ENVIRONMENTAL ASSESSMENT
WESTSLOPE CUTTHROAT TROUT RESTORATION:
TRANSFER OF LIVE FISH FROM
NORTH FORK DEEP CREEK TO MIDDLE FORK CAMAS CREEK

I. Description of proposed action

A. Description of water body and action.

Receiving Water:

Name:	Middle Fork Camas Creek	Location: T9N R3E Sec 13, 14
Water Code:	17-4645	T9N R4E Sec 18
County:	Meagher	

Donating Water:

Name:	North Fork Deep Creek	Location: T15N R5E Sec 19 & 20
Water Code:	17-5280	
County:	Meagher County	

Westslope cutthroat trout (WCT) *(Oncorhynchus clarki lewisi)* will be transferred from North Fork Deep Creek (Smith Drainage) to a 1.5 mile section of stream above a waterfall barrier in the Middle Fork of Camas Creek (Smith Drainage). In 2003, 80 pure WCT were moved from the West Fork of Cottonwood Creek (Castle Mountains; Smith Drainage) to the aforementioned 1.5 miles of stream in Middle Fork Camas Creek (Tews 2003). An additional transfer was planned for 2004, but canceled because of low population numbers in West Fork Cottonwood Creek. A transfer of additional fishes into Middle Fork Camas Creek will help prevent inbreeding depression. The North Fork Deep Creek drainage supports a robust population of pure WCT (protected by waterfalls and dewatered downstream reaches) and is a suitable within drainage basin donor for the Middle Fork Camas Creek expansion population.

Big Camas Creek contains brook trout and cutthroat trout 2 miles downstream of the mouth of Middle Camas Creek (Moser 2004; Wipperman 1973). Genetics samples collected by the United States Forest Service (USFS) in 1991 near the forest boundary on Big Camas Creek were 96% WCT and 4% Yellowstone cutthroat trout (Leary 1992). Upper Big Camas above the mouth of Middle Camas Creek was likely fishless prior to 1938 due to waterfall barriers upstream of the forest boundary (Figure 1). Montana Fish, Wildlife & Parks (MFWP) stocked Camas Lake in the headwaters of the Big Camas drainage with Yellowstone cutthroat trout in 1938 and 1940 (MFWP 1998). Recent genetic tests revealed that the lake still contains pure Yellowstone cutthroat trout (Somerville 2002).

Surveys in 2001 (Archie Harper 2001; USFS files) revealed about 1.5 miles of fishless habitat in Middle Fork Camas Creek located above a waterfall. This habitat is fragmented by 1 additional barrier (Figure 1) and has approximately a 3.5 square mile drainage area. The stream has a conductivity of 40 µS/cm, base flows of about 3 cfs, and high quality fish habitat (Archie Harper 2001; USFS files and Figure 2). Habitat features, particularly pool depth and width, indicate that this stream may be a good candidate for translocation (Young and Guenther-Gloss 2004). It is

unlikely that this short reach of stream could support the 2,500 minimum WCT population recommended by Hilderbrand and Kershner (2000) for long term persistence and it drains less than the 5.6 square miles area recommended as a coarse filter for translocations by Harig and Fausch (2002). However, the habitat is better than found in many WCT streams in northcentral Montana that have held WCT populations for decades (Tews et al. 2000). The habitat in Middle Fork Camas Creek should support a self-sustaining WCT population for several decades or longer.

There will be 50 to 100 WCT transferred annually from North Fork Deep Creek to Middle Fork Camas Creek for 2 to 3 years. These numbers should be sufficient to prevent a genetic founder effect, which requires a minimum transfer of 25 males and 25 females (Leary et al. 1998). Mixing of several populations (i.e West Fork Cottonwood Creek and North Fork Deep Creek) is a compromise aimed at minimizing outbreeding effects (Gilk et al. 2004) while also reducing the negative impacts of inbreeding (Wang et al. 2002). Sex ratios and mortality of the transferred WCT cannot feasibly be determined on-site so a total of 100 to 300 WCT will be transplanted over a three year period. Population surveys will be completed at the donor site prior to transfers to determine the number of fish to be moved. No more than 10% of the estimated population >= 6 inches and no more than 20% of the population <6 inches will be moved.

B. Need for Action:

The cutthroat trout is the Montana State Fish and is a Class A Species of Special Concern in Montana. 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 2003). Major threats to WCT include competition and hybridization with non-native rainbow trout *(Oncorhynchus mykiss)* (Leary et al. 1995; Hitt et al. 2003), competition with brook trout *(Salvelinus fontinalis)* (Dunham 2003; 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).

The North Fork Deep Creek WCT population is likely one of only 3 pure populations in the entire Smith Drainage (Moser 2004). The three pure populations, combined, total less than 5 miles of WCT inhabited stream in the Smith Drainage. Historically, the Smith River drainage had about 740 miles of WCT inhabited stream (Tews et al. 2000). Translocations/transfers have been commonly used to: augment established populations, create refuge populations, and reestablish historic populations (Stockwell and Leberg 2002). To expedite WCT conservation, the State of Montana has developed a Memorandum of Understanding and Conservation Agreement for WCT with several other groups and agencies to provide direction in conserving WCT (MFWP 1999). One of the restoration actions referenced in the Conservation Agreement is translocation of pure populations into new habitats. This transfer will replicate the North Fork Deep Creek population in an area geographically distinct from its source. In the event one of these populations is lost due to a catastrophic event, it can be restored from the replicated population, thus preserving some of its unique genetic legacy.

II. Impacts of the proposed action

Please review the attached checklist on pages 7 and 8. The impacts of this action are included in the Environmental Assessment checklist. The following text addresses the impacts.

A. Impacts to the Physical Environment

1) Terrestrial and Aquatic Habitat

The proposed project will involve transfer of WCT from North Fork Deep Creek to Middle Fork Camas Creek. Both streams are in the Smith Drainage. Live fish transfers have successfully established cutthroat populations in the past (Tews et al. 2000). Several measures have been taken to reduce potential impacts to the aquatic habitat. These include, disease testing of fish in the donor and recipient streams and invertebrate and amphibian surveys of the recipient stream. The MFWP wild fish transfer policy will be followed and WCT will not be transferred until approved by the MFWP Fish Health Committee.

Disease testing: Thirty WCT collected from Deep Creek on July 19, 2000 and 32 brook trout and 11 cutthroat trout collected from Big Camas Creek on June 5, 2002 were tested for disease (Peterson 2000; Peterson 2002). All fish were negative for all pathogens in Deep Creek and Big Camas Creek fish tested positive for *R. salmoninarium* (bacterial kidney disease) by ELISA (confirmed by PCR). Tests for bacterial kidney disease have been positive in wild fish throughout central Montana.

Genetic Purity: Fifty WCT sampled in July 2000 from North Fork Deep Creek were tested for genetic purity using allozyme tests. Leary (2002) concluded that the North Fork Deep Creek population is pure. The fifty fish sample is based on recommendations of the WCT technical committee (Leary et al. 1998). In addition, 61 allozyme samples collected between 1980 and 1985 tested as pure WCT.

Aquatic Invertebrates and Amphibians: Any minor impacts from transfer of fishes to this stream have already been realized through the previous transfer of 80 fish in 2003 from the West Fork of Cottonwood Creek (Castle Mountains). Previous analysis (2003 EA) of affects on the recipient stream were as follows:

On October 18, 2002, Dr. Dan Gustafson (Montana State University) and David Moser (MFWP) conducted invertebrate surveys of Middle Fork Camas Creek. Results indicated that the invertebrate community is typical of a small intact Rocky Mountain stream and is similar to a many other streams over a large geographic area. All of the species occur with trout species in other areas and the transfer would likely not cause localized extinctions of rare invertebrates (Gustafson 2003).

Columbia spotted frogs *(Rana luteiventris)* were observed in 2001 in Middle Fork Camas Creek on the stream margins (Archie Harper; personal communication). Columbia Spotted Frogs are abundant and widely distributed throughout central Montana and are often found in streams with fish (Michael Enk; personal communication). Moreover, since their typical breeding habitat is in standing water not connected to streams this transfer would be unlikely to have a negative impact on

Columbia Spotted Frogs in this drainage. No amphibians listed as Species of Special Concern are found in the area (Archie Harper, personal communication).

2) Unique, endangered, fragile or limited environmental resources.

This proposed action should benefit WCT. WCT are a Species of Special Concern in Montana and have been petitioned for listing as a federally threatened species. This action will create an additional pure WCT population in the Smith Drainage, which historically contained about 740 miles of WCT (Tews et al. 2000). The transfer, if successful, will preserve unique WCT alleles from North Fork of Deep Creek and provide a refugia and source population for future transfers to new or historical WCT habitats.

B. Impacts to the Human Environment

1) Agricultural or Industrial production

The fishless section of Middle Fork Camas Creek where WCT are proposed for introduction lies entirely on national forest lands (Helena National Forest). The geography of this area is not conducive to cattle use and they are not found in Middle Fork Camas Creek. The topography is too steep, does not have suitable forage for livestock and is not part of any grazing allotment (Archie Harper; personal communication).

2) Access to and Quality of Recreational Activities

The proposed action will improve catch and release fishing opportunities by increasing fishable stream length by about 1.5 miles along remote Middle Fork Camas Creek. The public will have a new opportunity to catch native westslope cutthroat trout in a wild area.

3) Demands on Government Services

This action will be undertaken by fisheries staff as part of normal field operations. Other WCT fisheries projects may be postponed due to the fish transfer. Much of the work for this transfer has already been completed. It is anticipated that it will take two, three person fisheries crews about 3 to 4 days each to complete additional surveys and to transfer the WCT.

III. Discussion of Reasonable Alternatives

1) No Action

Upper Middle Fork Camas Creek may support a small population of WCT from the 2003 West Fork of Cottonwood Creek transfer (80 fish). This population may suffer from founder effects related to small initial population size if additional WCT individuals are not added to the population. The unique genetic legacy of the North Fork Deep Creek population would not be replicated. There would be no additional costs associated with introduction. The MFWP and USFS have agreed to take actions

to benefit WCT (MFWP 1999). If this project is not completed it will be a setback to WCT conservation in Montana.

2) Introduction of WCT from other populations

The only other population that could be used for this transfer is West Fork Cottonwood Creek (Castle Mountains). The Cottonwood Creek population may be used in the future if drought conditions abate and the total population size in West Fork Cottonwood Creek increases.

Montana's WCT hatchery brood stock originated primarily from the South Fork Flathead Drainage and is not in any danger of extinction because it is the basis for several WCT populations. Stocking of these hatchery fish is not recommended in this situation because sites for replication are always less than number of potential wild fish donors and regional policy does not allow mixing of fish from different large drainages (i.e Smith and Flathead).

IV. Environmental Assessment Conclusion Section

1) Is an EIS required? No, the action is expected to be minor and beneficial.

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Environmental Assessment Checklist

Project: Westslope Cutthroat Restoration – Transfer of live fish from North Fork Deep Creek (Smith Drainage) to Middle Fork Camas Creek (Smith Drainage).
Division: Fisheries Division
Description of Project: Genetically pure westslope cutthroat trout will be moved from North Fork Deep Creek to a stream reach above a waterfall barrier on Middle Fork Camas Creek. A total of 100 to 300 WCT will be transferred over a 2 – 3 year period; 50 –100 WCT will be transferred annually.

Potential Impact on the Physical Environment

	MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ON ATTACHED PAGES
1. Terrestrial & aquatic life and habitats			X			P. 3
2. Water quality, quantity & distribution				X		
3. Geology & soil quality, stability and moisture				X		
4. Vegetative cover, quantity & quality				X		
5. Aesthetics				X		
6. Air quality				X		
7. Unique, endangered, fragile or limited environmental resources		X Benefit				P. 4
8. Demands on environmental resources of land, water, air & energy				X		
9. Historical & archaeological sites				X		

Potential Impacts on the Human Environment

	MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ON ATTACHED PAGES
1. Social structures & mores				X		
2. Cultural uniqueness & diversity				X		
3. Local & sate tax base & tax revenue				X		
4. Agricultural or industrial production				X		P. 4
5. Human health				X		
6. Quantity & distribution of community & personal income				X		
7. Access to & quality of recreation and wilderness activities			X benefit			P. 4
8. Quantity & distribution of employment				X		
9. Distribution and density of population & housing				X		
10. Demands for government services				X		P. 4
11. Industrial and commercial activity				X		
12. Demands for energy				X		
13. Locally adopted environmental plans & goals				X		
14. Transportation networks & traffic flow				X		

Other groups or agencies contacted or which may have overlapping jurisdiction: United States Forest Service.

List of Individuals or groups contributing to this EA: Archie Harper, Fisheries Biologist, Helena National Forest, Helena, MT; Anne Tews, Fisheries Biologist, MFWP, Lewistown, MT; Michael Enk, Fisheries Biologist, Lewis and Clark National Forest, Great Falls, MT.

List of all agencies and individuals who have been notified of this proposed transfer: Public notification via the MFWP Web Site (http://fwp.state.mt.us/publicnotices/). The USFS has been involved in drafting the EA.

Recommendation concerning preparation of EIS: No EIS Required. Action expected to be minor.

EA prepared by: David Moser, Fisheries Biologist, MFWP, Great Falls, MT. **Date:** March 3, 2005

Comments will be accepted until: May 31, 2005

Comments should be sent to: David Moser, MFWP, c/o USFS, P.O. Box 869, Great Falls, MT 59403; dmoser@fs.fed.us

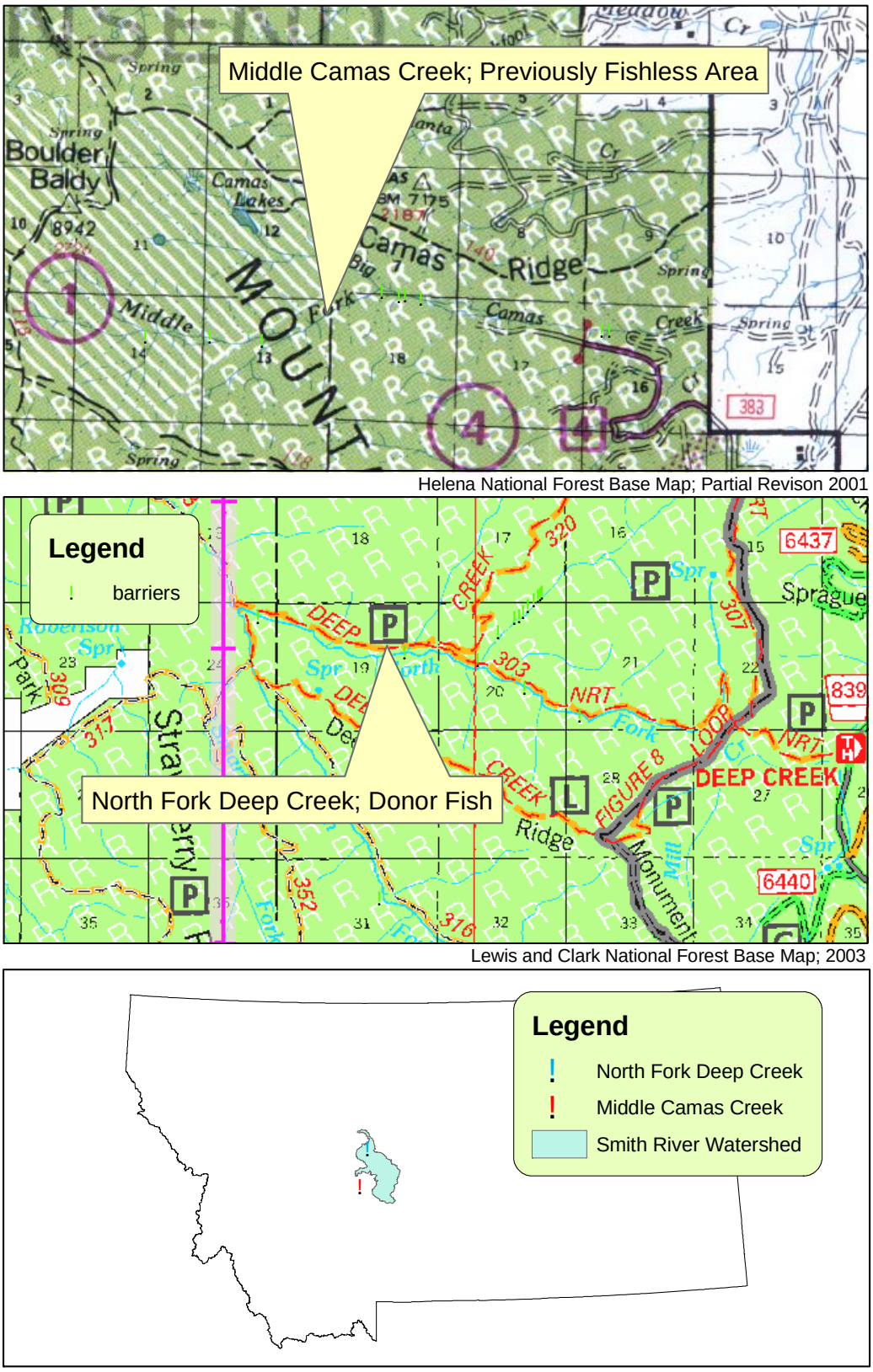

Figure 1. North Fork Deep Creek and Middle Fork Camas Creek site locations within Montana.

Figure 2. The previously fishless reach of Middle Fork of Camas Creek, Smith River. Photo, Archie Harper, Helena National Forest.