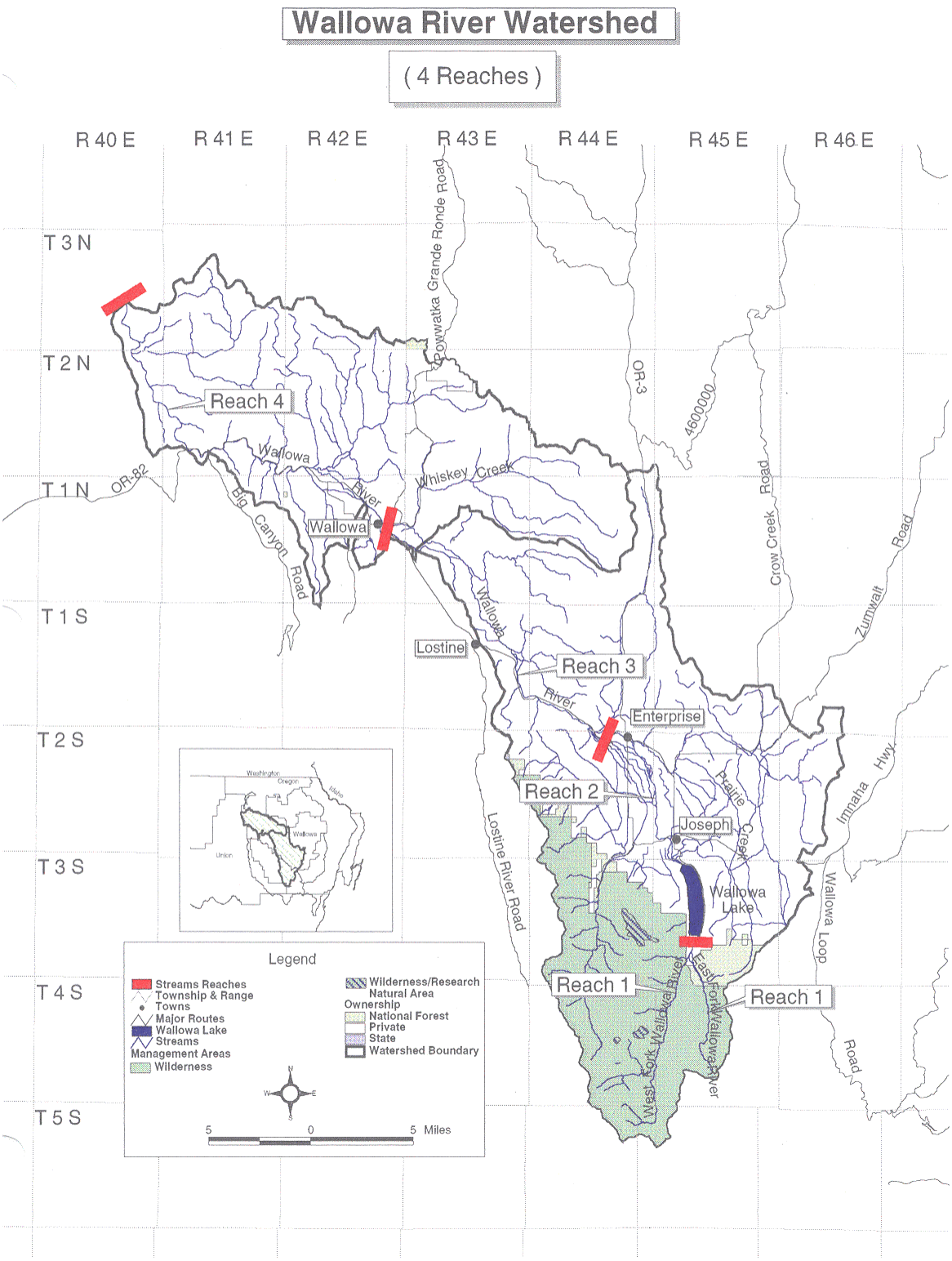
Wallowa River Watershed
(4 Reaches)
R 40 E
R 41 E
R 42 E
R 43 E
R 44 E
R 45 E
R 46 E
T 3 N
T 2 N
T 1 N
T 1 S
T 2 S
T 3 S
T 4 S
T 5 S
Reach 4
Reach 3
Reach 2
Reach 1
Reach 1
Wallowa
Lostine
Enterprise
Joseph
Wallowa Lake
Wallowa River
Whiskey Creek
Big Canyon Road
Powwatka Grande Ronde Road
OR-3
4600000
Crow Creek Road
Zumwalt Road
Prairie Creek
Imnaha Hwy
Lostine River Road
Wallowa Loop
West Fork Wallowa River
East Fork Wallowa River
OR-82
Legend
Streams Reaches
Township & Range
Towns
Major Routes
Wallowa Lake
Streams
Management Areas
Wilderness
Wilderness/Research Natural Area
Ownership
National Forest
Private
State
Watershed Boundary
5 0 5 Miles

WALLOWA RIVER[13]

The Wallowa River was analyzed in four reaches:

1. Headwaters to Wallowa Lake
2. Wallowa Lake to Spring Creek
3. Spring Creek to head of Wallowa Canyon
4. Head of Wallowa Canyon to Grande Ronde River

The Wallowa River rises in the Eagle Cap Wilderness, flows north to Wallowa Lake and then northwest to join with the Grande Ronde near Rondowa. The Wallowa is the largest tributary of the Grande Ronde. Major tributaries of the Grande Ronde include Hurricane Creek, the Lostine River, Bear Creek, and the Minam River. The river flows about 30 miles through agricultural lands in the Wallowa Valley.

Resource use on the reach above Wallowa Lake is primarily recreation. Resource use on the middle two reaches is primarily irrigated agriculture and grazing. Resource use on the lowest reach includes recreation, grazing, and timber harvest.

The EPA has classified the lower Wallowa River as "severely polluted" due to runoff from agricultural lands. Much of the suspended solids in the Wallowa River are organic materials originating from winter feeding grounds and feedlots for livestock. Study to determine source of pollution. At the confluence with the Minam River, human contact sports in the river are not possible due to E coli levels.

The storage dam at Wallowa Lake blocks salmon from the reach above Wallowa Lake. Sockeye salmon used Wallowa Lake and supported a cannery early in the century but have been extinct since then. Kokanee, the land locked cousins of the sockeye, are present and support a recreational fishery in the lake, but current stocks may be primarily non-native stocks from Washington, Montana, and British Columbia. The non-native stocks were introduced because the native stocks collapsed in 1957-1963 as a result of channelization of their spawning area and the introduction of lake trout, which prey on kokanee. Kokanee have not been stocked since 1982, and the population is self-sustaining. Small numbers of marked kokanee have been stocked since 1990 for evaluation purposes.

Low flows are common in the reach immediately downstream of Wallowa Lake because of irrigation impoundments and diversions to the Prairie Creek area. This reach has not had a flushing flow in several years, and fine sediment has built up. Fish biologists note that previously good holding pools are now filled with sediment.

Spring chinook presently spawn in the Wallowa River from the McClaran Road bridge downstream to at least Spring Branch (located approximately one mile below the Lostine River confluence), a distance of 20.2 miles. In the late 1800's, spring chinook spawned upstream as far as Wallowa Lake. The run size has declined significantly

[13]See also Watershed Management - Approaches to Implementing Solutions

since the mid-1960's when index surveys were standardized as to length, location, and time of year. Index areas were chosen because the majority of spawning occurs in the index reach. The index area is from McClaran Lane to the Wallowa Fish Hatchery, a distance of 4.5 miles. The average redd count in the index area from 1964 to 1973 was 16.6 redds. The average redd count from 1979 to 1988 was 4.0 redds. The average redd count from 1989 to 1998 was 0.4 redds (some years having zero counts).

Wallowa River--Headwaters to Wallowa Lake

Water Quantity

Tree Density (Medium Priority).--*Dense thickets of trees, resulting in part from past fire suppression, prevent much of the rain and snow from reaching the ground, and consequently the moisture is lost to the drainage through evaporation and/or sublimation.*

Prescribed burning can be used in the wilderness to reduce tree densities, although burning is not as selective as thinning. Commercial and precommercial thinning can be used in the non-wilderness areas to provide optimum tree densities.

Since the original plan was completed in 1993, a Wildland Fire Use Program has been completed for the Eagle Cap Wilderness. Several wildfires have been managed for resource benefits under this program.

Water Quality

Fuel Density (Medium Priority).--*Fuel densities in this reach are high, with relatively large numbers of dead tree. In particular, most of the spruce trees in this area have been killed by the spruce bark beetle. The current large fuel loads are a relatively high risk for catastrophic fire.*

Prescribed burns in the wilderness could provide corridors with low fuel levels to serve as fire breaks in the event of wildfires. Prescribed burning may best be done in January through February to reduce the risk of a controlled burn getting away. With current fuel levels it should be possible to burn it at these times. Commercial and precommercial thinning could be used to lower fuel loads and wildfire risk on non-wilderness lands. In many cases, particularly in riparian areas, fuel rearrangement is preferable to burning, to return the organic material to the soil and provide many other ancillary benefits.

NOTE: Since the original plan was completed in 1993, a Wildland Fire Use Program has been completed for the Eagle Cap Wilderness. Several wildfires have been managed for resource benefits under this program.

Herbicides/Pesticides (High Priority).—See Countywide Issues

Stream Structure

Channelization (Low Priority).--*Channelization done to protect the state park has*

adversely affected kokanee spawning beds in the past.

Develop a coordinated (State Park, landowner, DSL, ODFW, and Wallowa County) plan to address property protection needs while maintaining spawning areas in the Wallowa River.

Substrate

Dredging (Low Priority).--*Dredging, related to the channelization addressed above, can adversely effect spawning beds.*

See "Channelization" above. If dredging (gravel removal) is absolutely necessary, permit it only between July 1 and August 15.

Habitat Requirements

No problems were identified.

Wallowa River--Wallowa Lake to Spring Creek

Water Quantity

Irrigation/Water Withdrawals (High Priority).--*Irrigation and stock water diversions remove essentially all of the water from portions of this reach during irrigation season. Water held in storage behind the dam also contributes periodically to low water problems on this reach. Springs and irrigation return flows between Joseph and Enterprise return some water to this reach upstream of the confluence with Spring Creek.*

Protect upland vegetative cover to avoid quick runoff and promote recharge of the aquifer. Aquifer recharge needs to be protected to sustain the spring flows. Work with water right holders to limit irrigation diversions that result in return flows to Prairie Creek and possibly allow conserved water to be used for instream purposes. Improve irrigation efficiency and allow conserved water to be used for instream purposes. Lease water from water-right holders during minimum flow times to maintain instream flows.

Study additional impoundments in the Prairie Creek area to supply irrigation needs and keep natural flow in the stream. Instream water rights have been filed by ODFW for this reach.

Minimum Flow (High Priority).--*Adequate minimum, or base flows, do not currently exist and are needed for salmon spawning on this reach.*

See "Irrigation" above.

Flushing Flow (High Priority).--*Excess fine sediment in the stream substrate is building*

up in this reach because the natural flushing flows have been impounded over the last several drought years.

Work with water-right holders to manage releases from the dam to provide flushing flows when water is available.

Future Demand (Study).--*Future demands by agricultural and domestic users may adversely affect flow quantities.*

Utilize zoning and land use planning to limit possible future demands for development of domestic or agricultural uses. Utilize land use planning to avoid building on the floodplain.

Water Quality

Temperature (Study).--*Excessive temperatures are stressful and potentially lethal to salmon in all life stages.*

Provide riparian shading to preserve cool temperatures. Protect and possibly increase spring flow by protecting (and promoting) aquifer recharge. Increase flow quantities to provide additional cooler water and dilute warm water. Limit irrigation return flows of warm water. Plant and/or protect conifers, in addition to deciduous vegetation, to provide thermal cover in the winter. Thermal cover may help avoid freezing temperatures, which are lethal to eggs and rearing salmon.

Excess Fine Sediments (High Priority).--*Excess fine sediment has built up in this reach over the last several years because there have been no high flows to flush the sediment away. All of the flows that would normally have flushed excess sediment have been impounded for irrigation because of the drought. Fine sediment in this reach has filled in at least one good holding pool. Fine sediment can smother eggs.*

Limit sediment input to the river. Limit human and livestock trail use in the riparian area that leads to compaction, devegetation, and erosion. Fence the riparian area and use watering corridors for livestock. Relocate feedlots and develop alternate water sources. Work on road design and maintenance to avoid quick, sediment-laden runoff into stream, and allow precipitation and snowmelt to recharge the aquifer instead. Relocate road to better site if it is adding sediment and maintenance or redesign cannot stop sediment input. Close roads, limit road use, vegetate road if necessary to stop sediment input. Do not over-divert water to another watershed and preserve flow in this reach. Keep enough watershed vegetation to slow runoff and avoid bank erosion. Provide wetlands and/or filter strips for feedlot runoff.

Irrigation Return Flows (High Priority).--*Irrigation return flows supply excessively warm, sediment, and nutrient laden water to the river.*

Study the possibility of adding impoundments to supply irrigation and keep more of the natural flow in the river. Limit irrigation return flows of warm water. Provide wetlands and/or filter strips for return flows to improve their water quality.

Limit overland return flows.

Septic (Study).--*Leakage of nitrates from septic systems may add to excess nutrient problems in the river.*

If there is a problem, install pump or self-composting toilets. Improve current systems if necessary (and possible) with design assistance from the ODEQ. Limit future development which may result in problems by using the county's comprehensive land use plan.

Feedlots (High Priority).--*Feedlots in the riparian area result in devegetation, shade loss, bank erosion, and sedimentation. Runoff from feedlots also provide excess nutrients to the river.*

Prevent bank erosion and destruction by livestock through physical or electric fencing and using watering corridors. Relocate feedlots and supply alternate water source if necessary to protect water quality. Provide wetlands and/or filter strips for feedlot runoff.
NOTE: Since the original plan was completed in 1993, one landowner moved the feeders away from the river and fenced off the river leaving a buffer strip between feedlot and river.

Other Chemicals (Low Priority).--*There is potential for hazardous chemicals accidentally being put into to the river in this reach. One site, the old Joseph Forest Products site, on this reach is a CERCLA "superfund" clean up site. Studies have shown that no contaminants from this site have reached the Wallowa River.*

Monitor storage of industrial chemicals and fuels at the sawmills, airport, grain growers, fertilizer facilities, etc. Monitor possible contaminants (fuel storage, backyard chemicals, etc.) from urban areas for safety. Educate city inhabitants about chemical use, disposal, and possible effects on anadromous fish. Avoid farmland fertilizer runoff.
NOTE: Since the original plan was completed in 1993, clean-up has been accomplished at the old Joseph Forest Products and also at the Boise Cascade log yard.

Excess Nutrients (High Priority).--*Excess nutrients in the water contribute to water quality problems. One result of excess nutrients is excess growth of algae. The excess algae growth can result in large diurnal swings in dissolved oxygen (extreme swings from 37% saturation to 232% saturation of DO were measured at Catherine Creek in Union County in 1992). The diurnal swings are a consequence of oxygen production from photosynthesis during the day and oxygen use for respiration and decomposition of algae at night.*

See "Septic" and "Feedlots" in this section. Avoid farmland fertilizer runoff.

Stream Structure

Woody Debris (High Priority).--*Large woody debris provides diversity of stream structure. Some portions of this reach are lacking adequate large woody debris.*

Add large woody debris, preserve existing large woody debris. Provide healthy riparian vegetation as a source of future large woody debris.

Pool/Riffle Ratio (High Priority).--*A good pool/riffle ratio is vital to salmon habitat. Some portions of this reach are lacking a good pool/riffle ratio. The salmon use various portions of the stream at different life stages. For example, pools are vital for spring/summer chinook to hold in over the summer after they have migrated upstream and are waiting to spawn, and the pool/riffle interface is the preferred salmon spawning area.*

See "Woody Debris" above. Possibly provide other permanent structures such as boulders or concrete to form pools. Avoid building on floodplains which could lead to devegetation (landscaping) and channelization (for protection) by using land use planning. Develop mitigation strategies for necessary channelization and bank protection.

Channelization (Low Priority).--*Channelization limits diversity of stream habitat.*

See "Pool/Riffle Ratio" above. Preserve riparian vegetation that provides bank stability by physical or electric fencing of riparian areas and supplying watering corridors or alternate water source.

Bank Form (Low Priority).--*Good bank form provides bank stability and, in some cases, cover for the fish.*

See "Feedlots" above. Prevent bank erosion and degradation by livestock through physical or electric fencing of the riparian area and use watering corridors or supply alternative water source. Do not over-divert water from this reach into other watersheds. Avoid excess high/peak flows and consequent bank erosion and unraveling by keeping enough watershed vegetation to slow runoff.

Substrate

Cobble Embeddedness (Medium).--*Cobble embeddedness can make it difficult for salmon to build their redds. It is also an indication that the eggs may be smothered by sediment.*

Do not impound or divert the flushing flow needed to flush fine sediment from the gravel. Reduce impounded water to flush. Possibly increase flow quantity by limiting tree density/vegetative cover.

Excess Fine Sediment (High Priority).--*Excess fine sediment in the substrate smothers eggs and leads to cobble embeddedness.*

See "Water Quality" and "Cobble Embeddedness" in this section.

Physical Barriers (Study).--*Physical barriers can stop salmon migration.*

Modify diversion barriers to better provide passage.

Habitat Requirements

Predators/competitors (Study, Low Priority).--*There is a Blue Heron rookery near this reach.*

Live with the Blue Heron, possibly provide alternate food source for Blue Heron.

Diversion Screens (Study).--*Diversions should be screened to prevent loss of fish.*

Make sure diversions and irrigation returns are screened, monitored, and maintained.

Wallowa River--Spring Creek to Head of Wallowa Canyon

Water Quantity

Irrigation/Water Withdrawal (Low Priority).--*Irrigation and stock water diversions remove most of the water from portions of this reach.*

Protect upland vegetative cover to avoid quick runoff and promote recharge of the aquifer. Aquifer recharge needs to be protected to sustain the spring flows. Work on reducing diversions/return flows from the Wallowa to the Lostine. Improve irrigation efficiency and allow conserved water to be used for instream purposes. Lease water from water-right holders during minimum flow times to maintain instream flows. Study additional impoundments to supply irrigation needs and keep the natural flow in the stream. Instream water rights have been filed by ODFW for this reach.
NOTE: Since the original plan was completed in 1993, several landowners have installed more efficient irrigation systems.

Compaction (Low Priority).--*Compaction causes increased surface runoff and decreased aquifer recharge.*

Limit human and livestock use that leads to compaction and devegetation in the riparian area.

Flushing Flow (High Priority).--*Excess fine sediment in the stream substrate is building up in this reach because the natural flushing flows have been impounded over the last several drought years.*

Work with water-right holders to avoid impounding or diverting needed flushing

flows. Possibly release impounded water to flush the streambed.

Future Development (Study).--*Future development could lead to additional demands of water for agricultural and domestic uses.*

Limit development that would lead to excess water demands for agricultural and domestic uses by using zoning and land use planning to limit possible future demand. Use land use planning to avoid building on floodplains that would result in additional channelization and loss of floodplain groundwater recharge to feed spring flows.

Water Quality

Temperature (High Priority).--*Excessive temperatures are stressful and potentially lethal to salmon in all life stages.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Excess Fine Sediment (High Priority).--*Excess fine sediment is added to this reach through a variety of activities and processes. In the upstream portion of this reach much of the water during base flow time comes from sources such as Prairie Creek, Spring Creek, and Trout Creek. Water from some of these creeks contains excess fine sediment which stresses fish and smothers eggs.*

See "Wallowa River--Wallowa Lake to Spring Creek."
NOTE: Since the original plan was completed in 1993, several landowners have constructed fences along the river and planted vegetation to improve bank stabilization and reduce erosion. Other landowners have placed rip rap along the banks to reduce erosion.

Irrigation Return Flows (High Priority).--*Irrigation return flows can supply excessively warm, sediment, and nutrient laden water to the river.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Septic (Study).--*Leakage of nitrates from septic systems may add to excess nutrient problems in the river.*

See "Wallowa River--Wallowa Lake to Spring Creek." Make sure that municipality sewer treatment for Lostine and Wallowa is provided.

Feedlots (High Priority).--*Feedlots in the riparian area result in devegetation, shade loss, bank erosion, and sedimentation. Runoff from feedlots also carries excess nutrients to the river.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Other Chemicals (Low Priority).--*Use and storage of hazardous chemicals in this reach potentially affect water quality.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Stream Structure

Woody Debris (High Priority).--*Large woody debris provides diversity of stream structure. This reach is lacking adequate large woody debris.*

Add large woody debris, preserve existing large woody debris. Provide healthy riparian vegetation as a source of future large woody debris.

Pool/Riffle Ratio (High Priority).--*A good pool/riffle ratio is vital to salmon habitat. This reach is lacking a good pool/riffle ratio.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Channelization (Low Priority).--*Channelization limits diversity of stream habitat.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Bank Form (Low Priority).--*Good bank form provides bank stability, and in some cases, cover for the fish.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Substrate

Excess Fine Sediment (High Priority).--*Excess fine sediment in the substrate smothers eggs and leads to cobble embeddedness.*

See "Wallowa River--Wallowa Lake to Spring Creek."

Physical Barriers (Study).--*Physical barriers in the stream substrate can halt migration of juvenile and adult salmon.*

Modify diversion barriers to better provide passage.
Since the original plan was completed in 1993 one cement diversion structure was installed eliminating three push-up dams and aiding fish passage.

Habitat Requirements

Predators/competitors (Study, Low Priority).--*There are Blue Heron rookeries near this reach. The Blue Heron feed on fish, including juvenile salmon.*

Exist with the Blue Heron and look into the potential for providing an alternate food source.

Diversion Screening (Medium).—All irrigation diversions have been screened since the original plan was completed in 1993.

Make sure irrigation diversions and returns are screened, monitored, and maintained

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Wallowa River--Head of Wallowa Canyon to Grande Ronde River

Water Quantity

Compaction (Low Priority).--*Compaction along the riparian area leads to loss of vegetation and reduces the amount of aquifer recharge. In riparian upland areas, compaction causes increased surface runoff, higher peak flows, and bank erosion. Some of the older soils formed on a basalt substrate, with relatively high amounts of clay, are the ones in the county most likely to compact.*

Limit recreational trail use in the riparian area that leads to compaction. Do not use roads and ground skidding on clay rich soils when wet because the soils are subject to compaction. Limit use of roads and ground skidding to when the soil is dry or frozen because it does not compact at these times. Use lighter skidding equipment or off-ground equipment. Educate fishermen and campers about riparian erosion and compaction.

Water Quality

Temperature (Low Priority).--*There is the potential for temperatures on this reach to be high enough to adversely affect the salmon. The upper portion of this reach, from the head of the canyon to Minam, has limited potential for riparian shade (other than the canyon itself) because of the presence of the road on one bank and the railroad on the other.*

Provide riparian shading, where possible, to preserve cool temperatures. Protect and/or possibly increase spring flow to provide cool, high quality water. Plant and/or protect conifers in the riparian area to provide thermal cover in the winter. Increase flow quantity to dilute the effects of heating.

Excess Fine Sediment (High Priority).--*Excess fine sediment stresses salmon, smothers eggs, and reduces aquatic insect production.*

Work on road design and/or maintenance to avoid quick runoff (with lots of sediment) and promote groundwater recharge. Limit human and livestock trail use in riparian area to avoid compaction and devegetation. Limit dust that drifts from road to river with lignosulfonate, water, chip seal, or asphalt.

Relocate road to a better site where necessary and possible. Vegetate road, limit road use, or close road where necessary. Do not use roads or ground skidding when wet to avoid surface compaction and runoff. Use lighter skidding equipment or off-ground equipment such as helicopters. Educate fishermen and campers about riparian erosion and compaction.

Weeds/Erosion (Study, Medium Priority).-- See Countywide Issues

Herbicides/Pesticides (Low Priority).—See Countywide Issues

Stream Structure

No problems were identified.

Substrate

No problems were identified.

Habitat Requirements

Harassment (Low Priority).--*Recreational use by float boaters or fishermen can result in harassment of salmon.*

Educate recreational users about the potential adverse effects of their activities on migrating, holding, and spawning activities.