retired.	Irrigation	None

- 2. In the last 10 years, has your full water right amount regularly been available at your point of diversion throughout your period of use?**

Yes / **No** (Please circle one) The proposed lease seeks only to convert up to 2.2 cfs of the 17.5 cfs of rights listed above to instream flow. Flow measurements during the initial 10-year lease confirmed that the 2.2 cfs was left instream per the terms of the agreement. The irrigators often reduced their diversion to maintain the minimum flow in late June to early July. In drier years, the natural flow was measured as low as 1.3 cfs.

Have you ever made “a call” on junior water users to obtain the water you needed (through a water commissioner or otherwise)?

Yes / **No** (Please circle one) The only upstream rights are junior stockwater rights.

3. **Please describe or include a summary of any measurements of the amount of water you have regularly diverted and how much typically flows by your diversion during different time periods.** Prior to the original 10-year lease, Trout Unlimited measured diversions as high as 14.3 cfs in the spring to no diversion late season.
4. **Has your local FWP fish biologist confirmed that your leasing/salvage project addresses a stream flow problem that significantly limits the fishery?**

☒ Yes / No (Please circle one)

5. **How much actual water (often different than just the remainder of your water rights) will be added to the stream through completion of your project?**
2.2 Please fill in and circle one – ☒ cfs / gpm / miners inches

What length of stream will benefit from this additional flow? (Note: Under certain circumstances, senior water can be protected legally from diversion by downstream junior users.)

1.7 miles (please fill in or describe)

6. **Is there a water commissioner on your stream? Yes / ☒ No** (Please circle one)

Are you willing to actively assist in monitoring and/or protecting the conserved water instream? ☒ Yes / No (Please circle one and describe)

Attachment I.C – Landowner and/or Lessee Name

Bignell Ranch Co
4801 Ovando-Helmville Rd
Helmville, MT 59843-9121

Gordon Murphy
PO Box 75
Ovando, MT 59854-0075

Attachment II.C Excerpt from MT FWP Fisheries Investigations in the Blackfoot River Watershed, 2016-2020. Patrick Uthe, Craig Podner, and Rob Pierce. May 2021.

Murphy Spring Creek

Restoration objectives: Restore spawning and rearing habitat for fluvial Westslope Cutthroat Trout; prevent fish entrainment in irrigation ditches; maintain minimum instream flows to provide rearing opportunities and seasonal refugia for North Fork Blackfoot River juvenile Bull Trout.

Project summary

Murphy Spring Creek, a small 1st order tributary, drains a 4.4 mile² basin and flows 6.7 miles before entering the North Fork Blackfoot River at mile 9.9. Average baseflow ranges from 2 to 3 cfs. The stream originates on the Lolo National Forest on the northeast side of Ovando Mountain, then enters state land at mile 2.3, before entering private land near mile 1.0.

Prior to restoration, Murphy Spring Creek frequently dewatered from irrigation withdrawals and had fish passage problems (Pierce et al. 2005). Most problematic was the chronic dewatering and entrainment of Westslope Cutthroat Trout at the Murphy Ditch at mile 1.8. Fish passage problems involved an undersized culvert at mile 0.5 and the poor condition of the diversion at mile 1.8.

Restoration of Murphy Spring Creek began in 1998 with a new diversion fitted with a Denil fish ladder. In 2004, restoration expanded with an instream flow agreement that granted habitat maintenance flows as well as a 2.2 cfs minimum instream flow to provide additional coldwater input to the lower North Fork and create high quality rearing opportunities for juvenile Bull Trout and Westslope Cutthroat Trout. In 2006, a Coanda fish screen was installed at the diversion to eliminate entrainment of Westslope Cutthroat Trout. The most recent work occurred in 2010 with an upgrade of the culvert at stream mile 0.5 and the restoration of instream habitat throughout 880 ft stream section. The instream flow lease is in the renewal process with intention for the lease to commence for another 10-year period in summer 2021.

Fisheries monitoring

Prior to restoration, we established a fish population monitoring site at mile 0.6. Following implementation of project actions, a consistent increase in native trout abundance was observed until a high point in 2011. Since then, surveys have documented that native trout abundance has leveled off and fluctuated around a post-restoration average that is higher than pre-treatment levels of abundance. Abundance of non-native trout (Brook Trout) remains relatively low, although they represented a larger proportion of the total catch in the 2018 survey (Figure 40; Appendices A & B). This might indicate an increase in Brook Trout expansion similar to other tributary drainages in the Blackfoot watershed (e.g., Gold Creek). Alders and other riparian vegetation from the restoration project have matured and contribute to high quality riparian conditions and overhanging cover. Future monitoring plans include long-term monitoring at 5–10-year intervals to continue evaluating fishery response and benefits associated with the ongoing water lease.

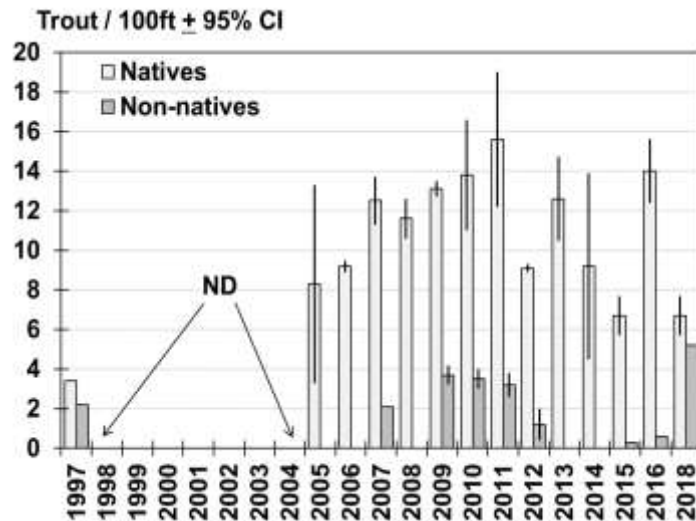


Figure 40. Estimates of abundance for age-1 and older native and nonnative trout in Murphy Spring Creek at mile 0.6, 1997-2018.

WPLATE SHEET FOR FUTURE FISHERIES PROGRAM AND

[illegible]

BUDGET TEMPLATE SHEET FOR FUTURE FISHERIES PROGRAM APPLICATIONS

008-2022

			Sub-Total	\$ -	\$ -	\$ -	\$ -	\$ -
TOTALS				\$ 82,532.20	\$ 15,000.00	\$ 66,600.00	\$ 932.20	\$ 82,532.20

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)
BPA - Columbia Basin Water Transactions Program	\$ -	\$ 66,600.00	\$ 66,600.00	Y
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
TOTALS	\$ -	\$ 66,600.00	\$ 66,600.00	

OTHER CONTRIBUTIONS

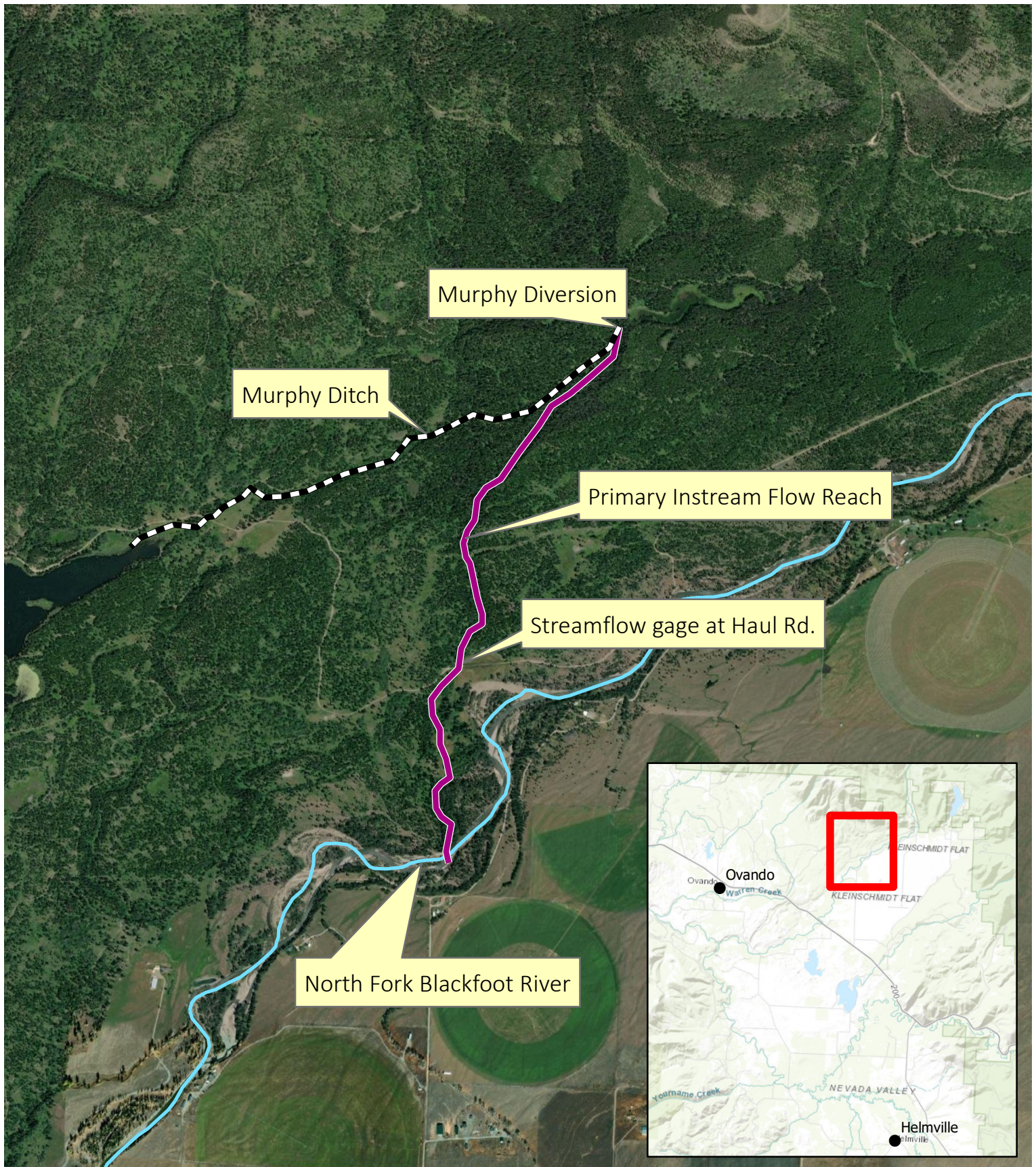
(contributions not associated with the application)

CONTRIBUTOR	IN-KIND	CASH	TOTAL	Secured? (Y/N)
BPA - Columbia Basin Water Transactions Program	\$ -	\$ 932.20	\$ 932.20	Y
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
	\$ -	\$ -	\$ -	
TOTALS	\$ -	\$ 932.20	\$ 932.20	

Murphy Spring Creek instream flow restoration renewal
Attachment II.G Murphy Spring Creek

008-2022

10-Year Split Season Lease Renewal 2021-2030



Attachment II.H – Photographs of pre-project conditions

Figure 1. Murphy Spring Creek downstream of Haul Road prior to original lease.



Figure 2. Perched Culvert on lower Murphy Spring Creek before replacement.



**MUTUAL MODIFICATION AND RENEWAL
WATER RIGHTS LEASE AGREEMENT FOR INSTREAM FLOWS**

THIS MODIFICATION AND RENEWAL OF THE LEASE AGREEMENT is made this 28 day of May, 2021, between Trout Unlimited, Inc.; Big Blackfoot Chapter Trout Unlimited; Bignell Ranch Co.; and Gordon Murphy.

RECITALS

1. Big Blackfoot Chapter Trout Unlimited and Bignell Ranch Co., Gordon Murphy, and Alfonso Angello (collectively "Spring Creek Irrigators") entered into a water lease agreement dated September 23, 2008 to provide for instream flows in Spring Creek, also known as Murphy Spring Creek, tributary of the North Fork Blackfoot River near Ovando, Montana.
2. Authorizations to change the purpose of a portion of the Spring Creek Irrigators' water rights were obtained from the Montana Department of Natural Resources and Conservation on June 3, 2011 and are set to expire on June 3, 2021.
3. Since the original lease and Change Authorizations were executed, the Spring Creek Irrigators continued to use their water for irrigation until the discharge of Spring Creek fell below 2.2 cfs, whereupon the Spring Creek Irrigators either ceased to divert from Spring Creek or reduced the diversion to maintain 2.2 cfs in Spring Creek as instream flow.
4. The instream flow lease benefitted wild westslope cutthroat and bull trout in Spring Creek and the North Fork Blackfoot River by protecting juvenile rearing habitat and enhancing cold-water refugia for migrating fish.

5. Alfonso Angello, party to the original lease, passed away in 2012. His portion of the Spring Creek water rights (20%) is now owned by Bignell Ranch Co.
6. Trout Unlimited, an active participant in the development and funding of the original lease, will continue to assist the Spring Creek Irrigators with the monitoring, change renewal, and funding associated with the ten-year lease extension.
7. The parties to this lease intend to mutually modify and renew the agreement to continue to accomplish its instream flow purposes as set forth in the agreement pursuant to the provisions of section 85-2-408, Montana Code Annotated.

THEREFORE, the parties agree to the following modifications of the September 23, 2008 lease as follows:

1. **Parties.** Trout Unlimited shall be added as a party to the lease. Alfonso Angello shall be removed as party to the lease.
2. **Term of Lease.** The term of this lease shall be an additional ten (10) years, commencing on the date that the Department of Natural Resources and Conservation (DNRC) approves renewal of the Change Authorizations unless otherwise terminated by either party.
3. **Trout Unlimited Contributions.** In furtherance of this renewal, Trout Unlimited shall:
 - a) Pay all costs associated with processing through DNRC an application to renew Change Authorization Nos. 76F 30047783 and 76F 30047784;

- b) Pay a lease payment of eight-one thousand two hundred dollars (\$81,200) for the additional ten-year lease term, divided among the Spring Creek Irrigators as follows: Gordon Murphy, forty percent (40%); Bignell Ranch sixty percent (60%).

4. **Lease to Trout Unlimited.** In consideration of Trout Unlimited's actions in paragraph 3 of this lease, the Spring Creek Irrigators shall lease to Trout Unlimited the instream flow portion of water rights included in Change Authorization Nos. 76F 30047783 and 76F 30047784.

5. **Notice.**

Trout Unlimited's liaison address is:

Morgan Case
Trout Unlimited
432 N Last Chance Gulch Ste S
PO Box 412
Helena, MT 59624

Big Blackfoot Chapter Trout Unlimited's address is:

Ryen Neudecker
PO Box 1
Ovando, MT 59854

Spring Creek Irrigators' addresses are:

Bignell Ranch Co.
4801 Ovando-Helville Rd.
Helmville, MT 59843-9121

Gordon Murphy
PO Box 75
Ovando, MT 59854-0075

6. All other provisions of the September 23, 2008 not otherwise modified herein remain in effect.

Dated this 28 day of May, 2021.

Bignell Ranch Co.

by Sam Bignell
4801 Ovando-Helville Rd.
Helmsville, MT 59843-9121

Gordon Murphy

by Gordon Murphy
PO Box 75
Ovando, MT 59854-0075

Big Blackfoot Chapter Trout Unlimited

by James W. Stuyman
PO Box 1
Ovando, MT 59854

Trout Unlimited, Inc.

by Scott Gates
321 East Main St, Ste 411
Bozeman, MT 59715

FWP.MT.GOV

THE **OUTSIDE** IS IN US ALL.

Montana Fish, Wildlife and Parks
Region 2 Headquarters
3201 Spurgin Road
Missoula, MT 59804

November 5, 2021

Montana Fish, Wildlife and Parks
Attn: Michelle McGree
1420 East 6th Ave.
Helena, MT 59620

Dear Future Fisheries Panel:

I am writing to express support for Trout Unlimited's Murphy Spring Creek instream flow lease renewal project. Murphy Spring Creek has significant native species and sport fishery values. It is ranked as a high priority within the Blackfoot River prioritization framework because of its biological value and potential to improve flows in the Blackfoot River. Moreover, it flows directly into the North Fork Blackfoot River, one of the highest priority native trout fisheries in the watershed, as well as an extremely popular angling destination. Murphy Spring Creek enhances discharge in the hydrologic-losing reach of the North Fork and the instream flow lease results in perennial connection with the lower North Fork Blackfoot River.

Murphy Spring Creek provides important spawning and rearing opportunities for migratory westslope cutthroat trout. It also provides seasonal refugia and rearing habitat for migratory bull trout produced in the North Fork Blackfoot River. The abundance of native trout has increased since the late-1990s since habitat efforts were initiated in this stream. Bull trout spawning has not been observed in the creek, so the consistent observations of juvenile bull trout during electrofishing surveys indicate that they are specifically seeking out seasonal habitat within the lower reach of Murphy Spring Creek that is enhanced by the flow lease. The Future Fisheries Improvement Program contributed funding to the original flow lease and fish screen installation. The flow lease warrants continued investment given the positive changes observed in the fishery over the last decades.

I expect this project to directly benefit the fishery through improved spawning and rearing conditions for westslope cutthroat trout, and improved rearing opportunities for juvenile bull trout. Renewal of the flow lease will help facilitate increased recruitment of native trout to the North Fork Blackfoot River and Blackfoot River, helping to achieve species conservation and fisheries management objectives in this part of the watershed. Thank you very much for consideration of this funding request.

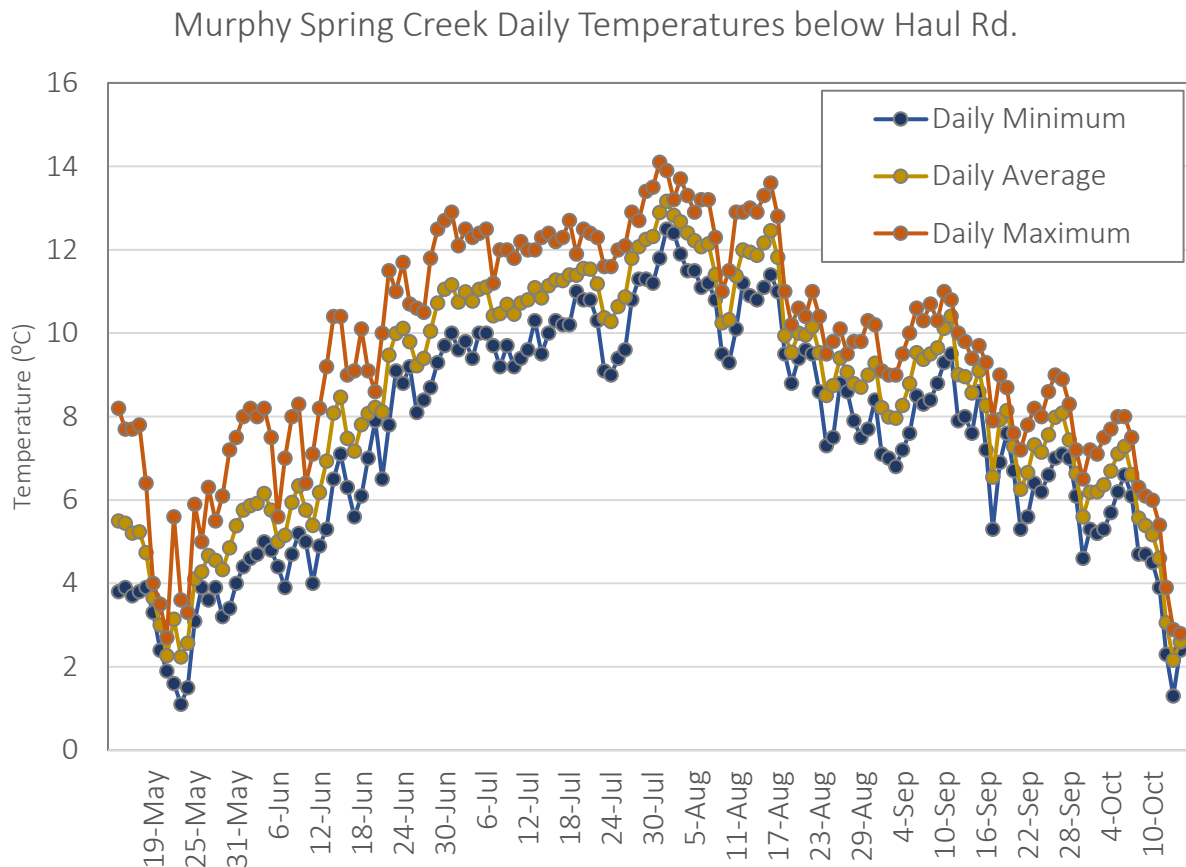
Sincerely,

Randy Arnold
Regional Supervisor

Attachment III.B

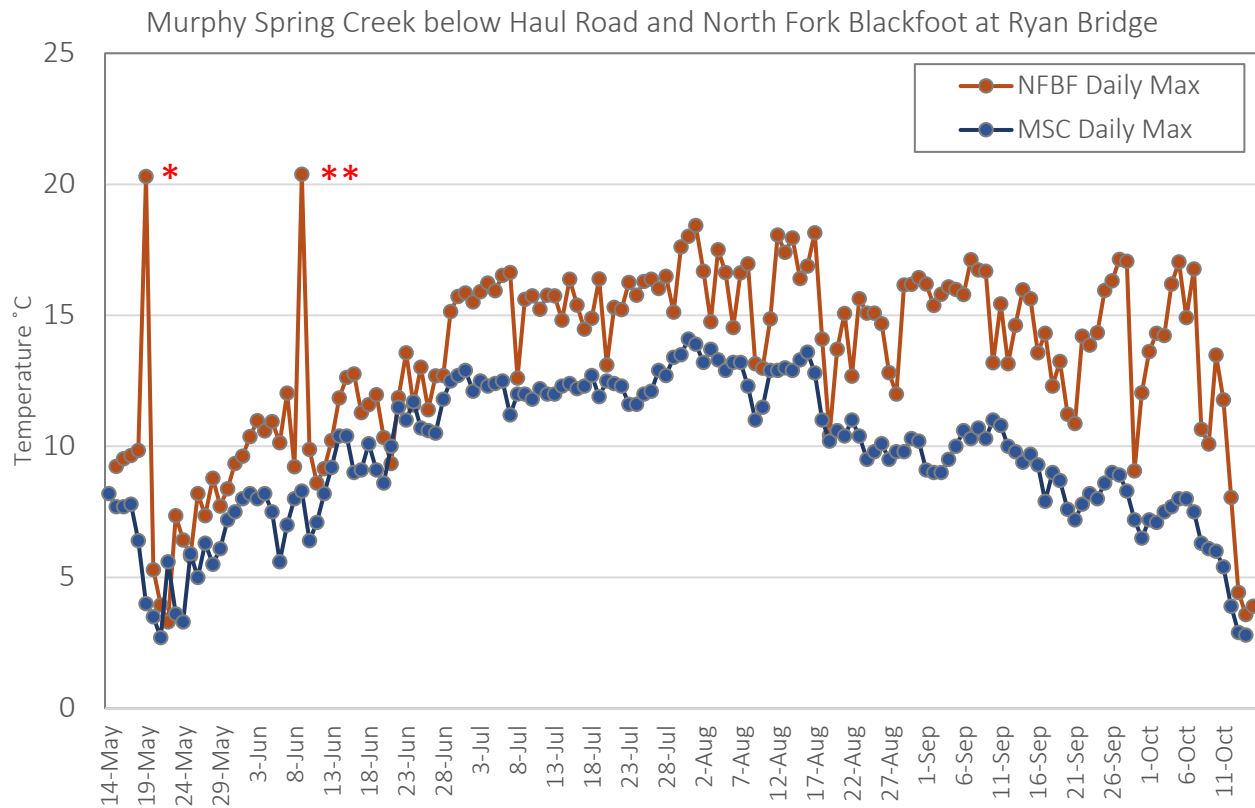
Trout Unlimited installed a stage and temperature logger in Murphy Spring Creek (MSC) below the Haul Road culvert on May 13, 2021. Despite drought and high temperatures in the Blackfoot basin, water temperatures in MSC stayed below thresholds considered stressful for Bull Trout (15°C) and Westslope Cutthroat Trout (20°C).

Figure 1. Water temperature ($^{\circ}\text{C}$) at Trout Unlimited Murphy Spring Creek stream gage between May 14 and October 12, 2021.



The Montana Department of Natural Resources operates a stream gage on the North Fork Blackfoot River (NFBF) at the Ryan Bridge approximately 1.5 miles downstream of the confluence with Murphy Spring Creek. Between May 18 and October 12, the maximum daily temperature was consistently warmer than the water coming in from Murphy Spring Creek. Between July 1 and September 30, when maximum temperatures in the NFBF often exceeded the 15°C threshold, the maximum daily temperature in Murphy Spring Creek was on average 4.2°C cooler (Figure 2).

Figure 2. Maximum daily water temperature (°C) at Trout Unlimited Murphy Spring Creek stream gage and DNRC North Fork Blackfoot River at Ryan Bridge between May 14 and October 12, 2021.



* Likely anomaly, temperature was 8.25°C before the high reading and 7.98 °C after the high reading.

** Likely anomaly, temperature was 7.89 °C before the high reading and 12.85°C after the high reading.