

DRAFT

ENVIRONMENTAL ASSESSMENT

CHECKLIST

**Translocation of Westslope Cutthroat Trout within
the Thompson River drainage to Big Hole Creek
(Thompson River drainage)**

June 25, 2024

FWP-CEA-FSH-R1-24-010



Table of Contents

I.	Compliance with the Montana Environmental Policy Act.....	3
II.	Background and Description of Proposed Project	3
III.	Purpose and Need	7
IV.	Other Agency Regulatory Responsibilities	8
V.	List of Mitigations, Stipulations	8
VI.	Alternatives Considered	9
VII.	Summary of Potential Impacts of the Proposed Project on the Physical Environment and Human Population .	10
VIII.	Private Property Impact Analysis (Takings).....	21
IX.	Public Participation	22
X.	Recommendation for Further Environmental Analysis	23
XI.	EA Preparation and Review	23
	Appendix A: References.....	23
	Appendix B: Species of Conservation Concern Occurrence list for project area.....	24

I. Compliance with the Montana Environmental Policy Act

Before a proposed project may be approved, environmental review must be conducted to identify and consider potential impacts of the proposed project on the human and physical environment affected by the project. The Montana Environmental Policy Act (MEPA) and its implementing rules and regulations require different levels of environmental review, depending on the proposed project, significance of potential impacts, and the review timeline. § 75-1-201, Montana Code Annotated (“MCA”), and the Administrative Rules of Montana (“ARM”) 12.2.430, General Requirements of the Environmental Review Process.

FWP must prepare an EA when:

- It is considering a “state-proposed project,” which is defined in § 75-1-220(8)(a) as:
 - (i) a project, program, or activity initiated and directly undertaken by a state agency;
 - (ii) ... a project or activity supported through a contract, grant, subsidy, loan, or other form of funding assistance from a state agency, either singly or in combination with one or more other state agencies; or
 - (iii) ... a project or activity authorized by a state agency acting in a land management capacity for a lease, easement, license, or other authorization to act.
- It is not clear without preparation of an EA whether the proposed project is a major one significantly affecting the quality of the human environment. ARM 12.2.430(3)(a));
- FWP has not otherwise implemented the interdisciplinary analysis and public review purposes listed in ARM 12.2.430(2) (a) and (d) through a similar planning and decision-making process (ARM 12.2.430(3)(b));
- Statutory requirements do not allow sufficient time for the FWP to prepare an EIS (ARM 12.2.430(3)(c));
- The project is not specifically excluded from MEPA review according to § 75-1-220(8)(b) or ARM 12.2.430(5); or
- As an alternative to preparing an EIS, prepare an EA whenever the project is one that might normally require an EIS, but effects which might otherwise be deemed significant appear to be mitigable below the level of significance through design, or enforceable controls or stipulations or both imposed by the agency or other government agencies. For an EA to suffice in this instance, the agency must determine that all the impacts of the proposed project have been accurately identified, that they will be mitigated below the level of significance, and that no significant impact is likely to occur. The agency may not consider compensation for purposes of determining that impacts have been mitigated below the level of significance (ARM 12.2.430(4)).

MEPA is procedural; its intent is to ensure that impacts to the environment associated with a proposed project are fully considered and the public is informed of potential impacts resulting from the project.

II. Background and Description of Proposed Project

Name of Project: Translocation of Westslope Cutthroat Trout within the Thompson River drainage to Big Hole Creek (Thompson River drainage)

Montana Fish, Wildlife & Parks (FWP) is proposing to translocate (i.e., transfer, move) non-hybridized westslope cutthroat trout (WCT) *Oncorhynchus clarkii lewisi* to suitable fishless habitat in the headwaters of Big Hole Creek (Thompson River drainage) from multiple populations across the Thompson River drainage (Figure 1). Presently, most WCT populations in the Thompson River drainage are at high risk of extirpation because of hybridization with non-native rainbow trout (RB) *Oncorhynchus mykiss irideus* and/or Yellowstone cutthroat trout (YCT)

Oncorhynchus clarkii bouvieri and through competition/predation from non-native brown trout (LL) *Salmo trutta* and brook trout (EB) *Salvelinus fontinalis*.



Figure 1. High-quality fishless habitat in Big Hole Creek, above river mile 1.2, in the Thompson River drainage.

Westslope cutthroat trout that would be translocated to Big Hole Creek would be individually genetically tested to ensure only non-hybridized fish are transferred. In addition, annual fish pathogen and aquatic invasive species testing is required to translocate fish within the watershed. Fish ≥ 100 mm, which includes juvenile and mature individuals, would be transferred to the stream. This proposed action is part of a larger conservation strategy in the Thompson River drainage to prevent the loss of remaining WCT genetic diversity, to expand the current range of non-hybridized populations into suitable and unoccupied habitats free of non-native fish species, and to reduce the likelihood of listing of WCT under the Endangered Species Act (ESA). The use of multiple stocks to translocate into a single stream is a viable strategy, especially when donor populations cannot provide large numbers of individuals as this approach also minimizes the demographic burden of any translocation removal on donor sources. Results from other WCT translocation efforts in Montana suggest that mixed-source translocations have many benefits and may be more likely to succeed (Feuerstein 2022).

Viable WCT populations in the Thompson River drainage that could be used as donor sources to be translocated into Big Hole Creek include: upper West Fork Thompson River and tributaries (Anne Creek and Four Lakes Creek), upper Deerhorn Creek, Fishtrap Creek tributaries (Jungle Creek, upper mainstem and Mantrap Fork), Little Thompson River tributaries (North Fork Little Thompson River, Alder Creek, McGinnis Creek, Alder Creek/Alder Ditch), Chippy Creek, Meadow Creek (genetic status pending), Big Rock Creek, Indian Creek as well as other population that have not yet been identified or genetically tested.

From 2020-2024, WCT have been transferred into fishless stream reaches above natural barriers (i.e., secure) in three Thompson River tributaries: Bear Creek, Shroder Creek and South Fork Murr Creek. Fish from four to six populations within the drainage have been translocated into each of these streams. Naturally reproduction has been documented in each stream and several founding adults have been recaptured during these investigations.

This project has increased the distribution of secure, non-hybridized populations in the Thompson River basin by at least 10 miles of stream habitat. It is unclear if any of the remaining aboriginal WCT populations in the Thompson River are secure from hybridization and non-native species colonization, however the vast majority of habitat currently occupied by the species is not secure.

Westslope cutthroat trout have declined in abundance, distribution, and genetic diversity throughout their native range (Shepard et al. 2005; Muhlfeld et al. 2016; Heckel et al. 2020). Major factors contributing to this decline include competition with non-native brook trout (EB) *Salvelinus fontinalis*, brown trout (LL) *Salmo trutta*, and rainbow trout that were first introduced in Montana in the 1890's (Dunham et al. 2002; Peterson et al. 2004), hybridization with rainbow and Yellowstone cutthroat trout (Leary et al. 1995; Hitt et al. 2003; Muhlfeld et al. 2014, Bourret et al. 2022), habitat changes, and isolation to small headwater streams (Wang et al. 2002). Recent genetic evaluations have documented wide-spread hybridization in most tributary streams within the Thompson River drainage including West Fork Thompson River, Deerhorn Creek, Fishtrap Creek and tributaries (Beatrice Creek, West Fork Fishtrap Creek, Beatrap Fork, Radio Creek), Little Thompson River tributaries (Little Rock Creek, North Fork Little Thompson River), Chippy Creek, Big Rock Creek and Twin Lakes Creek. In addition, non-hybridized WCT occur in very low abundance or have been extirpated from a significant portion of the drainage including the entire mainstem Thompson River, most of the Little Thompson River drainage, Lazier Creek, lower Murr Creek and lower Indian Creek. Non-native trout (LL, EB, RB and/or *Oncorhynchus* hybrids) are becoming more abundant in tributary streams that are still strongholds for WCT (and in some instances bull trout *Salvelinus confluentus* as well) including West Fork Thompson River, Deerhorn Creek, Fishtrap Creek, Little Rock Creek, North Fork Little Thompson River, Chippy Creek and Big Rock Creek. Currently, it is estimated that non-hybridized WCT populations occur in about 14% of historical habitat within the Thompson River drainage. Most, if not all, of the historically occupied habitat where non-hybridized populations still occur is not secure from invasion by non-native trout species.

The declining status of WCT has led to its designation as a Species of Special Concern by the State of Montana, a Sensitive Species by the U.S. Forest Service (USFS), and a Special Status Species by the Bureau of Land Management (BLM). In addition, in 1997 a petition was submitted to the U.S. Fish and Wildlife Service (USFWS) to list WCT as "threatened" under the ESA. USFWS status reviews have found that WCT were "not warranted" for ESA listing (DOI 2003); however, this finding was in litigation until 2008 and additional efforts to list WCT under the ESA are possible.

To advance WCT conservation efforts in Montana, a Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana was developed in 1999 by several federal and state resource agencies (including the BLM, FWP, the USFS, and Yellowstone National Park), non-governmental conservation and industry organizations, tribes, resource users, and private landowners (FWP 1999). The MOU outlined goals and objectives for WCT conservation in Montana, which, if met, would significantly reduce the need for special status designations and listing of WCT under the ESA. The MOU was revised and endorsed by signatories in 2007 (FWP 2007). As described in the MOU, the primary management goal for WCT in Montana is to ensure the long-term self-sustaining persistence of the subspecies in its historical range. Presently the highest conservation priority is to secure existing, non-hybridized populations of WCT in place to conserve the remaining genetic diversity left on the landscape. Secure WCT populations are isolated from non-native species (usually by a physical barrier) and occupy enough habitat to ensure long-term persistence. Hilderbrand and Kershner (2000) recommended a minimum WCT population size of 2,500 fish for long-term persistence (>100 years) and Harig and Fausch (2002) recommended a minimum of 5.6 square miles (minimum watershed size) of occupied habitat.

Big Hole Creek (T 22N R 27W) is a tributary to the lower Thompson River around river mile (rm) 10. Steep gradient and natural intermittency in the lower reaches of the stream have left it fishless. The stream becomes perennial again around rm 1.2 (section 20), which occurs on public domain managed by the USFS (Figure 2). No fish stocking records were found for the stream and 2021 electrofishing surveys upstream of rm 1.2 found the stream to be fishless. Based on scouting in this drainage over the last three years, FWP believes there are about three miles of high-quality habitat for WCT including in the mainstem of Big Hole Creek and the lower portions of some of its unnamed tributaries. This includes one full section of Green Diamond Resource Company land (section 29) and a partial section on the upstream end (section 33). About half of the species potential distribution would occur on Green Diamond land and half on national forest land. The drainage area is approximately 9 square miles which is greater than the minimum watershed area suggested for cutthroat population establishment (Harig and Faush 2002). Much of Big Hole Creek burned in the 2016 Copper King Fire and thus the stream likely has high productivity (Silins et al. 2014), representing an ideal successional period to introduced WCT. Mean linear abundance of approximately 837 fish/mile would be required to reach a suggested population size of 2500 for long-term persistence (Hilderbrand and Kershner 2000). Reaching such abundance in Big Hole Creek is possible based on the evaluation of minimum, median and maximum WCT abundance across the lower Clark Fork River drainage (Blakney and Tholl 2019, Figure B-1) and based on WCT abundance in other recently burnt streams in the Thompson River drainage including Chippy Creek (Kreiner and Terrazas 2020) and Big Rock Creek (Blakney et al. 2022).

The primary benefit of this project would be the long-term conservation of non-hybridized WCT populations across the Thompson River drainage. The project may take up to five years to complete and would increase the amount of known secure habitat in the drainage by approximately 25% (~10 miles to ~13 miles). This project is very similar the 2020-2024 WCT translocation project in the drainage which has documented successful natural reproduction in each of the three previously fishless streams, including each of the 11 sites sampled in 2022 and 2023. Monitoring for the Big Hole Creek translocation project would mirror the 2020-2024 WCT translocation project and would initially focus on documenting natural reproduction of translocated fish, distribution, and relative abundance. Genetic material would be collected from all offspring of founding parents to investigate the contribution of individuals from each donor population to evaluate measures of genetic diversity between the newly formed population and donor stocks.

Affected Area / Location of Proposed Project:

- Legal Description
 - Latitude/Longitude: 47.64442, -115.08916
 - Section, Township, and Range: T 22N R 27W Sec 20, 29 and 33
 - Town/City, County, Montana: Thompson Falls (nearest town), Sanders County, Montana.
- Location Map

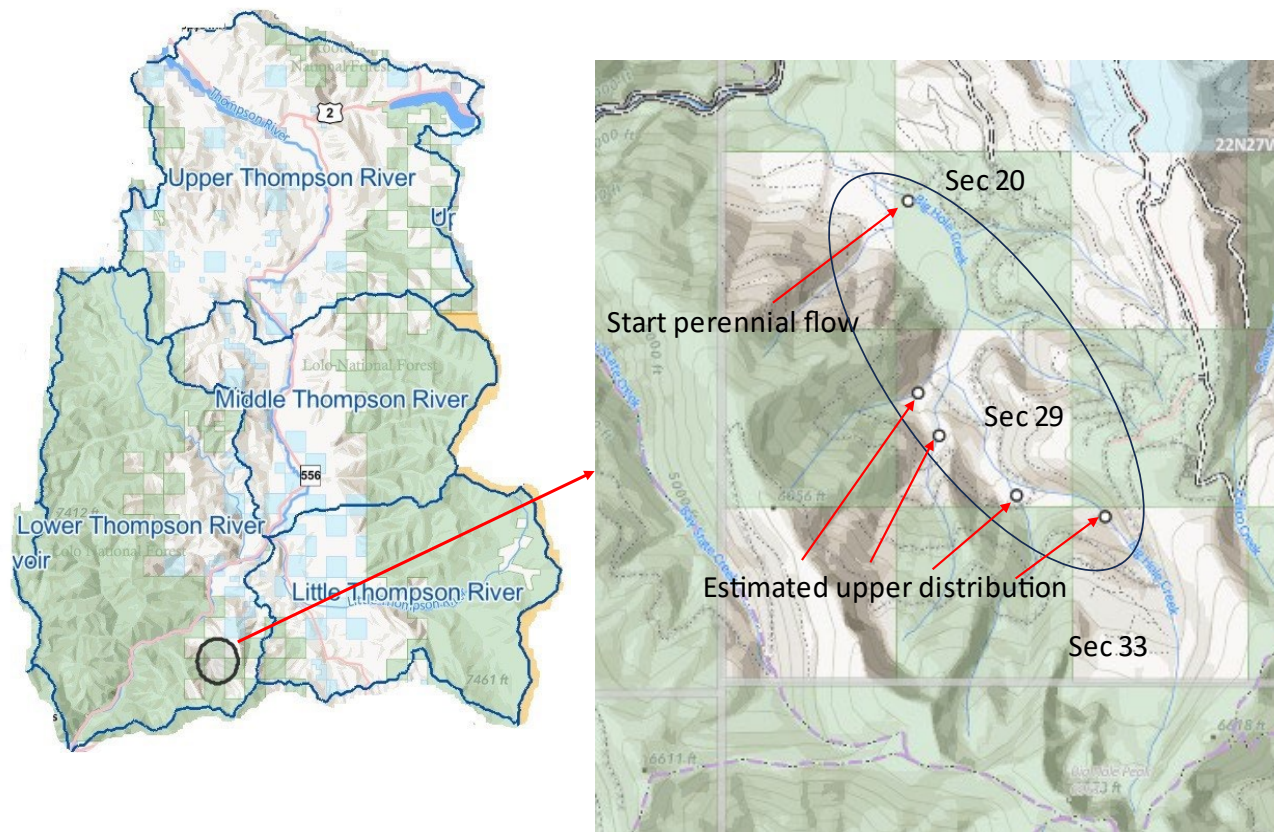


Figure 2. Thompson River drainage (left) and estimated potential suitable habitat for westslope cutthroat trout (WCT) in Big Hole Creek.

III. Purpose and Need

The EA must include a description of the purpose and need or benefits of the proposed project. ARM 12.2.432(3)(b). Benefits of the proposed project refer to benefits to the resource, public, department, state, and/or other.

The intent of the proposed action would be to support the following FWP goals and objectives:

- Prevent the loss of unique genetic lineages of native WCT throughout the Thompson River drainage.
- Expand the current distribution of secure non-hybridized WCT populations in the Thompson River drainage.
- Reduce the likelihood of ESA-listing of WCT.
- Establish a self-sustaining WCT conservation population in Big Hole Creek.
- Increase the amount of occupied secure WCT habitat in the Thompson River drainage by 25% (from ~10 miles to ~13 miles).
- Prevent the extirpation of aboriginal, non-hybridized WCT throughout the Thompson River drainage. Most if not all population are not secure and thus are threatened by non-native trout species through hybridization, competition and/or predation.
- Use Big Hole Creek as a donor stream for future WCT conservation efforts within the Thompson River drainage.

FWP intends to begin WCT translocation from extant Thompson River WCT populations to Big Hole Creek in 2024. Transfers would likely occur over several years (up to five years depending on wild collections/genetic results) to maximize the number and diversity of non-hybridized WCT populations transferred to Big Hole Creek.

If FWP prepared a cost/benefit analysis before completion of the EA, the EA must contain the cost/benefit analysis or a reference to it. ARM 12.2.432(3)(b).

	Yes*	No
Was a cost/benefit analysis prepared for the proposed project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* If yes, a copy of the cost/benefit analysis prepared for the proposed project is included in Attachment A to this Draft EA

IV. Other Agency Regulatory Responsibilities

FWP must list any federal, state, and/or local agencies that have overlapping or additional jurisdiction, or environmental review responsibility for the proposed project, as well as permits, licenses, and other required authorizations. ARM 12.2.432(3)(c).

A list of other required local, state, and federal approvals, such as permits, certificates, and/or licenses from affected agencies is included in **Table 1** below. **Table 1** provides a summary of requirements but does not necessarily represent a complete and comprehensive list of all permits, certificates, or approvals needed for the proposed project. Agency decision-making is governed by state and federal laws, including statutes, rules, and regulations, that form the legal basis for the conditions the proposed project must meet to obtain necessary permits, certificates, licenses, or other approvals. Further, these laws set forth the conditions under which each agency could deny the necessary approvals.

Table 1: Federal, State, and/or Local Regulatory Responsibilities

Agency	Type of Authorization (permit, license, stipulation, other)	Purpose
Lolo National Forest	Management of forest resources, including in a portion of Big Hole Creek where project would occur.	Consultation on proposed project
Green Diamond Resource Company	Owner of a portion of the land in Big Hole Creek where project would occur.	Project permission acquired on 4/26/24

V. List of Mitigations, Stipulations

Mitigations, stipulations, and other enforceable controls required by FWP, or another agency, may be relied upon to limit potential impacts associated with a proposed Project. The table below lists and evaluates enforceable conditions FWP may rely on to limit potential impacts associated with the proposed Project. ARM 12.2.432(3)(g).

Table 2: Listing and Evaluation of Enforceable Mitigations Limiting Impacts

Are enforceable controls limiting potential impacts of the proposed action? If not, no further evaluation is needed.		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If yes, are these controls being relied upon to limit impacts below the level of significance? If yes, list the enforceable control(s) below		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Enforceable Control	Responsible Agency	Authority (Rule, Permit, Stipulation, Other)	Effect of Enforceable Control on Proposed Project

Native and sensitive species management	FWP USFS	Section 87-1-201(10)(a), M.C.A. Lolo NF Forest Plan (1986) as amended by Inland Native Fish Strategy (USFS 1995).	FWP is required by law to implement programs that manage sensitive fish species in a manner that assists in the maintenance or recovery of those species, and that prevents the need to list the species under § 87-5-107, MCA, or the federal ESA.
Westslope cutthroat trout conservation	FWP, DNRC, DEQ, MT Stockgrowers, MT Farm Bureau Federation, USFS, BLM, USFWS, US Natural Resource and Conservation Service and 10 other signatories	Memorandum of Understanding	FWP is a signatory to the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (FWP 1999, 2007) which states: "The management goal for WCT in Montana is to ensure the long-term, self-sustaining persistence of the subspecies within each of the five major river drainages they historically inhabited in Montana, and to maintain genetic diversity and life history strategies represented by the remaining local populations."
Westslope cutthroat trout translocation in the Thompson River drainage (pg.8-Lower Clark Fork) Westslope cutthroat trout conservation opportunities (pg. 8-Lower Clark Fork)	FWP	State-wide Fisheries Management Plan	Specifies a management goal to protect non-hybridized WCT through translocation into secure habitat. Big Hole Creek is listed as a priority stream. Employ potential conservation and enhancement opportunities including translocation into suitable unoccupied habitat.
Fish Health Inspection	FWP	Aquatic Health Advisory Committee	Minimizes disease transfer risk associated with movement of wild fish between waterbodies.
AIS Early Detection & Monitoring	FWP	AIS Bureau	Minimizes the harmful impacts of AIS through the prevention and management of AIS into, within, and from Montana.

VI. Alternatives Considered

In addition to the proposed project, and as required by MEPA, FWP analyzes the "No-Action" alternative in this EA. Under the "No Action" alternative, FWP would not do the proposed project.

The "no-action" alternative forms the baseline from which the potential impacts of the proposed Project can be measured. Under the no-action alternative FWP would not transfer non-hybridized WCT from various Thompson River populations to Big Hole Creek. Without action, hybridization and displacement by non-native trout species will continue to negatively impact most of the extant native WCT populations in the Thompson River drainage and the species would likely face genomic and/or physical extirpation in the near future. The approximately three miles of fishless habitat in Big Hole Creek above rm 1.2 will remain fishless under the no-action alternative.

	Yes*	No
Were any additional alternatives considered and dismissed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

* If yes, a list and description of the other alternatives considered, but not carried forward for detailed review is included below

Other Alternatives Not Carried Forward for Detailed Analysis

No other alternatives were considered but not carried forward for further analysis.

VII. Summary of Potential Impacts of the Proposed Project on the Physical Environment and Human Population

The impacts analysis identifies and evaluates **direct**, **secondary**, and **cumulative impacts**.

- **Direct impacts** are those that occur at the same time and place as the action that triggers the effect.
- **Secondary impacts** “are further impacts to the human environment that may be stimulated or induced by or otherwise result from a direct impact of the action.” ARM 12.2.429(18).
- **Cumulative impacts** “means the collective impacts on the human environment of the proposed action when considered in conjunction with other past and present actions related to the proposed action by location or generic type. Related future actions must also be considered when these actions are under concurrent consideration by any state agency through pre-impact statement studies, separate impact statement evaluation, or permit processing procedures.” ARM 12.2.429(7).

Where impacts are expected to occur, the impact analysis estimates the **extent**, **duration**, **frequency**, and **severity** of the impact. The duration of an impact is quantified as follows:

- **Short-Term:** impacts that would not last longer than the proposed project.
- **Long-Term:** impacts that would remain or occur following the proposed project.

The severity of an impact is measured using the following:

- **No Impact:** there would be no change from current conditions.
- **Negligible:** an adverse or beneficial effect would occur but would be at the lowest levels of detection.
- **Minor:** the effect would be noticeable but would be relatively small and would not affect the function or integrity of the resource.
- **Moderate:** the effect would be easily identifiable and would change the function or integrity of the resource.
- **Major:** the effect would irretrievably alter the resource.

Some impacts may require mitigation. As defined in ARM 12.2.429, mitigation means:

- Avoiding an impact by not taking a certain action or parts of a project;
- Minimizing impacts by limiting the degree or magnitude of a project and its implementation;
- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment; or

- Reducing or eliminating an impact over time by preservation and maintenance operations during the life of a project or the time period thereafter that an impact continues.

A list of any mitigation strategies including, but not limited to, design, enforceable controls or stipulations, or both, as applicable to the proposed project is included in **Section VI** above.

FWP must analyze impacts to the physical and human environment for each alternative considered. The proposed project considered the following alternatives:

- Alternative 1: No Action; and
- Alternative 2: Proposed Project.

Table 3 - Potential Impacts of Proposed Project on the Physical Environment

PHYSICAL ENVIRONMENT	Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
	None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
Terrestrial, avian, and aquatic life and habitats	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Introduction of WCT would result in positive long-term moderate impacts to WCT conservation in the Thompson River drainage. Introduction of WCT may result in long-term negligible changes in species composition of the aquatic invertebrate community (Benjamin et al. 2011; Lepori et al. 2012) as well as trophic or food web level alterations within the project area. However, overall richness and diversity of invertebrates is likely to be preserved following WCT introduction (Lepori 2012; Banting et al. 2020). Restoring the native fish species is consistent with improved biological integrity, as the native fish would exert the same community level pressure on invertebrates with which they evolved. Expected impacts to the affected ecosystem and associated wildlife would be long-term, beneficial, and minor.
Water quality, quantity, and distribution	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to water quality, quantity, and distribution would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population and would not require the use of any additional new water resources, nor would it affect the distribution of any existing water resources.
Geology	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to geology would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. The proposed project would not affect any geologic features in the project area; therefore, no impacts to geology would be expected because of the proposed project.

PHYSICAL ENVIRONMENT	Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
Resource	None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
Soil quality, stability, and moisture	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to soil quality, stability, and moisture would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. The proposed project would not affect soils; therefore, no impacts would be expected because of the proposed project
Vegetation cover, quantity, and quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to vegetation cover, quantity, and quality would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. The proposed project would not affect vegetation in the affected area; therefore, no impacts would be expected because of the proposed project
Aesthetics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. Therefore, the proposed project would benefit any person who enjoys fishing for WCT in remote mountainous areas or otherwise values the species' existence and the ecosystem in which they reside. The proposed project would result in a long-term minor improvement of aesthetic values in the affected area by establishing a mixed stock population of this iconic and once widely distributed native fish.
Air quality	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to air quality would be expected because of the proposed project. Air quality in the area affected by the proposed project is currently unclassifiable or in compliance with applicable National 15 and Montana ambient air quality standards (NAAQS/MAAQS). The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and, when completed, would not result in additional new air quality disturbance in the affected area. Further, no significant point -sources of air pollution exist

PHYSICAL ENVIRONMENT	Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
	None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
									in the area affected by the proposed project. Existing sources of air pollution in the area are associated with the extensive unpaved road network in the Thompson River drainage (fugitive dust source) and vehicle exhaust emissions. Fugitive dust and vehicle exhaust emissions resulting from the use of motor vehicles for the proposed project may adversely impact air quality. However, any impacts to air quality would be short -term, consistent with existing impacts, and negligible.
Unique, endangered, fragile, or limited environmental resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p>No significant adverse impacts to any unique, endangered, fragile, or limited environmental resources would be expected because of the proposed project. Westslope cutthroat trout is currently ranked an S2 species of concern. The intent of the proposed project is to establish a WCT conservation population in Big Hole Creek. Any impacts to WCT would be long -term, beneficial, and moderate. The presence of additional animal or plant Species of Concern and/or any species listed as Threatened or Endangered under the Endangered Species Act (ESA) that may be located within or use the affected area were assessed (Appendix B).</p> <p>Rocky Mountain tailed frog (MT S4 rank) tadpoles and adults occur in Big Hole Creek. The species is common and widely distributed in low-order mountain streams on the west side of the Continental Divide in Montana (MT Field Guide 2024). The species is commonly found in fish bearing headwater streams-often with WCT and/or bull trout- throughout the lower Clark Fork River drainage including many tributaries to the Thompson River. Given these species is common within other similar fish-bearing habitats in the area, portions of the headwaters of Big Hole Creek will remain fishless (above natural barriers)</p>

PHYSICAL ENVIRONMENT	Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
Resource	None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
									and because WCT and Rocky Mountain tailed frogs for evolved together, impacts from the WCT introduction should be minor.
Historical and archaeological sites	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to historic and archaeological sites would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and does not involve any groundbreaking activities.
Demands on environmental resources of land, water, air, and energy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to demands on the environmental resources of land, water, air, and energy would be expected because of the proposed project. Fuel would be required to operate equipment and vehicles used for the proposed project. No other demands on the environmental resources of land, water, air, and energy would be expected because of the proposed project. Therefore, any impacts to such resources would be short-term, negligible, and limited to energy resources in the form of fuel.

Table 4 - Potential Impacts of Proposed Project on the Human Population

HUMAN POPULATION	Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
Resource	None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
Social structures and mores	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to social structures and mores in the affected area would be expected because of the proposed project. WCT have been designated Montana's state fish. Many Montanans and visitors to the state alike hold high regard for wild WCT as an angling resource, an icon of the state, and a valuable component of the ecosystems in which it resides. As such, wild WCT

HUMAN POPULATION		Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
Resource		None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
										are deeply engrained in the customs and lifestyles of residents and visitors to the state of Montana. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek to prevent the loss of a unique genetic lineages of WCT native to Thompson River drainage of northwest Montana; to expand the current range of non-hybridized populations into suitable and unoccupied habitats free of non-native fish species; and to reduce the likelihood of listing of WCT under ESA. Therefore, the proposed project would benefit any person who enjoys fishing for WCT or otherwise values the species' existence, the State of Montana, and the ecosystem in which they reside. Any impacts from the proposed project would be long -term, beneficial, and moderate.
Cultural uniqueness and diversity		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant impacts to cultural uniqueness and diversity in the affected area would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and it is not expected this action would result in any relocation of people into or out of the affected area. Therefore, no impacts to the existing cultural uniqueness and diversity of the affected area would be expected because of the proposed project.
Access to and quality of recreational and wilderness activities		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to access or the quality of recreational and wilderness activities would be expected because of the proposed project. No Wilderness areas currently exist in the affected area; therefore, no impacts to Wilderness recreation activities would occur because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. No closures of public lands would occur because of the proposed project. The new WCT population would

HUMAN POPULATION		Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
Resource		None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
										provide an opportunity to fish for native trout in a remote natural setting, a long -term , minor, and beneficial impact to recreational opportunities in the affected area.
Local and state tax base and tax revenues		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to the local and state tax base and tax revenue would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and, when completed, would not result in changes to local or state taxes. The proposed project would be expected to increase state and local tax revenues from the sale of fuel, supplies and/or equipment to complete the project. Any impacts to the local and state tax base and tax revenue would be short -term and negligible, lasting only as long as the proposed project.
Agricultural or Industrial production		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant impacts to agricultural or industrial production in the affected area would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. Because the affected area is not currently used for agriculture, the proposed project would not impact such practices. A portion of the area is (Green Diamond land) or may be (USFS land) used for production of forest products, and this project would have negligible, long-term impacts by increasing stream buffer distances for vegetation treatments on USFS land from 150' to 300'.
Human health and safety		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to human health and safety would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and, when completed, would not impact human health and safety. Affected government staff may realize increased risk to human health and safety during project implementation; however, FWP would require affected staff to operate in a

HUMAN POPULATION	Duration of Impact			Severity of Impact					
Resource	None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
									safe manner and utilize best management practices, including the use of available and appropriate safety precautions. Therefore, any potential impacts to human health and safety would be short -term and negligible, lasting only as long as the proposed project
Quantity and distribution of employment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to the quantity and distribution of employment in the affected area would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek. Existing government staff would be used to implement the proposed project as part of their typical job duties. Therefore, no impacts would be expected because of the proposed project.
Distribution and density of population and housing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to the distribution and density of population and housing would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek using existing government staff for implementation. The proposed project would not require or result in the movement of existing or new population into or out of the affected area. Therefore, no impacts would be expected because of the proposed project.
Demands for government services	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to the demands for government services in the affected area would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and, when completed, would not further impact demands for government services. The proposed project would use existing government staff to complete the work. No additional demands for government services would be expected because of the proposed project. Any impacts would be short -term and negligible.

HUMAN POPULATION		Duration of Impact			Severity of Impact					Summary of Potential Direct, Secondary, and Cumulative Impacts and Mitigation Measures
Resource		None	Short-Term	Long-Term	None	Negligible	Minor	Moderate	Major	
Industrial, agricultural, and commercial activity		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to industrial, agricultural, or commercial activity would be expected because of the proposed project. The proposed project constitutes establishing a WCT conservation population in Big Hole Creek and would not disturb or otherwise impact any industrial, agricultural, or commercial properties or operations; therefore, no impacts to industrial, agricultural, or commercial activity would be expected because of the proposed project
Locally adopted environmental plans and goals		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The proposed project would result in beneficial, long-term, and moderate impacts to WCT conservation goals outlined in the Montana Statewide Fisheries Management Plan, Memorandum of Understanding and Conservation Agreement for Westslope and Yellowstone Cutthroat Trout in Montana, and the Lolo National Forest Plan.
Other appropriate social and economic circumstances		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No significant adverse impacts to any other appropriate social and economic circumstances would be expected because of the proposed project. FWP is unaware of any other appropriate social and economic circumstances that may be impacted by the proposed project. Therefore, no significant adverse impacts to other appropriate social and economic circumstances would be expected because of the proposed project.

Table 5: Determining the Significance of Impacts on the Quality of the Human Environment

If the EA identifies impacts associated with the proposed project FWP must determine the significance of the impacts. ARM 12.2.431. This determination forms the basis for FWP's decision as to whether it is necessary to prepare an environmental impact statement. An impact may be adverse, beneficial, or both. If none of the adverse effects of the impact are significant, an EIS is not required. An EIS is required if an impact has a significant adverse effect, even if the agency believes that the effect on balance will be beneficial. ARM 12.2.431.

According to the applicable requirements of ARM 12.2.431, FWP must consider the criteria identified in this table to determine the significance of each impact on the quality of the human environment. The significance determination is made by giving weight to these criteria in their totality. For example, impacts

identified as moderate or major in severity may not be significant if the duration is short-term. However, moderate or major impacts of short-term duration may be significant if the quantity and quality of the resource is limited and/or the resource is unique or fragile. Further, moderate or major impacts to a resource may not be significant if the quantity of that resource is high or the quality of the resource is not unique or fragile.

Criteria Used to Determine Significance

1	<p>The severity, duration, geographic extent, and frequency of the occurrence of the impact</p> <p>“Severity” describes the density of the potential impact, while “extent” describes the area where the impact will likely occur, e.g., a project may propagate ten noxious weeds on a surface area of 1 square foot. Here, the impact may be high in severity, but over a low extent. In contrast, if ten noxious weeds were distributed over ten acres, there may be low severity over a larger extent.</p> <p>“Duration” describes the time period during which an impact may occur, while “frequency” describes how often the impact may occur, e.g., an operation that uses lights to mine at night may have frequent lighting impacts during one season (duration).</p>
2	The probability that the impact will occur if the proposed project occurs; or conversely, reasonable assurance in keeping with the potential severity of an impact that the impact will not occur
3	Growth-inducing or growth-inhibiting aspects of the impact, including the relationship or contribution of the impact to cumulative impacts
4	The quantity and quality of each environmental resource or value that would be affected, including the uniqueness and fragility of those resources and values
5	The importance to the state and to society of each environmental resource or value that would be affected
6	Any precedent that would be set as a result of an impact of the proposed project that would commit FWP to future actions with significant impacts or a decision in principle about such future actions
7	Potential conflict with local, state, or federal laws, requirements, or formal plans

VIII. Private Property Impact Analysis (Takings)

The 54th Montana Legislature enacted the Private Property Assessment Act, now found at § 2-10-101. The intent was to establish an orderly and consistent process by which state agencies evaluate their proposed projects under the "Takings Clauses" of the United States and Montana Constitutions. The Takings Clause of the Fifth Amendment of the United States Constitution provides: "nor shall private property be taken for public use, without just compensation." Similarly, Article II, Section 29 of the Montana Constitution provides: "Private property shall not be taken or damaged for public use without just compensation..."

The Private Property Assessment Act applies to proposed agency projects pertaining to land or water management or to some other environmental matter that, if adopted and enforced without due process of law and just compensation, would constitute a deprivation of private property in violation of the United States or Montana Constitutions.

The Montana State Attorney General's Office has developed guidelines for use by state agencies to assess the impact of a proposed agency project on private property. The assessment process includes a careful review of all issues identified in the Attorney General's guidance document (Montana Department of Justice 1997). If the use of the guidelines and checklist indicates that a proposed agency project has taking or damaging implications, the agency must prepare an impact assessment in accordance with Section 5 of the Private Property Assessment Act.

Table 6: Private Property Assessment (Takings)

PRIVATE PROPERTY ASSESMENT ACT (PPAA)			
Does the Proposed Action Have Takings Implications under the PPAA?	Question #	Yes	No
Does the project pertain to land or water management or environmental regulations affecting private property or water rights?	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the action result in either a permanent or an indefinite physical occupation of private property?	2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the action deprive the owner of all economically viable uses of the property?	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the action require a property owner to dedicate a portion of property or to grant an easement? (If answer is NO, skip questions 4a and 4b and continue with question 5)	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there a reasonable, specific connection between the government requirement and legitimate state interest?	4a	<input type="checkbox"/>	<input type="checkbox"/>
Is the government requirement roughly proportional to the impact of the proposed use of the property?	4b	<input type="checkbox"/>	<input type="checkbox"/>
Does the action deny a fundamental attribute of ownership?	5	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the action have a severe impact of the value of the property?	6	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public general? (If the answer is NO, skip questions 7a-7c.)	7	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the impact of government action direct, peculiar, and significant?	7a	<input type="checkbox"/>	<input type="checkbox"/>
Has the government action resulted in the property becoming practically inaccessible, waterlogged, or flooded?	7b	<input type="checkbox"/>	<input type="checkbox"/>
Has the government action diminished property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?	7c	<input type="checkbox"/>	<input type="checkbox"/>
Does the proposed action result in taking or damaging implications?		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Taking or damaging implications exist if **YES** is checked in response to Question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if **NO** is checked in response to question 4a or 4b.

If taking or damaging implications exist, the agency must comply with MCA § 2-10-105 of the PPAA, to include the preparation of a taking or damaging impact assessment. Normally, the preparation of an impact assessment will require consultation with agency legal staff.

Alternatives:

The analysis under the Private Property Assessment Act, §§ 2-10-101 through -112, MCA, indicates no impact. FWP does not plan to impose conditions that would restrict the regulated person's use of private property to constitute a taking.

IX. Public Participation

The level of analysis in an EA will vary with the complexity and seriousness of environmental issues associated with a proposed action. The level of public interest will also vary. FWP is responsible for adjusting public review to match these factors (ARM 12.2.433(1)). Because FWP determines the proposed action will result in limited environmental impact, and little public interest has been expressed, FWP determines the following public notice strategy will provide an appropriate level of public review:

- An EA is a public document and may be inspected upon request. Any person may obtain a copy of an EA by making a request to FWP. If the document is out-of-print, a copying charge may be levied (ARM 12.2.433(2)).
- Public notice will be served on the Montana Fish, Wildlife and Parks website at:
<https://fwp.mt.gov/news/public-notices>
- Copies will be distributed to neighboring landowners to ensure their knowledge of the proposed project and opportunity for review and comment on the proposed action.
- FWP maintains a mailing list of persons interested in a particular action or type of action. FWP will notify all interested persons and distribute copies of the EA to those persons for review and comment (ARM 12.2.433(3)).
- Public notice will announce the availability of the EA, summarize its content, and solicit public comment.
 - **Duration of Public Comment Period:** The public comment period begins on the date of publication of legal notice in area newspapers (see above). Written or e-mailed comments will be accepted until 5:00 p.m., MST, on the last day of public comment, as listed below:

Length of Public Comment Period: 15 days

Public Comment Period Begins: June 25, 2024

Public Comment Period Ends: July 9, 2024

Comments must be addressed to the FWP contact, as listed below.

- **Where to Mail or Email Comments on the Draft EA:**

Name: JASON BLAKNEY

Email: JBlakney@mt.gov

Mailing Address:

Montana Fish, Wildlife & Parks

5427 MT Hwy. 200

Thompson Falls, MT 59873

X. Recommendation for Further Environmental Analysis

NO further analysis is needed for the proposed action	<input checked="" type="checkbox"/>
FWP must conduct EIS level review for the proposed action	<input type="checkbox"/>

XI. EA Preparation and Review

	Name	Title
EA prepared by:	Jason Blakney	Fisheries Biologist, FWP Region 1
EA reviewed by:	Mike Hensler	Fisheries Manager, FWP Region 1
	Abigail Maddigan	Fisheries Technician, FWP Region 1
	Lynsay Maykuth	Regional Administrative Assistant, FWP Region 1
	Josh Schulze	Fisheries Program Manager, Lolo National Forest

Appendix A: References

- Banting, A., Taylor, M., Vinebrooke, R., Carli, M., and M. Poesch. 2020. Assisted colonization of a regionally native predator impacts benthic invertebrates in fishless mountain lakes. *Conservation Science and Practice* 2021; 3: e344.
- Benjamin, J., Fausch K., and C. Baxter. 2011. Species replacement by a nonnative salmonid alters ecosystem function by reducing prey subsidies that support riparian spiders. *Oecologia* 167: 503–512.
- Blakney, J., Maddigan, A., and H. Carlsmith. 2022. Thompson River Drainage Fisheries Monitoring Report: 2021. Montana Department of Fish, Wildlife, and Parks. Thompson Falls, Montana.
- Blakney J., and T. Tholl. 2019. Native Salmonid Abundance and Tributary Habitat Restoration Monitoring. Comprehensive Report, 2014-2016. Including Summarized Data, 1999-2016. Report to Avista Corporation, Noxon, Montana and Montana Fish, Wildlife and Parks, Thompson Falls, Montana.
- Bourret, S., Kovach, R., Cline, T., Strait, J., and C. Muhlfeld. 2022. High dispersal rates of hybrids drive expansion of maladaptive hybridization. *Proceedings of the Royal Society B* 289:20221813.
- Dunham, J., Adams, S., Schroeter, R., and D. Novinger. 2002. Alien invasions in aquatic ecosystems: toward an understanding of brook trout invasions and potential impacts on inland cutthroat trout in western North America. *Reviews in Fish Biology and Fisheries* 12: 373-391.
- Department of Interior, Fish and Wildlife Service (DOI). 2003. Endangered and Threatened Wildlife and Plants: Reconsidered Finding for an Amended Petition to List the Westslope Cutthroat Trout as Threatened Throughout Its Range. *Federal Register*, Vol. 68, No. 152, Thursday, August 7, 2003/Proposed Rules (68 FR 46989 47009).
- Feuerstein, C. 2022. The Genetic and Demographic Outcomes of Mixed-Source Reintroductions of Westslope Cutthroat Trout in Montana. University of Montana, Missoula, Montana. Graduate Student Theses, Dissertations, & Professional Papers. 11871. <https://scholarworks.umt.edu/etd/11871>.
- FWP. 1999. Memorandum of understanding and conservation agreement for westslope cutthroat trout in Montana. Montana Department of Fish, Wildlife and Parks, Helena, Montana.

- FWP. 2007. Memorandum of understanding and conservation agreement for westslope cutthroat trout and Yellowstone cutthroat trout in Montana. Montana Department of Fish, Wildlife and Parks, Helena, Montana.
- Harig, A., and K. Fausch. 2002. Minimum habitat requirements for establishing translocated cutthroat trout populations. *Ecological Applications* 12:535-551.
- Heckel, J., Quist, M., Watkins, C., and A. Dux. 2020. Distribution and abundance of westslope cutthroat trout in relation to habitat characteristics at multiple spatial scales. *North American Journal of Fisheries Management* 40:893-909.
- Hilderbrand, R., and J. Kershner. 2000. Conserving inland cutthroat trout in small streams: how much stream is enough? *North American Journal of Fisheries Management* 20:513-520.
- Hitt, N., Frissell, C., Muhlfeld, C., and F. Allendorf. 2003. Spread of hybridization between native westslope cutthroat trout, *Oncorhynchus clarki lewisi*, and nonnative rainbow trout, *Oncorhynchus mykiss*. *Canadian Journal of Fisheries and Aquatic Sciences*. 60:1440-1451.
- Kreiner, R., and M. Terrazas. 2020. Lower Clark Fork River Tributary Sampling, including fishway exploitation summary, 2019. Montana Department of Fish, Wildlife, and Parks. Thompson Falls, Montana.
- Leary, R., Allendorf, F., and G. Sage. 1995. Hybridization and introgression between introduced and native fish. *American Fisheries Society Symposium*, American Fisheries Society, 15:91-103.
- Lepori F., Benjamin, J., Fausch K., and C. Baxter. 2012 Are invasive and native trout functionally equivalent predators? Results and lessons from a field experiment. *Aquatic Conservation of Marine Freshwater Ecosystems*. 22: 787–798.
- Montana Field Guide. 2024. Rocky Mountain Tailed Frog — *Ascaphus montanus*. Montana Natural Heritage Program and Montana Fish, Wildlife and Parks. Retrieved on May 27, 2024, from <https://FieldGuide.mt.gov/speciesDetail.aspx?elcode=AAABA01020>.
- Muhlfeld, C., D'Angelo, V., Downs, C., Powell, J., Amish, S., Luikart, G., Kovach, R., Boyer, M., and S. Kalinowski. 2016. Genetic status and conservation of westslope cutthroat trout in Glacier National Park. *Transactions of the American Fisheries Society* 145:1093-1109.
- Muhlfeld, C., Kovach, R., Jones, L., Al-Chokhachy, R., Boyer, M., Leary, R., Lowe, W., Luikart, G., and F. Allendorf. 2014. Invasive hybridization in a threatened species is accelerated by climate change. *Nature Climate Change* 4:620–624.
- Peterson, D., Fausch, K., and G. White. 2004. Population ecology of an invasion: effects of brook trout on native cutthroat trout. *Ecological Applications* 14:754-772.
- Silins, U., Bladon, K., Kelly, E., Esch, E., Spence, J., Stone, M., Emelko, M., Boon, S., Wagner, M., Williams, C., and I. Tichkowsky. 2014. Five-year legacy of wildfire and salvage logging impacts on nutrient runoff and aquatic plant, invertebrate, and fish productivity. *Ecohydrology* 7: 1508-1523.
- Shepard, B., May, B., and W. Urie. 2005. Status and conservation of westslope cutthroat trout within in western United States. *North American Journal of Fisheries Management* 25:1426-1440.
- U.S. Forest Service (USFS). 1995. Inland Native Fish Strategy (INFISH) Environmental Assessment: Decision notice and finding of no significant impact. Interim strategies for managing fish-producing watersheds in eastern Oregon and Washington, Idaho, western Montana, and portions of Nevada. U.S. Department Agriculture, Forest Service.
- Wang, S., Hard, J., and F. Utter. 2002. Salmonid inbreeding: a review. *Reviews in Fish Biology and Fisheries* 11:301- 319.

Appendix B: Species of Conservation Concern Occurrence list for project area

MT Status	Species Group	Common Name	Scientific Name	Habitat	Distribution
SOC	Mammals	Grizzly Bear	Ursus arctos	Conifer forest	Resident Year Round
SOC	Birds	Pacific Wren	Troglodytes pacificus	Moist conifer forests	Resident Year Round
SOC	Mammals	Fisher	Pekania pennanti	Mixed conifer forests	Resident Year Round
SOC	Mammals	Wolverine	Gulo gulo	Boreal Forest and Alpine Habitats	Resident Year Round