EA-61-06

MONTANA FISH, WILDLIFE AND PARKS
FISHERIES DIVISION

ENVIRONMENTAL ASSESSMENT
SOUTH FORK JUDITH WESTSLOPE CUTTHROAT TROUT REHABILITATION

PART I. PROPOSED ACTION DESCRIPTION

A. Type of Proposed Action:

Removal of non-native fishes and rainbow trout x westslope cutthroat trout (WCT) hybrids from the South Fork Judith River (SF) above a constructed fish barrier (near the confluence of Bluff Mountain Creek) using electrofishing equipment. After removal of highly hybridized WCT, genetically purer WCT remaining in the headwaters of the SF will naturally re-populate the lower reaches of stream.

B. Agency Authority for the Proposed Action:

- The Montana Fish, Wildlife & Parks (MFWP) "...is hereby authorized to perform such acts as may be necessary to the establishment and conduct of fish restoration and management projects...." under statute 87-1-702.
- The overall goal of WCT management in Montana as stated in the Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (MFWP 1999) 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."

C. Estimated Commencement Date: October, 2006

Estimated Completion Date: November, 2007
Current Status of Project: A man-made concrete barrier will be constructed just downstream of the mouth of Bluff Mountain Creek in late summer of 2006.

D. Name and Location of the Project: *South Fork Judith Westslope Cutthroat Trout Rehabilitation, Lewis and Clark National Forest.*

The upper South Fork Judith River is a second order stream approximately 10 miles south of Sapphire Village (Judith Basin County). The portion of stream (approximately 16 miles) to be electrofished is entirely on Lewis and Clark National Forest upstream of a barrier near Bluff Mountain Creek (Figure 1).

E. Project Size (acres affected)

1. Developed/residential - 0 acres
2. Industrial - 0 acres
3. Open Space/Woodlands/Recreation - 0 acres
4. Wetlands/Riparian – Approximately 2 miles of stream
5. Floodplain - 0 acres
6. Irrigated Cropland - 0 acres
7. Dry Cropland - 0 acres
8. Forestry - 0 acres
9. Rangeland - 0 acres (adjacent to grazing allotments on national forest lands).

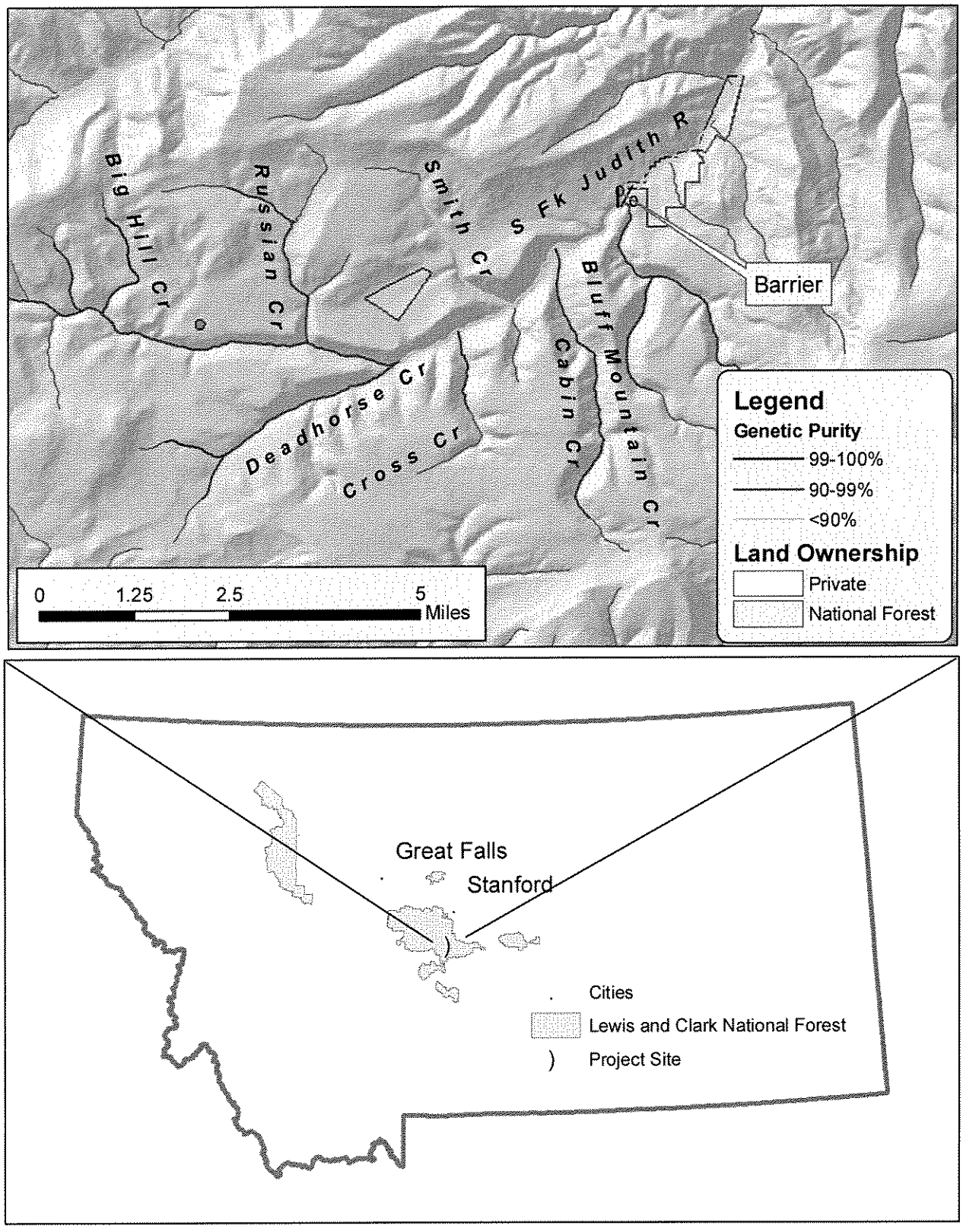

Figure 1. South Fork Judith River and vicinity.

F. Narrative Summary of the Proposed Action and Purpose of the Proposed Action

1. Summary of the Proposed Action:

The upper South Fork Judith River (SF) is a second order stream that combines with the Middle Fork Judith River to form the mainstem Judith River. The upper reaches and tributaries of the SF hold slightly hybridized (generally < 5%) westslope cutthroat trout (WCT; *Oncorhynchus clarkii lewisi*). Currently, most of the SF downstream of its confluence with Deadhorse Creek is dominated by highly hybridized fishes, and rainbow trout (Figures 1 and 2).

To stop continued hybridization and upstream colonization by non-native fishes, a conceptual design for a fish barrier to be constructed near Bluff Mountain Creek was developed in 2002. Funding was obtained in 2003 for design and construction of the fish barrier. In 2004, NEPA (USFS 2004; FONSI) was completed with a "finding of no significant impact." Design of the barrier was completed in 2005 and construction is planned for late summer of 2006.

After construction, highly hybridized fishes and brook trout will be removed from approximately 16 miles of the mainstem SF and portions of tributaries with backpack electrofishing equipment. Current genetic information in the SF and information from the literature (Hitt et al. 2003) indicates a gradient of hybridization exists with more highly hybridized fishes in lower reaches and less hybridized fishes in headwater reaches (Figure 2). The actual extent of fish removal (total length of stream shocked) will be determined through longitudinal collection of genetic samples in the SF mainstem prior to treatment. After highly hybridized fishes are removed, empty reaches of stream will re-colonize naturally from genetically purer upstream sources of WCT. Electrofishing efficiencies will likely be approximately 70 % (i.e. 70 % of fall fish will be captured during one pass). The overall goal is to maintain a fishery in the SF with levels of hybridization less than 5 percent. Poorer than expected capture efficiencies may reduce purity of the post-project population below 95%.

2. Purpose and Need for the Proposed Action:

The westslope cutthroat trout is ranked as S2 (imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extinction throughout its range) by the Natural Heritage Network and the State of Montana. Major threats to WCT include competition and hybridization with non-native rainbow trout (Leary et al. 1995; Hitt et al. 2003), competition with brook trout (Dunham 2002; Peterson et al 2004), and isolation of remaining pure populations above barriers in short headwater sections of stream. These small isolated populations are at risk of extinction from catastrophic events (e.g. fire, drought) and may eventually suffer negative consequences of genetic inbreeding (Wang et al. 2002).

Genetically pure WCT are thought to occupy about 8% of their historical range in the western United States (Shepard et al. 2003) and less than 3% of their historical range in northcentral Montana within the Missouri River Drainage (Moser et al. 2004). Current survey and inventory work has documented about 8 stream miles and 5 populations of pure WCT and 40 miles and 16 populations of > 95% pure WCT in the entire Judith Drainage, including the South Fork, Middle Fork, Lost Fork, and Yogo drainages (Moser et al. 2005). The proposed treatment of sixteen miles of stream represents less than 3% of total suitable trout habitat in the Judith Drainage. Sixty to eighty percent of suitable habitat is currently occupied by brook trout, rainbow trout, and brown trout.

Projects which restore WCT to historically occupied habitats are necessary to ensure the continued survival of WCT in the Judith River Drainage and elsewhere. This proposed action will protect the WCT population in the SF from continued hybridization with rainbow trout while maintaining connectivity between tributary and mainstem populations in approximately 25 miles of stream. Opportunities for protection and restoration of large WCT population aggregates are extremely limited in northcentral Montana because of land ownership issues, degree of environmental degradation, and challenges of controlling or removing firmly established non-native trout species. After project completion, the protected populations of WCT in the upper SF will likely always be

slightly hybridized with rainbow trout. However, since much of the genetic variation in WCT occurs between local populations it would be unwise to replace the locally adapted and unique SF populations with populations from other drainages (Allendorf and Leary 1988; Peacock and Kirchoff 2004). Moreover, though low levels of hybridization will necessarily negatively impact some of the local adaptations in the SF populations (Leary et al. 1995), the overall uniqueness and rarity of WCT in the Judith Drainage warrant preservation and protection despite limited introgression (Peacock and Kirchoff 2004).

3. Benefits of the Project:

- Protection of approximately 25 miles of stream in the SF Judith from continued hybridization with rainbow trout and a concomitant decrease in levels of hybridization to less than 5%. These efforts may help halt the loss of local adaptations to the South Fork Judith Rivers unique environment. Numbers of brook trout, generally competitively superior to WCT, will also be reduced during this project.
- This project protects fluvial life history patterns and movement between population aggregates while maintaining protection from invasive non-native species (rainbow trout and brook trout).
- The large size of the protected WCT population will help ensure long term persistence (>100 years) in the face of drought, fire, or other catastrophic events.

G. Other Local, State, or Federal agencies with overlapping jurisdiction

N/A

H. Agencies Consulted During the Preparation of the EA

USDA Forest Service, Lewis & Clark National Forest

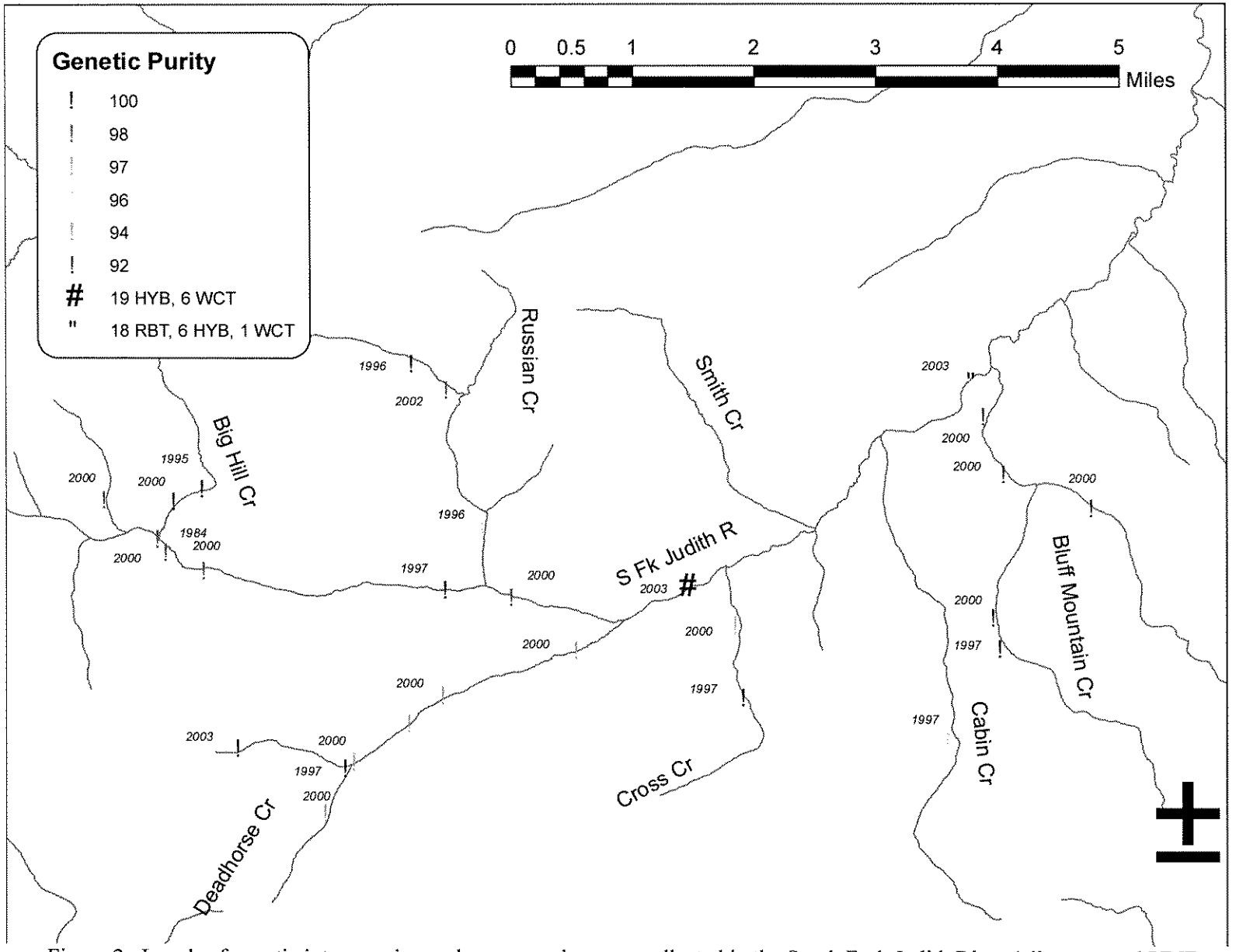

Figure 2. Levels of genetic introgression and year samples were collected in the South Fork Judith River (allozyme and PINE sampling). Samples from 2000 were collected longitudinally and pooled (Deadhorse Cr., Upper SF Judith, and Bluff Mountain Cr.

PART II. ENVIRONMENTAL REVIEW

A. PHYSICAL ENVIRONMENT

3. AIR Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?			X		YES	3b.
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge, which will conflict with federal or state air quality regulations?		X				

Comment 3b: This project involves killing large numbers of fishes in a short period of time (approximately two weeks). Fish will be buried at least 100 yards from the waterway they are captured to prevent excessive accumulation of odors from decomposing carcasses.

4. VEGETATION Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?			X			4a
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				

5. FISH/WILDLIFE Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?			X		NO	5b
c. Changes in the diversity or abundance of		X				

non-game species?						
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?			X		NO	5g
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)		X				

Comment 5b: This project involves killing fishes (rainbow trout, WCT hybrids, and brook trout) in approximately 16 miles of the SF and its tributaries upstream of a constructed fish barrier near Bluff Mountain Creek. Levels of hybridization cannot be reliably identified by outward looking characteristics of fish (i.e. spotting patterns and coloration). Since all fish will be removed downstream of a point to be determined through longitudinal genetic collections, some pure WCT will also likely be killed. Efforts will be made to rescue fish captured within 0.5 miles upstream of the constructed barrier by moving them below the barrier. Rescuing fish further above the barrier will not be feasible.

After completion of the project, the treated reach will naturally recolonize with genetically purer WCT from upstream reaches of the SF and its tributaries (Big Hill Creek, Russian Creek, etc.). The bulk of recolonization will likely occur within 5 years of treatment. During recolonization numbers of fish in the treated reach will be lower than pre-project levels.

Comment 5g: This project will cause a temporary reduction in food supplies for fish eating birds and mammals. Most birds and mammals utilize multiple food sources and can switch to other streams or headwater areas until fish populations recover.

B.HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Increases in existing noise levels?			X		NO	6a
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				

Comment 6a: During removal efforts some noise will be created by crews using electrofishing equipment. Most crews will operate battery powered backpack electrofishers. Some crews may use gas powered backpack electrofishers that emit small amounts of exhaust gas and produce some engine noise. To complete the project in a timely manner at least four electrofishing crews will be operating concurrently throughout the SF drainage for approximately two week's time.

12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Will the project affect historic or cultural resources?			X			12d

Comment 12d: This project will help preserve westslope cutthroat trout, the State Fish of Montana and the only trout native to the upper Missouri River.

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources, which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?			X			13e
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				

g. List any federal or state permits required.						

Comment 13e: We do not expect this project to generate substantial controversy. Individual concerns will be addressed during this MEPA process

PART III. ALTERNATIVES

Three alternatives were considered during preparation of the Environmental Assessment.

Alternative 1 - No Action.

Under the "No Action" alternative, hybrid fish would not be removed from the SF upstream of the barrier near Bluff Mountain Creek. This alternative would have little effect on the magnitude and rates of hybridization in the SF because the lower reaches of the SF (above and below Bluff Mountain Creek) are already heavily colonized by rainbow trout. The upper reaches and tributaries of the SF will continue to become more hybridized through time. Hybridization with rainbow trout will likely result in loss of local adaptations through outbreeding depression. The consequences of this loss of adaptation are unknown but could negatively impact reproductive success, thermal tolerances, homing behavior etc. (Leary et al 1995).

Alternative 2 - Proposed Action

The proposed action includes removing the existing, highly hybridized fish populations in approximately 16 miles of the South Fork Judith River.

The predicted benefits of Alternative 2 include:

- Protection of approximately 25 miles of stream in the SF Judith from continued hybridization with rainbow trout and a concomitant decrease in levels of hybridization to less than 5%. These efforts may help halt the loss of local adaptations to the South Fork Judith Rivers unique environment.

- This project protects fluvial life history patterns and movement between population aggregates while maintaining protection from invasive non-native species (rainbow trout and brook trout).
- The large size of the protected WCT population will help ensure long term persistence (>100 years) in the face of drought, fire, or other catastrophic events.

Alternative 3 – Treatment with Piscicides

The 16 miles of stream in the SF could be treated with the piscicides antimycin or rotenone. In most other WCT restoration projects the complete eradication of non-native fishes is the objective. Complete eradication of fishes with electrofishing equipment in an even moderately complex stream is very difficult or impossible to complete. In this project, the objective is fish populations with higher genetic purity so the use of piscicides is not necessary. Use of piscicides, though safe and effective, tends to be more controversial because of possible negative impacts on invertebrate communities and immature amphibians. Electrofishing has less short term impact on non-target animals and no restrictions on re-entry intervals and downstream use of water for irrigation or livestock.

PART IV. ENVIRONMENTAL ASSESSMENT CONCLUSION SECTION

A) Is an EIS required? No

This environmental review demonstrates that the impacts of this proposed project are not significant. The proposed action would benefit westslope cutthroat trout in the Judith drainage with minimal impact on the physical, biological, or the human environment.

B) Public Involvement.

This EA will be posted on the MFWP internet site (http://fwp.mt.gov/publicnotices/), and mailed directly to interested persons. Any interested citizen will be encouraged to contact MFWP to discuss the proposal.

C) Duration of the comment period?

The comment period is 30 days. Public comment will be accepted through August 13, 2006

D) Name, title, address, and telephone number of the Person Responsible for Preparing the EA Document.

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