Alternative 2 and especially Alternative 3 were formulated to reduce sediment delivery, thereby improving the watershed's hydrologic function. Short duration sediment spikes may result from the work done in order to obtain an overall reduced sediment delivery. Mitigation measures have been designed in order to reduce or eliminate this potential.

All action alternatives have the potential risk of introduction of petroleum products into the streams while work is being done. A mitigation measure has been developed to prevent spills and control the handling and storage of petroleum products. This mitigation measure is explained in detail under Mitigation Required for All Action Alternatives. All activities are required to adhere to Federal Soil and Water Conservation Practices and Idaho State Best Management Practices (BMPs), therefore making the risk of petroleum spills/leaks very small.

Cumulative Effects

Alternative 1, no action, would have an associated cumulative effect with sediment production/delivery and turbidity. Chronic sediment delivery would still be an issue, and paired with other sources of chronic sediment, leads to degraded aquatic habitat in the watershed.

Alternatives 2 and 3 would have a beneficial cumulative effect on sediment production/delivery and turbidity. This work would reduce chronic sediment production and delivery. The short pulse in sediment during decommissioning would be offset by mitigation measures listed in the mitigation section. These alternatives are also not expected to have any cumulative effects associated with petroleum spills and leaks, as a mitigation measure has been designed to prevent this event.

Fisheries

Aquatic Species Listed Under the Endangered Species Act (ESA)

The Burnt Flats analysis area includes designated critical habitat for listed steelhead trout and spring/summer chinook salmon. Steelhead trout occur throughout the White Bird watershed, in the mainstem and larger, accessible tributaries. Spring/summer chinook salmon occur in the mainstem of White Bird Creek and in the lower reaches of the North and South Fork White Bird Creeks in very low densities. Bull trout have not been observed in the White Bird Creek drainage. Sockeye salmon and Snake River fall chinook salmon do not use White Bird Creek specifically, but do use the mainstem Salmon River at the mouth of White Bird Creek as a migration corridor. More details on their habitat and life history can be found in the fisheries' biologist's report in the project file.

Spring/summer chinook salmon (*Oncorhynchus tschawytscha*) are listed as a threatened species under the Endangered Species Act (Federal Register, Vol. 59, May 22, 1992). Spring/summer chinook salmon spawn and rear in White Bird Creek in variable, but very low numbers. They are present throughout the Salmon basin, using the Salmon River primarily as a migration corridor and larger tributaries for spawning and rearing.

Historically, significant numbers of this species spawned and reared in the White Bird drainage. Currently, adult returns are extremely low, and the species is generally found only in main White Bird Creek and the very lowest reaches of North and South Fork White Bird Creeks.

Steelhead trout (*Oncorhynchus mykiss*) in the Snake River are currently listed as a threatened species under the ESA (Federal Register Vol. 62, No. 159, August 18, 1997). Steelhead trout are currently distributed throughout the Salmon River basin and in most of the major drainages (USDA Forest Service – Nez Perce National Forest, 1999). The Salmon River and all areas within the basin accessible to the species are proposed as critical habitat (Federal Register Vol. 64, No. 24, February 5, 1999).

Adult steelhead trout generally use steeper smaller streams for spawning than chinook salmon. Spawning by this species occurs annually in White Bird Creek and many of its tributaries. Adults migrating to the Salmon River generally enter fresh water in late summer and fall, overwinter in the river, and move into the White Bird watershed in early spring. Spawning usually occurs in April.

In the Burnt Flats analysis area, the following streams are known to support steelhead trout or could potentially support steelhead trout: mainstem White Bird, South Fork White Bird, North Fork White Bird, Little White Bird, and Pinnacle Creeks. The White Bird Creek watershed is considered a historic and current strong producer of steelhead trout (IDF&G, Unpublished Data 2000).

Sensitive Species

In a letter dated March 12, 1999, the Northern Region Sensitive Species list was updated and includes the following fish species: westslope cutthroat trout and redband rainbow trout on the Nez Perce Forest.

The interior redband trout (*Oncorhynchus mykiss giardneri)* includes not only the listed anadromous steelhead, but also the resident life history form associated with isolated stream reaches inaccessible to steelhead.

Redband trout in the Salmon River are generally classified as the same species as steelhead trout, except they follow a resident life history instead of an anadromous life history. This means they spend their entire lives in a small stream or river, often at or near their natal area. A significant population of redband trout, which has been genetically tested and documented, occurs in Fish Creek, a tributary of the North Fork White Bird Creek. Other populations may exist elsewhere in the watershed but have not been documented.

The upper reaches of Fish Creek, a tributary to the North Fork, are functionally isolated from the rest of the watershed by a series of steep cascades and waterfalls. Upstream migration by anadromous fish or other species of fish is unlikely. The population of redband trout here has probably been isolated from the rest of the watershed for centuries.

Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) are considered a sensitive species by Region 1 of the U.S. Forest Service and a species of special concern by the State of Idaho. Currently, they are not listed or proposed for listing under ESA. In a

letter dated June 10, 1998, the U.S. Fish and Wildlife Service "determined that a petition to list the westslope cutthroat trout...presented substantial information indicating that the requested action may be warranted". Cutthroat trout are widely distributed across the Salmon basin, although the current abundance is likely much less than historic abundance, particularly for the migratory form.

The only documented population in the project area occurs in the Little White Bird drainage. Westslope cutthroat trout have not been documented elsewhere in the White Bird Creek drainage. It is possible they existed historically in the upper reaches of South Fork White Bird Creek, which is currently populated by non-native brook trout.

Fish Habitat: The Forest Plan identified a beneficial use and fish/water quality objectives by prescription watersheds throughout the Forest. The fish/water quality objectives are stated in terms of percent habitat potential and take into consideration the fish species present, and other factors.

Values for the habitat parameters shown below are quantified in a set of desired future condition (DFC) tables. The DFC tables list the specific fish habitat parameter and a value or range that a stream should have in order to be at a given percentage of the streams potential. The DFC values, habitat parameter data, and their relationships are stratified by channel types, stream order, life history stage, and fish species.

Data collected on streams through surveys or monitoring are compared to the channel type and species specific values in the DFCs to assess compliance with fish/water quality objectives for a specific stream as listed in Appendix A of the Nez Perce National Forest Plan. Through analyses, resource specialists can determine if the habitat is at or below objective for a particular species life stage and/or a specific habitat parameter.

Table 6 lists fish habitat potential parameters, which are aggregated into four capability categories. These parameters and categories are used to evaluate fish habitat conditions.

Table 6. Fish Habitat Potential Parameters

Capability Category	Fish Habitat Parameter
Summer Rearing	Pool quality, instream cover, pool/riffle ratio, maximum summer rearing water temperature
Winter Rearing	Cobble embeddedness, pool/riffle ratio, pool quality
Spawning	Percent fines, instream cover, pool quality, maximum water spawning temperature
Riparian	Potential woody debris, acting woody debris, bank cover, bank stability

The following is a synopsis of field data analysis of existing fisheries conditions stratified within the drainage based on current fish species distribution. The "Identified Habitat" column displays the species that would be most appropriate to manage for.

Table 7. Field Data Analysis Synopsis

Stream Habitat Reach Name	Habitat Location (stream mile)	Identified Habitat	Forest Plan Fish / Water Quality Objective	Current Fish / Water Quality Condition
Main White Bird Creek	Mouth of Chapman Creek upstream to the forks	Chinook	90%	65%
South Fork White Bird Creek	0.0 – 5.99	Chinook	90%	68%
South Fork White Bird Creek	5.99 – 10.21	Steelhead/rainbow westslope cutthroat	80%	74%
North Fork White Bird Creek	0.0-5.5	Chinook	90%	64%
North Fork White Bird Creek	5.5-headwaters	Steelhead/rainbow	80%	73%
Pinnacle Creek	0-0.75	Steelhead/resident	90%	*
Little White Bird Creek	0-0.5	Steelhead/rainbow	80%	*
Little White Bird Creek	0.5-headwaters	Westslope cutthroat	80%	*
Jungle Creek	0-headwaters	resident	90%	*
Cold Springs Creek	0-headwaters	resident	90%	*

* Data from the Reconnaissance Level Stream Survey has not been refined and analyzed at this point in time to calculate Current Fish/Water Quality Condition Values.

Direct Effects

Alternative 1 would have no direct effects on fish habitat. The only potential for direct effects to listed fish species and/or their habitat is for steelhead in the South Fork of White Bird regarding the replacement of the bridge on FSR 642. There could be a risk of sediment entering the stream and impairing spawning or egg and sac-fry development. If conducted between July 1 and August 15, the risk of impacts to spawning fish, incubating eggs, or developing fry will be reduced (see Mitigation Measures Common to All Action Alternatives). There is no other known potential for direct effects to listed fish species and or their habitat as a result of implementing either action alternative. The only potential direct effect to non-listed fish species would be associated with decommissioning roads at stream crossings and at the culvert removal and subsequent crossing improvement on Road 642 at the Little White Bird stream crossing. There is the potential for sediment to enter streams at these sites and disrupt westslope cutthroat trout if present. Standard mitigation standards common to all action alternatives will reduce this risk. The Road 642 stream crossing at Little White Bird Creek will be designed to fully meet Forest Plan Amendment 20 (PACFISH) and will improve fish habitat, fish populations, and stream channel connectivity.

Indirect Effects

Riparian

Under Alternative 1, all existing roads would remain on the landscape, and the riparian areas associated with the stream crossings would remain disrupted. Both action