Flathead River
Hybrid Trout Suppression Project
Draft Environmental Assessment

February 2013

Montana Fish, Wildlife & Parks

Draft Environmental Assessment
MEPA CHECKLIST

PART I. PROPOSED ACTION DESCRIPTION

1. Type of proposed state action: Montana Fish, Wildlife & Parks proposes to continue removing hybrid and rainbow trout from the mouths and channels of Abbot, Sekokini, Rabe, Ivy, and Third Creeks in the mainstem Flathead and North Fork Flathead Rivers. Trapping and electrofishing would be used to remove fish during their spawning season (April-May) with tributary surveys conducted July-September.

2. Agency authority for the proposed action: Montana Fish, Wildlife & Parks (Mont. Code Ann. 87-1-201(1)).

3. Name, address and phone number of project sponsor (if other than the agency): None

4. Anticipated schedule:
Estimated duration: March 15, 2013, through September 30, 2013, to be repeated annually until effectiveness can be reassessed (6-10 years).

5. **Location affected by proposed action:** The mouths and channels of Third, Ivy, Rabe, Sekokini, and Abbot Creeks in the Flathead River system within Flathead County (Figure 1). Third Creek is located in Glacier National Park, and the remaining areas are included in the Wild and Scenic portion of the mainstem and North Fork Flathead River.

6. Project size:

	Acres		Acres
(a) Developed:		(d) Floodplain	0
Residential	0		
Industrial	0	(e) Productive:	
(existing shop area)		Irrigated cropland	0
(b) Open Space/	0	Dry cropland	0
Woodlands/Recreation		Forestry	0
(c) Wetlands/Riparian	0	Rangeland	0
Areas		Other	0

8. Listing of any other local, state or federal agency that has overlapping or additional jurisdiction:

(a) Permits: Permits will be filed at least 2 weeks prior to project start.

National Park Service - Scientific Research and Collection Permit OMB #1024-0236
U.S. Forest Service - Special Use Permit (Authorization ID: HUN227)

(b) Funding:
Bonneville Power Administration

(c) Other Overlapping or Additional Jurisdictional Responsibilities:
U.S. Forest Service
Glacier National Park

9. Narrative summary of the proposed action:

Montana Fish, Wildlife & Parks (FWP) proposes to continue removing hybrid and rainbow trout from the mouths and channels of Abbot, Sekokini, Rabe, Ivy, and Third Creeks in the mainstem and the North Fork of the Flathead River. Trapping and electrofishing would be used to catch fish during their spawning season (April-May) and move them to community fishing ponds. FWP would also electrofish between July and September to remove hybrid and rainbow trout offspring. The goal of the proposed suppression effort is to minimize the loss of westslope cutthroat trout populations considered to be conservation populations, especially the genetically pure portions, in the interconnected Flathead River system. "Conservation" populations, as defined by the Memorandum of Understanding and Conservation Agreement for Cutthroat Trout in Montana (FWP 2007), are those that contain less than 10% hybridization based on genetic data (i.e., are > 90% genetically pure westslope cutthroat trout). It is not possible to eliminate hybrid trout from a large, interconnected river drainage such as the Flathead. Nevertheless, results from experimental suppression work suggest that it is possible to reduce the number of rainbow or hybrid trout adults in targeted source populations and help FWP to maintain the current number of identified conservation populations at a level of 90% westslope cutthroat trout or better.

The Flathead River drainage includes the North, Middle, and South forks, which join to form the mainstem channel near Hungry Horse, Montana. The Flathead system contains high quality aquatic habitat and is recognized as a stronghold for Montana's state fish, the westslope cutthroat trout (Liknes and Graham 1988; Shepard et al. 1984; Shepard et al. 1997; Shepard et al. 2005). In large, interconnected river systems, westslope cutthroat trout often display migratory behavior, making long-distance movements among spawning, rearing, and overwintering habitats. Migratory forms of a species are important for maintaining genetic diversity and dispersal among populations (Rieman and McIntyre 1995) and help to protect a population against environmental disturbances, such as wildfire or floods (Fraley and Graham 1981, Soule 1986, Shepard et al. 2005). However, populations with migratory life-history forms have been reduced in number because of hybridization and competition with introduced trout (Allendorf and Leary 1988) and habitat degradation (Behnke 1992). Presently, nonhybridized westslope cutthroat trout are estimated to occupy less than 10% of their historic range in the United States and less than 20% of their historic range in Canada (FWP 2007). Within Montana, the South Fork of the Flathead River drainage upstream of Hungry Horse Dam represents about half of the remaining large, interconnected habitat for nonhybridized westslope cutthroat trout (Shepard et al. 2005). The North and Middle forks of the Flathead comprise an additional 25% of the remaining nonhybridized populations in the state (Shepard et al. 2005). As a result of these significant population declines, FWP and the American Fisheries Society classified westslope cutthroat trout as a species of special concern, and the U.S. Forest Service and Bureau of Land Management classified them as a sensitive species. A collaborative agreement between resource management agencies, tribes, private organizations, user groups, and landowners was

developed to provide guidance on conservation of westslope cutthroat trout throughout its range (FWP 2007).

Introduced rainbow trout exist in the mainstem Flathead River and readily hybridize with native westslope cutthroat trout (Deleray et al. 1999). The consequences of this hybridization include: 1) potential loss of evolved traits in native species that help them thrive in their environment (Allendorf et al. 2001, 2004; Boyer et al. 2008; Muhlfeld et al. 2009a,b), 2) social and economic impacts associated with the decline of unique angling opportunities offered by westslope cutthroat trout, and 3) the increased potential for listing under the federal Endangered Species Act, affecting management of the species (U.S. Fish and Wildlife Service 2003). Both genetic information (Hitt et al. 2003; Boyer et al. 2008) and radio telemetry information (Muhlfeld et al. 2009b) indicate that hybridization has spread upstream in the Flathead River drainage in recent decades, mainly from a rainbow trout source population in Abbot Creek (Figure 1). From 2000-2007, 98 adult rainbow and hybrid trout captured in the mainstem Flathead River were radio-tagged and tracked to determine where they spawn. About 80% of tagged fish were located in spawning tributaries that are currently targeted for hybrid trout suppression (Table 1). In contrast, less than 5% of the tagged fish spawned in Middle Fork tributaries (Table 1), demonstrating that rainbow trout had not yet established source populations in the Middle Fork drainage to the extent that they have in tributaries below the North/Middle Fork confluence and in the lower North Fork drainage.

In 2001, FWP prepared an environmental assessment for the construction of a fish barrier and manual removal of hybrid trout from Abbot Creek, the primary source of hybridization in the upper Flathead system. Genetic surveys of populations in 2003 identified four additional tributaries where invasion of rainbow trout from nearby Abbot Creek had resulted in the recent establishment of new sources of hybridization. In response to this information, FWP began experimental suppression of these additional sources in 2005, which involved jet boat electrofishing at the mouths of Third, Ivy, and Rabe Creeks, and Sekokini Springs up to two times per week over an approximately four-week spring spawning period (Table 2, Figures 1, 4, and 5). The barrier installed at the mouth of Abbot Creek in 2001 suffered from design problems in this low gradient reach of stream and was removed in 2009. In 2003, a new barrier was constructed upstream at the U.S. Hwy. 2 culvert. This barrier design has been effective at limiting rainbow and hybrid trout access to spawning habitat and has required little maintenance.

A winter electrofishing estimate of rainbow and hybrid trout abundance has been carried out annually in the mainstem Flathead River near Columbia Falls since 2000 (Figures 6 and 7). Adfluvial westslope cutthroat trout (those fish that migrate to Flathead Lake) are also captured in this reach during winter electrofishing; however, abundance estimates for this species are highly variable (and unreliable) since these fish are actively moving through this river reach during our survey. This migratory movement makes an accurate population estimate of westslope cutthroat trout difficult. The estimated numbers of hybrid and rainbow trout in the section of river surveyed have varied through time, but demonstrate no upward or downward trends. The relatively large differences in estimated abundances from one year to the next suggest that a large change in true numbers of fish would have to occur before FWP would detect it using this method. Hybrid and rainbow trout sampled on the last day of the two-day estimate have been transported to a community fishing pond, resulting in about 28 adult fish ($\geq$ 10 in) and 61 total (all sizes) transported annually since 2009.

FWP has established success criteria to measure the effect of the suppression effort. One expected result is a reduction in the number of fish captured over time at targeted tributaries. Since 2000, this catch per unit effort (CPUE) has consistently declined across source populations targeted for electrofishing and trapping removals (Figures 4 and 5, Table 2), demonstrating a reduction in the number of spawning adults. On an annual basis, FWP will measure and evaluate CPUE at all sites targeted for suppression.

In addition to measuring the rainbow and hybrid trout response to suppression efforts as a function of numbers of fish captured and moved over time, genetic information is also used to gauge success. Thus, a second expected outcome of suppression is a change in the genetic characteristics of the source populations over time. Abbot Creek is a hybrid swarm with about 90% rainbow trout hybridization. That is, all fish in Abbot Creek are hybrids with about 90% of their genes descended from rainbow trout. In this case the genetic effects of suppression are expected to result in reduced variation and an increase in relatedness among individuals (i.e., inbreeding). The other tributaries targeted for suppression (Ivy, Rabe, Sekokini, and Third) contain a mixture of cutthroat and hybrids with differing amounts of rainbow genes. In these areas, the selective removal of hybrids based on visible characteristics such as spotting pattern and coloration (morphology) is expected to reduce the amount of hybridization. On an annual basis, FWP will quantify and evaluate the genetic characteristics of populations targeted for suppression.

If hybrid trout suppression is successful at reducing the number of spawning rainbow and hybrid trout in the targeted source populations, then FWP also expects to see a reduction in the level of straying (spawning in a tributary other than where that fish was born) into tributaries further upstream in the drainage. In other words, the suppression activity should decrease the rate at which westslope cutthroat trout conservation populations are lost due to hybridization. Evidence for this would be seen as a reduction in the number of juvenile trout that have a high amount of rainbow trout genes in recently invaded sites. For example, samples collected in 2003 and 2004 contained several F1 (first generation) individuals in tributaries upstream of the source populations. These F1 hybrids are the offspring of a straying rainbow trout from Abbot Creek and a westslope cutthroat trout native to that particular tributary population. In 2010 and 2011, tributaries were retested to describe genetic changes over time in the drainage. No F1 or highly hybridized trout were detected in any of the samples, suggesting that suppression efforts may be reducing the amount of straying and spread of hybridization in the drainage. Furthermore, a measured decline in the rate that hybridization has spread across the drainage since the early 2000s coincides with the beginning of hybrid suppression (Al-Chokhachy et al. in prep.). In 4-5 years, FWP will sample populations upstream of those targeted for suppression to quantify and evaluate the amount of straying and hybridization from source populations.

In addition to populations documented in the mid-upper Flathead drainage, rainbow trout have been detected in lower elevation tributaries to the mainstem Flathead River. FWP was interested in determining how much movement occurs between these lower river sources and the source tributaries being targeted for suppression. FWP radio-tagged rainbow trout from East Spring Creek, a known spawning and rearing tributary to the Flathead River in Kalispell and tracked their spawning movements over a period of two years. Of the 12 tagged fish that survived and moved out of East Spring Creek after spawning, only one was relocated upriver of the Stillwater/Flathead Rivers confluence and the remainder resided in the lower Flathead River and sloughs, including Mill Creek, near

Creston National Fish Hatchery. Genetic information from East Spring Creek and Abbot Creek show large genetic differences between the two populations, indicating little movement, or interbreeding, occurs between them. Together, this information suggests that suppression efforts focused at source streams near Abbot Creek may not be compromised by the existence of rainbow and hybrid trout populations further downstream in the system. FWP will resample rainbow trout from East Spring Creek and Mill Creek to monitor whether there continues to be limited straying from these lower river tributaries into populations in upstream tributaries to the North and Middle forks of the Flathead.

In conclusion, suppression efforts in the upper Flathead system have produced some encouraging initial results: 1) a consistent decline in the CPUE of hybrid and rainbow trout at targeted tributaries has occurred over time, and 2) a decrease in the rate at which hybridization has spread upstream in the drainage since the early 2000s coincides with the start of hybrid suppression (Al-Chokhachy et al. in prep). With this foundation of knowledge and supporting evidence, the goal of continued hybrid and rainbow trout suppression in the upper Flathead River system is to maintain the current number of conservation populations of westslope cutthroat trout (i.e., are > 90% genetically pure westslope cutthroat trout), addressing two primary questions in the process. First, how effective can FWP be at reducing the rate at which hybridization spreads upstream in the upper Flathead system? This question will be addressed by continuing to monitor the prevalence of F1 crosses and highly hybridized trout (by genetic testing) in previously sampled streams in the North Fork and mainstem Flathead Rivers with a sampling frequency of 5-6 years, the generation interval of westslope cutthroat trout. Second, can FWP continue to produce a long-term decrease or flat value of CPUE in targeted tributaries (i.e., Abbot, Rabe, Ivy, Sekokini, and Third Creeks)? This question would be addressed by continuing monitoring using trapping and electrofishing at targeted tributary mouths. A relative reduction or maintenance of hybrid and rainbow trout numbers, given equal effort over time would indicate success at reducing the number of spawning adults. Although genetically pure westslope cutthroat trout will likely continue to be lost due to hybridization with rainbow trout in the interconnected Flathead River system over time, information from suppression efforts so far indicate that FWP may be effective at reducing the rate and magnitude of that loss. Evaluation of our stated success criteria will occur within six years at the earliest, when one generation of fish will be complete. Ten years will provide a more comprehensive window to reevaluate the status of hybridization spread.

Table 1. Number of radio-tagged fish that spawned in the Flathead River system during 2000-2007 (from Muhlfeld et al. 2009b).

		No. of radio-tagged spawners			
Code	Site name	WCT	WCT hybrid	RBT hybrid	RBT
1	Mill				1
2	Taylors		1	7	4
3	Abbot			18	28
4	Ivy			1	3
5	Rabe			4	8
6	First				1
7	Steamer			1	
8	Third		1(F_1)	2	2
9	Dutch		2	2	1
10	Anaconda		3	1	
11	Coal (NF)	1	1(F_1)		
12	Moran	1			
13	Hay	1			1
14	Red Meadow	2			
15	Akokala	2	1		
16	Tepee	3			
17	Starvation	1			
18	Kishenehn	1			
19	Sage	4			
20	Burnham	1			
21	Cauldrey	1			
22	Commerce	3			
23	Rubideau		1		
24	McDonald				1
25	Lincoln	1	1		1
26	Coal (MF)	1			
27	Granite	1			
28	Lodgepole	1			
29	Schafer	2			

Note: Sites are coded in approximate order of ascending upstream distance. Acronyms: WCT, westslope cutthroat trout; RBT, rainbow trout; WCT hybrid, WCT × RBT hybrids backcrossed to WCT; RBT hybrid, backcrosses to RBT; F_1, first-generation hybrid; NF, North Fork stream; MF, Middle Fork stream.

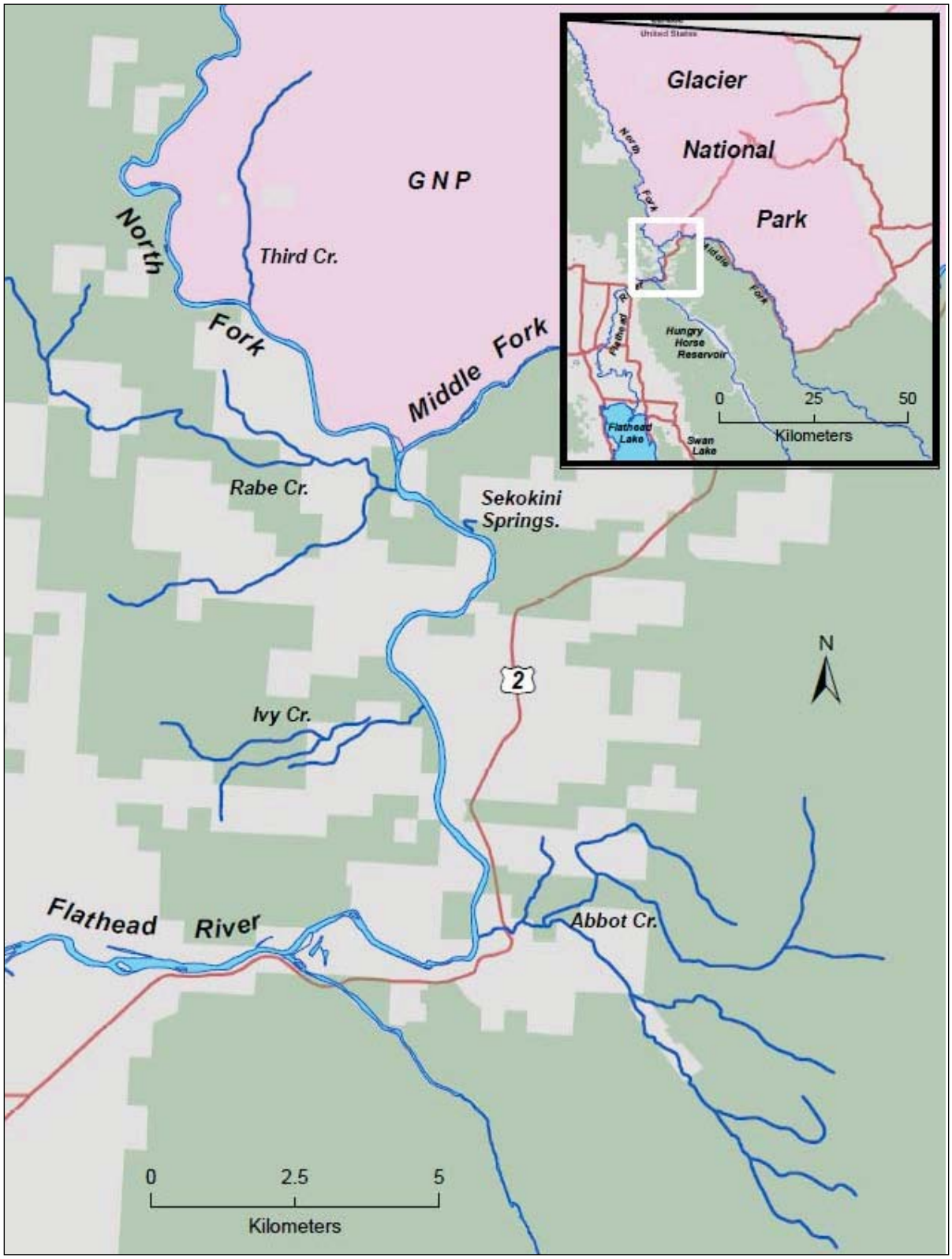

Figure 1. Locations of tributaries in the North Fork Flathead River where hybridization between westslope cutthroat trout and rainbow trout has been documented and subsequent hybrid removal has been conducted by Montana Fish, Wildlife & Parks.

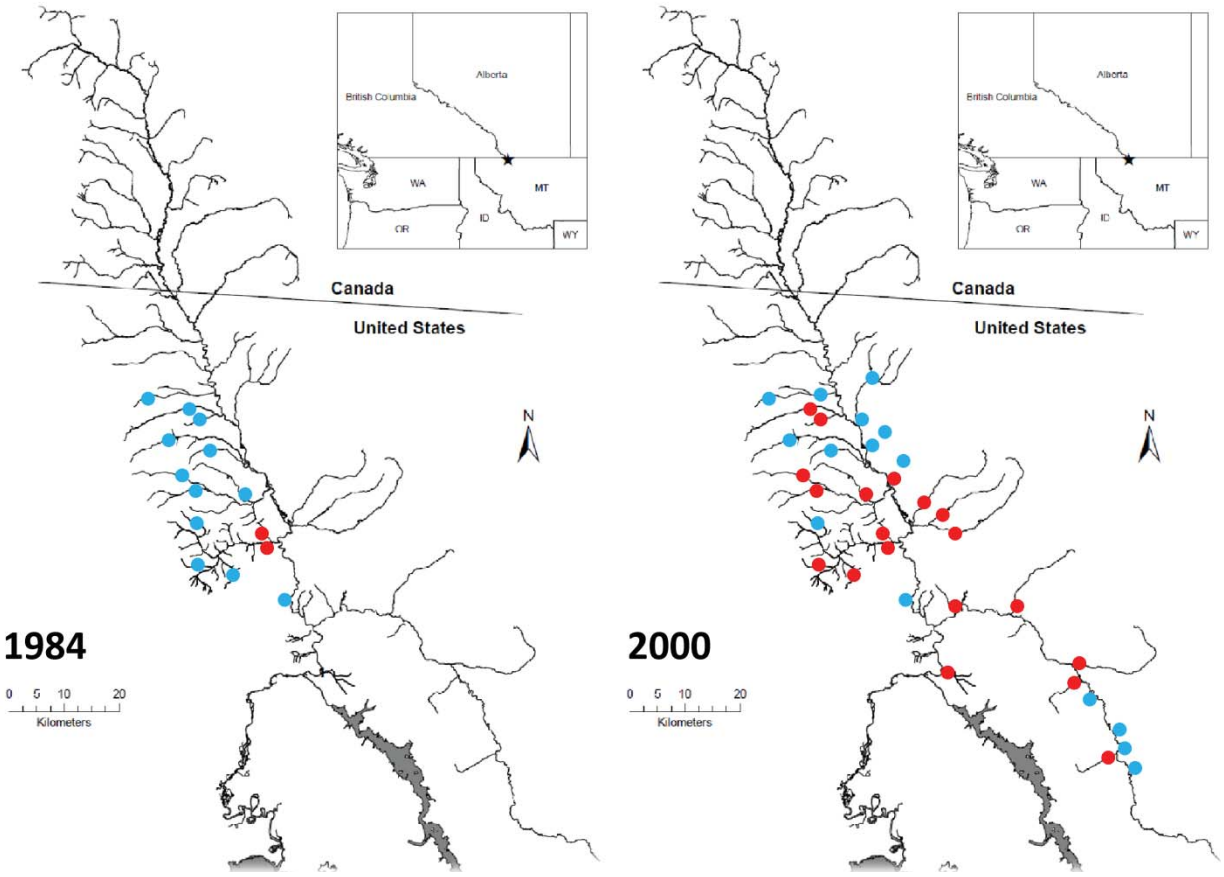

Figure 2. Temporal spread of hybridization between westslope cutthroat trout and rainbow trout in the Flathead River system between 1984 and 2000, based on genetic data (Huston 1984; Hitt et al. 2003; Boyer et al. 2008). Each dot represents a site sampled, blue indicating genetically pure westslope cutthroat trout, red signifying the presence of rainbow trout hybridization.

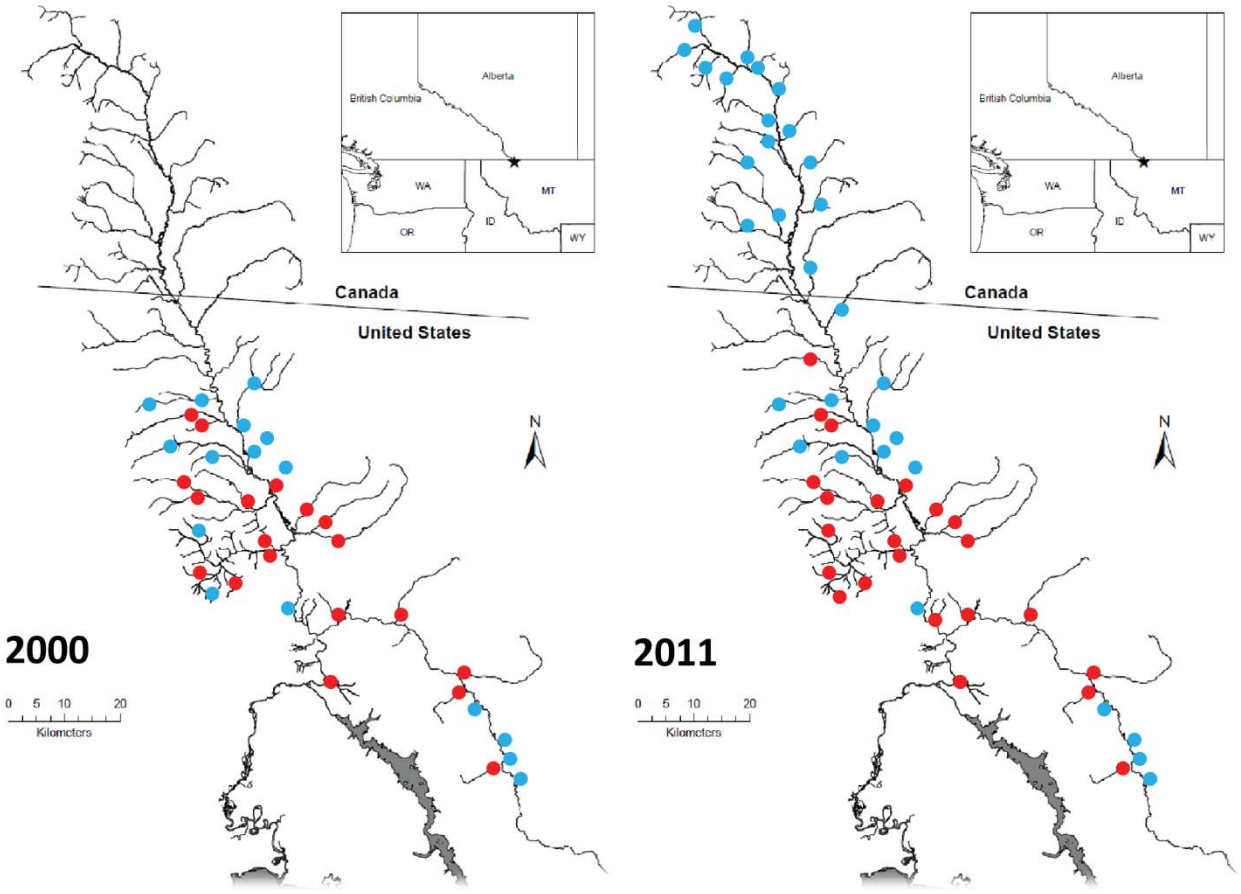

Figure 3. Temporal spread of hybridization between westslope cutthroat trout and rainbow trout in the Flathead River system between 2000 and 2011, based on genetic data (Huston 1984; Hitt et al. 2003; Boyer et al. 2008). Each dot represents a site sampled, blue indicating genetically pure westslope cutthroat trout, red signifying the presence of rainbow trout hybridization. Additional sites were sampled in 2000 and 2011 that were not evaluated in 1984.

Table 2. Numbers of rainbow and hybrid trout removed from tributaries in the Flathead River system by electrofishing and trapping from 2000 to 2012 (EF = electrofishing the tributary mouth). Values in parentheses indicate the number of fish captured for each day spent electrofishing or trapping (i.e., catch per unit effort).

	Site									
	Abbot		Third	Ivy		Sekokini		Rabe		
Year	Trap	EF	EF	Trap	EF	Trap	EF	Trap	EF	Total removed
2000	77(1.2)									77
2001	140(2.1)									140
2002	74(1.4)	114								188
2003	12(0.2)	43								55
2004	158(2.0)	11(5.5)								169
2005	131(1.6)	76(12.7)							8(8.0)	215
2006	77(1.0)	21(7.0)	31(5.2)		13(2.2)				14(2.3)	156
2007	95(1.2)	8(8.0)	4(4.0)		5(5.0)		4(4.0)		4(4.0)	120
2008	45(1.0)	19(4.8)	23(4.6)		10(2.5)		1(1.0)		16(4.0)	114
2009	16(0.2)	10(1.7)	27(3.4)		13(2.2)		1(1.0)		19(2.7)	86
2010	15(0.2)	7(1.8)	21(2.6)		11(1.8)		3(1.5)		30(3.8)	87
2011	20(0.3)	13(0.7)	20(1.7)		22(1.1)		14(1.2)	21(0.3)	14(1.1)	124
2012	44(0.6)	5(0.3)	12(0.8)	7(0.1)	10(0.7)	0(0)	5(0.3)	8(0.1)	11(0.7)	102
Total	904	327	138	7	84	0	28	29	116	**1633**

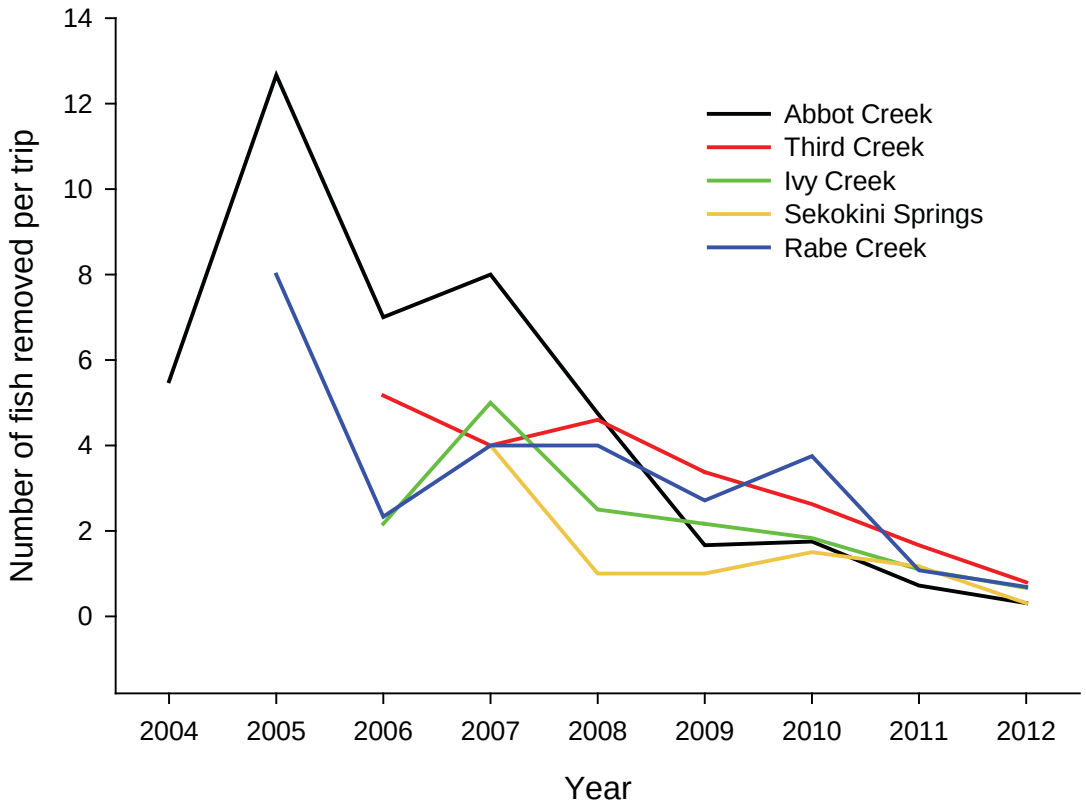

Figure 4. Catch per unit effort (CPUE) for rainbow and hybrid trout removed during 2000–2012 from the mouths of five tributaries of the Flathead River system by boat electrofishing.

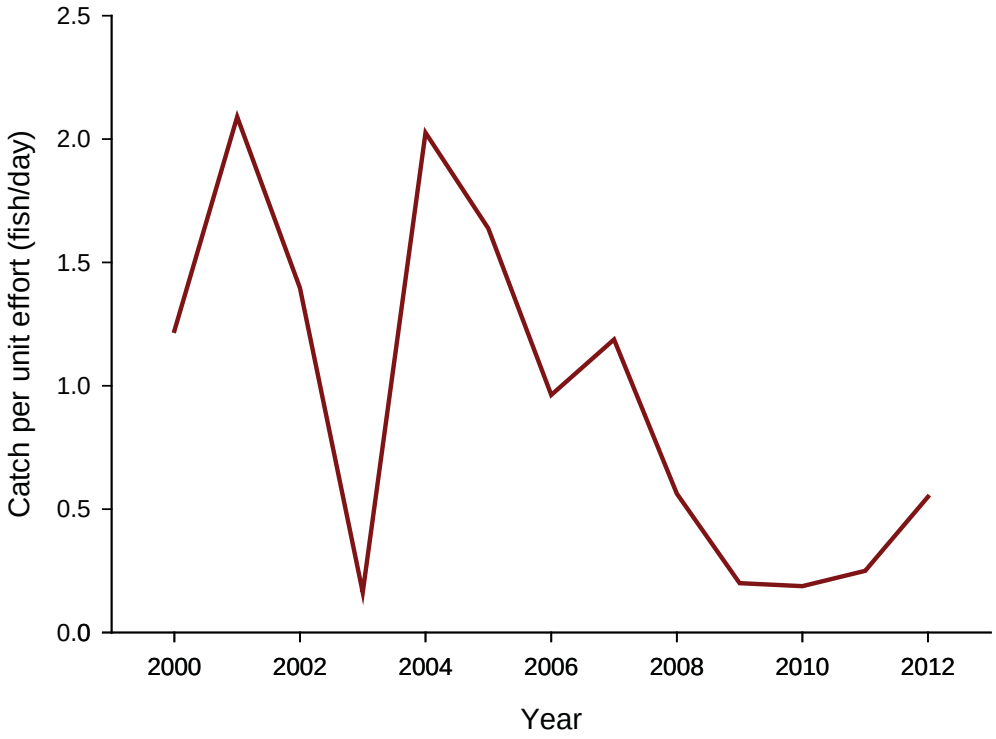

Figure 5. Catch per unit effort (CPUE) for rainbow and hybrid trout removed by trapping during 2000–2012 from Abbot Creek, a tributary to the mainstem Flathead River.

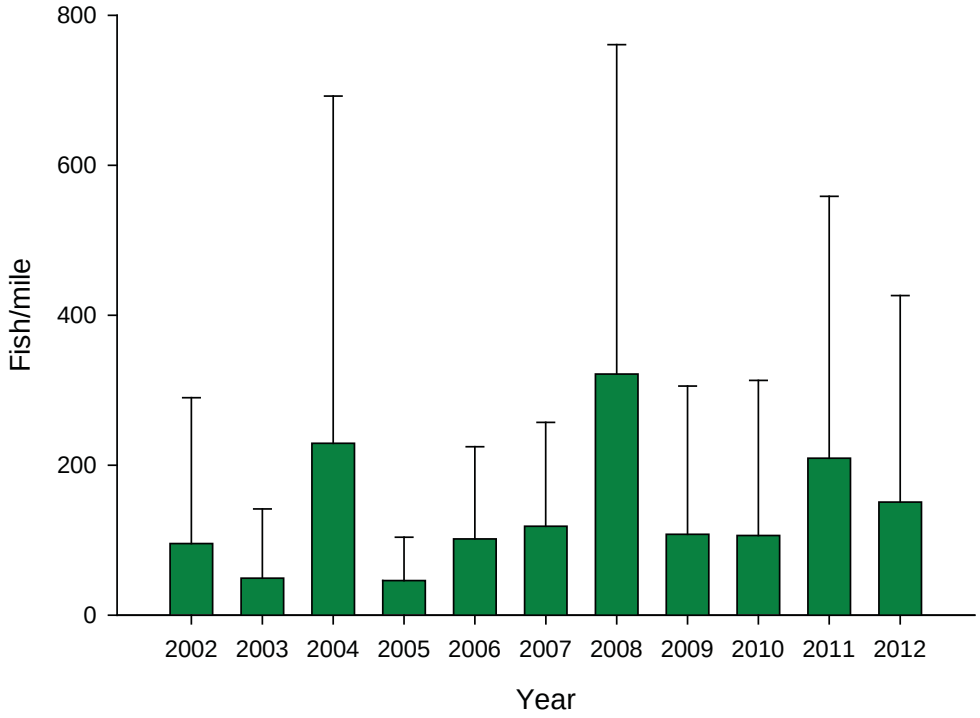

Figure 6. Estimated number of adult (≥ 10 in total length) rainbow and hybrid trout per mile, by year, in the mainstem Flathead River near Columbia Falls, Montana, during early March. Bars represent 95% confidence limits on estimated abundances.

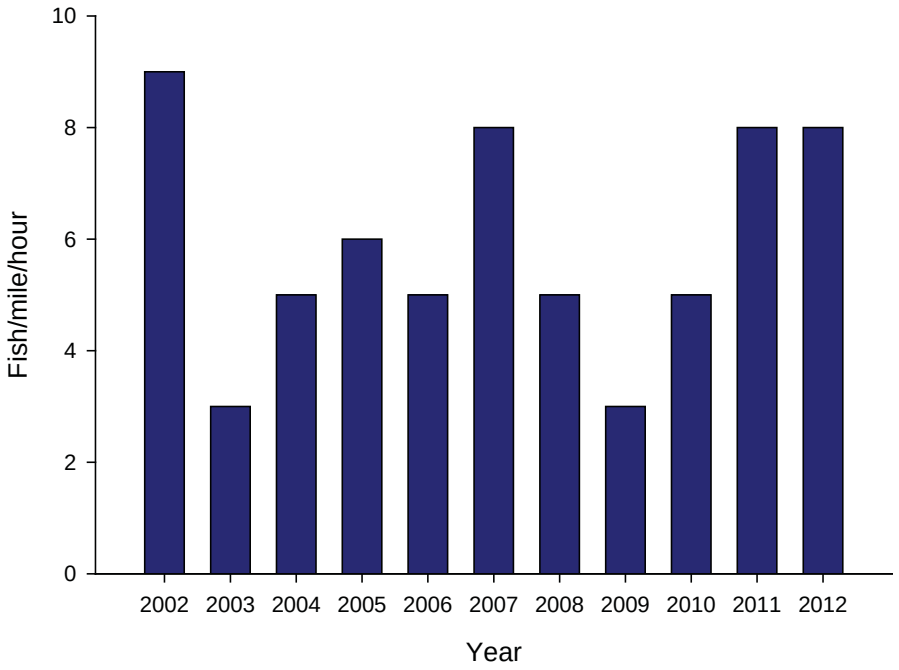

Figure 7. Catch per unit effort for adult (CPUE) (≥ 10 in total length) rainbow trout and hybrids combined captured in the Columbia Falls, Montana, electrofishing section of the mainstem Flathead River, by year, during early March.

10. Description and analysis of reasonable alternatives:

Alternative A: No Action. Rainbow trout and hybrids would not be removed from known tributary source populations within the Flathead River system. Over time, the likely result of the No Action Alternative would be an increase in the amount of rainbow trout hybridization and further loss of westslope cutthroat trout conservation populations resulting from the upstream expansion of hybrid trout from source populations. A reduction in the range of westslope cutthroat trout could lead to listing under the Endangered Species Act, changing state management of the species. It is possible that under this alternative nonhybridized westslope cutthroat trout would eventually become locally extinct (extirpated) in the North Fork, Middle Fork, and mainstem of the Flathead system altogether. This alternative would not meet the primary goals of the collaboratively-developed Memorandum of Understanding for Yellowstone Cutthroat Trout and Westslope Cutthroat Trout in Montana (2007) (FWP 2007), which are to: 1) ensure the long-term, self-sustaining persistence of each subspecies distributed across their historical ranges as identified in recent status reviews (Shepard et al. 2003; Shepard et al. 2005; May et al. 2003), 2) maintain the genetic integrity and diversity of nonhybridized populations, as well as the diversity of life histories, represented by remaining cutthroat trout populations, and 3) protect the ecological, recreational, and economic values associated with each subspecies. This action would not achieve one of the goals of FWP's Fisheries Program, namely to "protect, maintain, and restore native fish populations, life cycles, and genetic diversity, and continue to provide angling opportunities whenever possible."

Further, it is unknown exactly how hybrids and rainbow trout would perform compared to the westslope cutthroat trout populations that have evolved within the local environmental conditions of the Flathead River system. For example, a study of trout in a Flathead River tributary documented a decline in the number of offspring produced resulting from an increase in the amount of rainbow trout hybridization (Muhlfeld et al. 2009a).

Alternative B: Proposed Action - FWP proposes to continue removing hybrid and rainbow trout from the mouths and channels of Abbot, Sekokini, Rabe, Ivy, and Third creeks in the mainstem and the North Fork of the Flathead River. These efforts would be a continuation of work initiated in 2000, the purpose of which was to suppress the hybrid and rainbow trout population in Abbot Creek and reduce the threat of hybridization to westslope cutthroat trout persistence. Trapping and electrofishing would be used to remove fish during their spawning season (April-May) for up to 5 days per week (with a maximum of 4 electrofishing-only visits/week by jet boat). Catch per unit effort (number of fish removed relative to effort spent removing them) would be tracked through time to more accurately gauge effectiveness, with annual monitoring of success criteria and a full reevaluation in 10 years. Genetic samples would be collected from upstream tributary populations in 4-5 years to evaluate success as measured by a relative decrease or maintenance in the rate of hybridization spread across the network of streams containing westslope cutthroat trout. These evaluations would allow for adaptive management of the suppression effort. The time frame for evaluating success criteria is derived from the minimum amount of time that, based on the biology of cutthroat trout, FWP would expect to detect meaningful changes in the rate of spread of hybridization. Acknowledging that hybridization will always be present at some level, it may be possible to reduce its spread so that most populations remain below a hybridization threshold defining conservation populations of westslope cutthroat trout (i.e., containing > 90% westslope cutthroat trout genetic material). Additionally, more extensive genetic sampling of North Fork and Middle Fork tributaries would be done to monitor changes over time in hybridization and to identify other potential sources of rainbow trout. Finally, the fish passage barrier in the Highway 2 culvert in Abbot Creek would be maintained as needed. The proposed action is consistent with the goals of the cutthroat trout MOU (FWP 2007), which are to: 1) ensure the long-term, self-sustaining persistence of each subspecies distributed across their historical ranges as identified in recent status reviews (Shepard et al. 2003; Shepard et al. 2005; May et al. 2003), 2) maintain the genetic integrity and diversity of nonhybridized populations, as well as the diversity of life histories, represented by remaining cutthroat trout populations, and 3) protect the ecological, recreational, and economic values associated with each subspecies. Trout removed from targeted streams would no longer be available to river anglers, but would be transported to local community fishing ponds.

PART II. ENVIRONMENTAL REVIEW CHECKLIST

Evaluation of the impacts of the Proposed Action including secondary and cumulative impacts on the Physical and Human Environment.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic substructure?		x				1a-e.
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil, which would reduce productivity or fertility?		x				1a-e.
c. Destruction, covering or modification of any unique geologic or physical features?		x				1a-e.
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		x				1a-e.
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		N/A				1a-e.

1a-e. The proposed action would not affect existing soil structure or geologic features because it takes place within the designated waterways.

2. 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				2a-e.
b. Creation of objectionable odors?		x				2a-e.
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		x				2a-e.
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		x				2a-e.
e. For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a.)		N/A				2a-e.

2a-e. The proposed action would not affect ambient air quality near the targeted creeks.

3. WATER Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		x				
b. Changes in drainage patterns or the rate and amount of surface runoff?		x				
c. Alteration of the course or magnitude of floodwater or other flows?			x			3c.
d. Changes in the amount of surface water in any water body or creation of a new water body?		x				
e. Exposure of people or property to water related hazards such as flooding?		x				
f. Changes in the quality of groundwater?		x				
g. Changes in the quantity of groundwater?		x				
h. Increase in risk of contamination of surface or groundwater?		x				
i. Effects on any existing water right or reservation?		x				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		x				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		x				
l. For P-R/D-J, will the project affect a designated floodplain? (Also see 3c.)		N/A				
m. For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a.)		N/A				

3c. The seasonal use of fish traps may cause limited redirection of water as flows increase. Traps are monitored and cleaned daily during high flows, minimizing bank erosion.

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				4a-g.
b. Alteration of a plant community?		x				4a-g.
c. Adverse effects on any unique, rare, threatened, or endangered species?		x				4a-g.
d. Reduction in acreage or productivity of any agricultural land?		x				4a-g.
e. Establishment or spread of noxious weeds?		x				4a-g.
f. For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		N/A				4a-g.
g. Other:		x				4a-g.

4a-g. No vegetation would be disturbed if the proposed action were implemented.

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			5b.
c. Changes in the diversity or abundance of nongame species?		x				
d. Introduction of new species into an area?		x				
e. Creation of a barrier to the migration or movement of animals?			x			5e.
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				
h. For P-R/D-J, 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			5h.
i. For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d.)		N/A				

5b. There will be changes to the fish community in the Flathead River system associated with the proposed action. The estimated number of adult rainbow and hybrid trout ($\geq$ 10 in) in a specific section of the Flathead River near Columbia Falls has fluctuated over time (Figures 6 and 7), ranging from about 46 fish/mile in 2005 to 321 fish/mile in 2008. The number of westslope cutthroat trout for this section of river is not estimated because these fish are considered more migratory than rainbow and hybrid trout. However, captured rainbow and hybrid trout will be taken from this section to a community fishing pond following a survey once per year. Since 2009, an average of 28 adult fish and 61 total (all sizes) have been transported annually following the population estimate. Thus, the proportion of westslope cutthroat trout may increase over time relative to rainbow and hybrid trout.

5e. Reinforcement of the culvert fish migration barrier in Abbot Creek will continue to prevent upstream access by migratory fish species. However, this barrier has been in place since 2003 and subsequently all upstream fish movement has been blocked since then. Fish distribution and abundance surveys indicate that Abbot Creek supports nonnative populations of rainbow trout, hybrids, and eastern brook trout. Migratory bull trout do not use Abbot Creek for spawning, rearing, or overwintering habitat and would not be affected by the barrier. Eastern brook trout occupy the upper portions of Abbot Creek and are primarily resident (nonmigratory); thus, eastern brook trout would not be affected by the barrier.

5h. Bull trout are listed as Threatened under the Endangered Species Act and use the river corridor targeted for suppression. However, bull trout do not use Abbot, Sekokini, Ivy, Rabe, or

Third Creeks for spawning or rearing. The time period during which the proposed work would occur does not coincide with typical bull trout spawning movement, and few to no bull trout have been encountered annually during suppression efforts from 2000-2012. When a bull trout is encountered during electrofishing, all electricity is turned off immediately and the fish is allowed to swim away. When a bull trout is captured in a trap it is released unharmed. Typically, six or fewer bull trout have been encountered and released in traps and during electrofishing each year during 2000-2012.

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			6a.
b. Exposure of people to severe or nuisance noise levels?			x			6b.
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				

6a. Noise levels from jet boat use will increase in frequency in the affected area (Figure 1) during portions of late March-May when suppression efforts are active. However, few recreational users are encountered in the project area during this time of year because of high flows, turbid water, and inclement weather.

6b. Brief periods (< 5 minutes per occurrence) of nuisance noise from jet boat use may be detected for the limited number of residents along the Wild and Scenic portion of the mainstem and North Fork Flathead River.

7. LAND USE **Will the proposed action result in:**	**IMPACT**					
	Unknown	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?	x					7a.
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		x				7b.
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		x				
d. Adverse effects on or relocation of residences?		x				

7a. The reduction of rainbow and hybrid trout in the upper Flathead River system may reduce fishing opportunities for these fish in the targeted area. However, westslope cutthroat trout will not be reduced in suppression efforts, nor will any other species available to anglers. Further, these efforts focus on the upper Flathead; areas downstream that sustain rainbow and hybrid trout will likely be unaffected and remain available for private and commercial fishing opportunity. The approximate annual programmatic cost of maintaining hybrid trout suppression efforts is relatively small ($9,500) compared to the benefits of measuring our effectiveness over time while continuing to depress key sources of hybridization.

7b. Suppression efforts will occur on USFS land and within portions of the Wild and Scenic area of the Flathead River.

8. RISK/HEALTH HAZARDS **Will the proposed action result in:**	**IMPACT**					
	Unknown	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		x				8a-d.
b. Affect an existing emergency response or emergency evacuation plan, or create a need for a new plan?		x				8a-d.
c. Creation of any human health hazard or potential hazard?		x				8a-d.
d. For P-R/D-J, will any chemical toxicants be used? (Also see 8a)		N/A				8a-d.

8a-d. No harmful substances will be used during implementation of the proposed project.

9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT**					
	Unknown	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		x				
b. Alteration of the social structure of a community?		x				
c. Alteration of the level or distribution of employment or community or personal income?	x					9c.
d. Changes in industrial or commercial activity?	x					9d.
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		x				

9c. The reduction of rainbow and hybrid trout in the upper Flathead River system may reduce fishing opportunities for hybrid and rainbow trout for clients of commercial fishing guides. However, westslope cutthroat trout represent a major component of the recreational fishery and will not be reduced in suppression efforts, nor will any other species available to anglers. Further, these efforts focus on the upper Flathead; areas downstream that sustain rainbow and hybrid trout will unlikely be affected and remain available for private and commercial fishing opportunity. The economic impact of the proposed action is difficult to measure because of environmental and random variability in fish populations, and a lack of documented information describing fishing pressure and demand.

9d. See explanation in 9c.

10. PUBLIC SERVICES/TAXES/UTILITIES **Will the proposed action result in:**	**IMPACT**					
	Unknown	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		x				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		x				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		x				
d. Will the proposed action result in increased use of any energy source?		x				
e. Define projected revenue sources		x				
f. Define projected maintenance costs.						10f.

10f. Maintenance costs will be minor ($200-400 annually), involving periodic repair of traps and netting equipment.

11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		x				
b. Alteration of the aesthetic character of a community or neighborhood?		x				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report.)			x			11c.
d. For P-R/D-J, will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c.)			N/A			11d.

11c. The reduction of rainbow and hybrid trout in the upper Flathead River system may reduce recreational fishing opportunities for these fish in the targeted area. However, westslope cutthroat trout will not be reduced in suppression efforts, nor will any other species available to anglers. Further, these efforts focus on the upper Flathead; areas downstream that sustain rainbow and hybrid trout will unlikely be affected and remain available for recreational and commercial fishing opportunity.

11d. Suppression efforts will occur on USFS land and within portions of the Wild and Scenic area of the Flathead River.

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. For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12.a.)		N/A				12d.

12d. Cultural and historic resources will not be negatively affected by the proposed action.

SIGNIFICANCE CRITERIA

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 that 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				
f. For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e.)		N/A				
g. For P-R/D-J, list any federal or state permits required.						13g.

13g. A Special Use Permit has been obtained from the USFS for jet boat use in the Wild and Scenic River corridor of the Flathead, which was renewed in December 2012. A 124 permit was issued when the original barrier structures were implemented in Abbot Creek. A collection permit from the National Park Service is renewed annually for collection and removal of hybrid and rainbow trout from Third Creek.

2. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

The Special Use Permit issued by the USFS specifies jet boat operation between 10 a.m. and 4 p.m., weekdays only (no holidays). Up to four visits per week are allowed between March 1 and June 30, thereafter reduced to one visit per week from July 1 through September 1. Public river users are to be avoided either by reducing speed or moving to the opposite bank. An eagle nest near Hungry Horse will be avoided by powering down while within ¼ mile. The Hungry Horse Ranger Station will be notified when the jet boat is in operation.

PART III. NARRATIVE EVALUATION AND COMMENT

The overall goal of this project is to maintain the current number of identified conservation populations of westslope cutthroat trout (i.e., are > 90% genetically pure westslope cutthroat trout) in the upper Flathead River system. FWP supports this action because a primary goal of its Fisheries Program is to "protect, maintain, and restore native fish populations, life cycles, and genetic diversity and continue to provide angling opportunities whenever possible." The effort is further supported in the Statewide Fisheries Management Plan (SFMP), which states that native fish conservation will be prioritized where "practical and feasible." Hybridization between native westslope cutthroat trout and nonnative rainbow trout is a leading factor contributing to the decline of genetically pure cutthroat trout populations in the upper Flathead River system (Hitt et al. 2003; Boyer et al. 2008), and allowing this threat to persist directly conflicts with FWP's goal and the SFMP. The proposed action is also consistent with the cutthroat trout MOU (FWP 2007) developed jointly by resource agencies, conservation and industry organizations, tribes, resource users, and private landowners. FWP acknowledges that the project area lies within an open system that will contain rainbow and hybrid trout into the future. However, a focused and directed suppression effort, coupled with more reliable measurements of success and monitoring will better allow us to evaluate how effective FWP can be in conserving native westslope cutthroat trout into the future. FWP's efforts have already reduced the number of hybrid and rainbow trout spawning in targeted tributaries annually. Further, the rate of hybridization spread in the upper Flathead drainage had declined since suppression efforts started. The primary known negative impacts of the proposed action include a reduction in rainbow and hybrid trout fishing opportunities within the project area, periodic noise level increases from jet boat use throughout the proposed area (Figure 1), and periodic disturbance to river users.

PART IV. PUBLIC PARTICIPATION

1. Public involvement:

The public will be notified in the following manners to comment on this current EA, the proposed action, and alternatives:

- Two public notices in each of these papers: The Daily Inter Lake and Hungry Horse News
- One statewide press release
- Public notice on the Fish, Wildlife & Parks web page: *http://fwp.mt.gov*

Copies of this environmental assessment will be distributed to the neighboring landowners and interested parties to ensure their knowledge of the proposed project.

This level of public notice and participation is appropriate for a project of this scope, having limited impacts.

2. Duration of comment period:

The public comment period will extend for thirty days. Written comments will be accepted until 5:00 p.m., March 8, 2013, and can be mailed to Flathead River Hybrid Trout Suppression Project, Montana Fish, Wildlife & Parks, 490 N Meridian Road, Kalispell, MT 59901, or e-mail to asteed@mt.gov.

PART V. EA PREPARATION

1. Based on the significance criteria evaluated in this EA, is an EIS required? No.

An EA is an appropriate level of analyses for the proposed action for the following reasons:

1. Impacts will occur within a relatively small portion of the Flathead River system (Figure 1). Although the proposed action may affect angling opportunities for rainbow and hybrid trout within and near to the targeted area (Figure 1), abundant opportunities exist throughout other portions of the Flathead system. Rainbow trout and hybrids inhabiting lower portions of the mainstem Flathead will not be targeted by the proposed action and thereby available for angling opportunity.
2. The proposed action will occur during a 4-8-week period in spring when relatively few anglers and other river users are active in the proposed area on account of high flows.
3. No precedents would be set by the proposed action because nonnative species suppression to benefit natives has been implemented statewide in the past.

2. **Person(s) responsible for preparing the EA:**

Amber Steed, Fisheries Biologist
Montana Fish, Wildlife & Parks
490 North Meridian Road
Kalispell, MT 59901
406-751-4541
asteed@mt.gov

Matt Boyer, Fisheries Biologist
Montana Fish, Wildlife & Parks
490 North Meridian Road
Kalispell, MT 59901
406-751-4556
mboyer@mt.gov

Mark Deleray, Fisheries Biologist
Montana Fish, Wildlife & Parks
490 North Meridian Road
Kalispell, MT 59901
406-751-4543
mdeleray@mt.gov

3. List of agencies or offices consulted during preparation of the EA:

Montana Fish, Wildlife & Parks
U.S.D.A. Forest Service
National Park Service