

Appendix C

RESOURCE ASSESSMENT

**Lostine River
National Wild and Scenic River**

**USDA - Forest Service
Wallowa-Whitman National Forest**

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Prepared by:

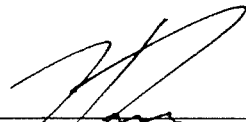


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WILD AND SCENIC RIVER--LOSTINE RIVER RESOURCE ASSESSMENT--Final

I. EXECUTIVE SUMMARY

As a result of the Omnibus Oregon Wild and Scenic Rivers Act of 1988, a segment of the Lostine River was designated as a Wild and Scenic River (W&SR). Under this Act, the Forest Service is required to prepare a comprehensive management plan to provide protection of the river values of the Lostine River. This resource assessment is being done to identify the river values that are outstandingly remarkable and/or verify the Congressionally-named values.

In September, 1990, a draft resource assessment was sent to the public, including other agencies and subject area experts, for review and comment. In that draft document, the preliminary findings of the Forest Service interdisciplinary team verified the outstandingly remarkable values identified in the Congressional Record.

As a result of our review of public and agency comments on the draft resource assessment, botany has been added to the list of outstandingly remarkable values. Hence, the findings of the Forest Service interdisciplinary team determined the following resources of the Lostine River to be outstandingly remarkable values: scenery, recreation, botany, wildlife and fisheries.

II. INTRODUCTION

In 1968, Congress enacted the National Wild and Scenic Rivers Act, and for the first time, established a system for preserving outstanding free-flowing rivers. The Lostine River was added to this system in 1988 when it was designated as a National Wild and Scenic River by the Omnibus Oregon Wild and Scenic Rivers Act of 1988. As defined by the Act, a National Wild and Scenic River must be free-flowing and have at least one "outstandingly remarkable value." The outstandingly remarkable values of the Lostine River identified in the Congressional Record include: scenery, recreation, wildlife and fisheries.

Under the Wild and Scenic Rivers Act, the Forest Service is required to prepare a comprehensive river management plan to provide for the protection and/or enhancement of the river values. This river planning process, of which the resource assessment is one step, will comply with the National Environmental Policy Act (NEPA) planning regulations. Through each phase of the planning process, public involvement will be invited and is essential for the success of a sound management plan.

III. INTRODUCTION TO RESOURCE ASSESSMENT PROCESS

This resource assessment serves as the foundation of the river management planning process. The assessment documents the determination of which river related values or features are outstandingly remarkable or contribute substantially to the river setting or to the functioning of the river ecosystem.

The resource assessment process provides a standardized approach to evaluation of values of designated Wild and Scenic Rivers. This assessment will guide interim management, development of the management plan, and determination of boundaries.

Although the determination of value significance is a matter of informed professional judgement and interpretation, this process includes the following steps or verification techniques:

- The use of an interdisciplinary team approach
- Consideration of uniqueness and rarity at a regional and national level*
- Values must be river related in that they owe their existence or contribute to the functioning of the river system and its immediate environs.
- The use of qualitative guidelines to help determine significance
- Verification by other experts in the subject area.

The resource value categories that have been considered include:

Scenic
Recreational
Geologic/Hydrologic
Vegetation/Botanic
Fisheries
Wildlife
Historic
Prehistoric
Traditional Use, Cultural
Other Resource Values

IV. RIVER DESCRIPTION

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 designated 16 miles of the Lostine River from its headwaters in the Eagle Cap Wilderness to the National Forest boundary at Silver Creek, in the following classes:

- | | |
|-----------|---|
| Segment A | WILD RIVER: The 5-mile segment from its headwaters in the Eagle Cap Wilderness to the Eagle Cap Wilderness boundary. |
| Segment B | RECREATIONAL RIVER: The 11-mile segment from the Eagle Cap Wilderness boundary to the Wallowa-Whitman National Forest boundary at Silver Creek. |

* Based partially on the eight geographic regions described in the 1989 Statewide Comprehensive Outdoor Recreation Plan for Oregon.

For the purposes of interim management, the Forest Service, as the lead agency, established a corridor width of 1/4-mile on either side of the river. The interim boundary map, included in Appendix B, shows private and federal ownership. The final corridor boundary will be determined as part of the Wild and Scenic River management plan development.

V. SPECIFIC DESCRIPTION OF VALUES

SCENIC

Criteria for Outstandingly Remarkable Rating

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions within the geographic region. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment length and not common to other rivers in the geographic region.

Evaluation of the Present Situation

The designated corridor for the Lostine River contains a diversity of landform, vegetation, water, and color that captures the attention of the viewer. The Lostine River is a regionally known scenic attraction and draws a wide variety of forest visitors.

High in the spectacular Eagle Cap Wilderness lies Minam Lake, the headwaters of the Lostine River. This lake, at 7300', is unique in that it also has an outlet for another Wild and Scenic River. The Lostine River flows out from the north end; the Minam River flows out from the south end.

The basin in which Minam Lake lies is surrounded by the rugged, granitic peaks of the Wallowa Mountains. The Lostine River exits this lake and flows down through open meadows in a glaciated u-shaped valley. Views from this upper stretch of the Lostine River include craggy peaks and smoothed-out avalanche chutes beginning at the ridgeline and fanning out on the subalpine meadow floor. A few small cirque lakes and hanging meadows are nestled up against granitic walls. Their outlets spill over the open side of their perimeter; these cascading streams add water to the Lostine River. The river meanders through the area, gently carving a streamcourse through the wet meadows. Accelerated springtime flows generate small rapids in this stretch of river.

Vegetation in this upper several miles (above Copper Creek) is typified by subalpine meadows interspersed with patches of subalpine fir and Engelmann spruce. In the summer, abundant wildflowers such as columbine, monkeyflower, Indian paintbrush, buttercup, blue harebell, elephants head, and mountain gentian vie for attention. Their rich hues of pinks, yellows, blues, whites, orange, and magenta provide dramatic color amidst the green grasses, sedges, and rushes. Low-growing, shrubby flowering plants such as white and pink heather, orange and yellow St. John's wort, and white Labrador-tea add color and texture to this vegetative carpet.

Around Copper Creek (approximately 6,400' elevation), the surrounding landscape of the Lostine River is dominated by small, uneven-aged fir and spruce trees which have encroached upon the open meadows. The small tree size is indicative of the site's short growing season and frequent avalanches. In this stretch, the Lostine River is a peaceful mountain stream, snaking through the area. Open, sweeping views of meadows and the Wallowa Mountains are hindered by the trees, although the upper ridgeline and peaks can be seen from many places along the river.

Soon the canopy closes, and a mature forest environment of grand fir, Douglas-fir, Engelmann spruce, western larch, and a few other species is dominant. Grouse huckleberry is a plentiful understory shrub. Flowers suited to the closed canopy, such as queen's cup, prince's pine, and the calypso and lady's slipper orchids delight the viewer who takes time to search them out on the forest floor.

In this forested setting, the river begins to transcend a "mountain stream" appearance and becomes a bit swifter and voluminous. Large rocks and a few windfall trees create obstacles for the river to flow around and over. The high spring runoff brings glacial till down from the side drainages and creates polished, scoured-out depressions in the large boulders found in the stream bed. Deep blue, clear pools are visible.

The Lostine River drainage continues to narrow, and at Two Pan Trailhead, the river leaves the Eagle Cap Wilderness. The next eleven miles is the roaded segment of the Wild and Scenic River designation, and is known locally as "Lostine Canyon." This canyon is dominated by steep, vegetated side slopes interspersed by rock bluffs. This topography combined with heavy snows in the Wallowa Mountains makes avalanches a hazard and annual occurrence during winter and spring. Past avalanches and landslides have created some small openings throughout Lostine Canyon, affording views up the steep slopes to spectacular craggy peaks.

The Lostine River has carved its way through the layers of rock and soil to become the focal point of this canyon. It has increased volume significantly from its shallow beginnings high up in the mountain meadows. In some stretches, the river runs swift over boulders and through coarse gravels, making sharp turns through the fir, spruce, pine and larch which line its bank. Deep pools of clear, cold water interrupt this fast flow, as do sections of shallow, slow moving water. In places, the river spills over large granitic sheets of bedrock on a quick descent to a scoured-out hole at the bottom. Short waterfalls can also be found. The Forest Road provides much access to, and views of, the Lostine River through the natural openings and recreation sites along this stretch. This variety in the river itself provides an absorbing image to all who visit Lostine Canyon.

During recent times, impacts to Lostine Canyon generally result from recreational development and activity. The gravelled Forest Road parallels the river for eleven miles, on the lower end of the Wild and Scenic River designation. About a half-dozen trailheads, a couple minimally-developed campgrounds, a picnic area, numerous (dispersed) user-developed campsites, and several summer homes are situated throughout this segment. Lostine Guard Station, a historic cabin and Forest Service administrative site, is adjacent to Lake Creek, a beautiful side tributary which flows into the Lostine River nearby. Structures for stock use, such as hitching rails and ramps, are found at some of the recreation sites. A high, concrete bridge crosses the Lostine River at the Polebridge site, where the river cuts through a small, but striking, gorge.

Finding

The Lostine River possesses much diversity in landform, water, color, and vegetation. The headwaters of the Lostine River is located in the spectacular high country of the Wallowa Mountains. Here, the river meanders through lush meadows surrounded by steep, craggy, granitic peaks. Further down, a forest environment of mixed conifer is dominant. The Lostine River has beautiful deep, clear, blue pools as well as stretches of swift water, crashing over and skirting around large rocks. This finding agrees with the Congressional Record that scenery in the Lostine River corridor is an outstandingly remarkable value.

RECREATIONAL

Criteria for Outstandingly Remarkable Rating.

Recreational opportunities are, or have the potential to be, unique enough to attract visitors from outside of the geographic region. Visitors would be willing to travel long distances to use the river resources for recreational purposes. River-related opportunities could include, but not be limited to, sightseeing, wildlife observation, photography, hiking, fishing, hunting, and boating.

Interpretive opportunities may be exceptional and attract or have the potential to attract visitors from outside the geographic region.

The river may provide or have the potential to provide settings for national or regional usage or competitive events.

Evaluation of the Present Situation

The Lostine River corridor provides a wide variety of recreational opportunities. The heaviest use occurs during summer and fall, when lack of snow allows easy access to Eagle Cap Wilderness. While day-use and overnight camping in Lostine Canyon tends to draw forest visitors from the geographic region, the Wilderness attracts backpackers and horseback riders from greater distances.

The upper five miles of the Lostine River falls within Eagle Cap Wilderness. Here, recreationists come to enjoy the many activities associated with pursuit of a wilderness experience. These include, but are not limited to, hiking, birdwatching, fishing, plant identification, sightseeing, photography, horseback riding, camping, orienteering, hunting, mule and/or horse packing, and wildlife viewing. Many, many people come in pursuit of solitude in order to "get away from" the pressures of daily life.

From its start at Two Pan Trailhead close to the Wilderness boundary, the Lostine River Trail (#1670; known locally as the West Fork Trail) parallels the river the entire distance up to Minam Lake, its headwaters. There is one cement bridge across the Lostine River along here; the trail is one of the most heavily used in the Eagle Cap Wilderness. Field observations indicate Two Pan Trailhead is probably the busiest Wilderness trailhead due to the Lostine River Trail and East Lostine River Trail (#1662) originating here. These trails provide short, fairly easy access to the high country of the Wallowa Mountains.

The lower eleven miles of the Wild and Scenic River designation is the roaded section, Lostine Canyon. A gravelled Forest Road (#8210) parallels the Lostine River. Below the Lostine Guard Station, this road is two-laned; above, it is a single-lane road with turnouts. Throughout this stretch, much recreational development has taken place, although generally it is of a primitive nature and remains secondary to the dominant natural surroundings.

In Lostine Canyon, there are five trailheads which provide access to Eagle Cap Wilderness. Facilities at the trailheads typically include informational signboards, and some sites have hitching rails and stock unloading ramps for riding and pack animals. The trails from them are popular for both day-hiking/riding and for those recreationists pursuing overnight trips in the Wilderness. Trailhead parking is designed to accommodate anywhere from a half-dozen to +50 vehicles, depending on the trail. It is not uncommon to find them packed beyond capacity during summer and fall. A quality big-game hunting experience awaits many who visit Eagle Cap Wilderness in this latter season.

Two minimally-developed campgrounds (Williamson, Shady) and many user-developed (dispersed) campsites are located along the Lostine River. Facilities such as vault toilets, picnic tables, and fire

rings are typical. A large campground at Lake Creek was washed out in the early 1970's due to a major flood.

Besides pursuing the camping experience itself, many forest visitors come to enjoy the quality fishing experience provided by the clear, cold water of the Lostine River. A combination of easy access to the water as well as sites "off the beaten path" give novice-to-advanced anglers a chance to try their luck. Day-use visitors using any of the "campsites" or the developed Pole Bridge Picnic Area usually come to fish as well as picnic.

A small area of private land, known as Lapover Ranch, is located in Lostine Canyon. These parcels have about a half-dozen summer homes built upon them. The structures are rustic in appearance and blend into the forest setting. This area was where Supreme Court Justice William O. Douglas summered for many years.

A commercial outfitter, under Special Use Permit from the Forest Service, provides day-use horse trips and extended overnight stays (especially during the various hunting seasons) in the Eagle Cap Wilderness. Permittee operations generally include using the Lillyville area, where corrals, hitching rails and some small structures are located. Other commercial outfitters also begin trips at various trailhead sites in Lostine Canyon.

About mid-way through Lostine Canyon, Lostine Guard Station serves as a Forest Service administrative site for seasonal personnel. Built in 1933 by the Civilian Conservation Corps (CCC), this small cabin is an attractive historic site. A shed, corral, and potable water fountain complete the setting. At the old French Camp site in the canyon, a picnic shelter constructed by the CCC is being considered for rehabilitation and interpretation opportunities.

The Lostine River is not considered "floatable" due to the rocks, short waterfalls, and occasional windfall trees hampering passage. Summertime "cloudbursts" of heavy rain, usually of short duration, combined with the unstable soils create flash floods in Lostine Canyon. In the past, sections of road have been washed out, stranding campers in the canyon.

The steep canyon walls, unstable soils, and heavy winter snows create a serious avalanche hazard during the winter months. While snowmobiling and cross-country skiing does occur in this roaded portion (with the latter extending into the Eagle Cap Wilderness in some areas), these activities should be pursued with caution and knowledge in recognizing the natural hazards.

Finding

The quality and diversity of recreation opportunities available along the Lostine River corridor makes it a very popular area. The Eagle Cap Wilderness and the roaded Lostine Canyon draws visitors locally and from great distances outside the geographic region. This finding agrees with the Congressional Record that recreation in the Lostine River corridor is an outstandingly remarkable value.

GEOLOGIC/HYDROLOGIC

Criteria for Outstandingly Remarkable Rating

The river or the area within the river corridor contains an example(s) of a geologic feature, process, or phenomena that is rare, unusual, one-of-a-kind, or unique to the geographic region. The feature(s) may be in an unusually active stage of development, represent a "textbook" example and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, and other geologic structures).

Evaluation of the Present Situation

The Lostine River flows through the northwest portion of the Wallowa Mountains, a steep and rugged range with peaks reaching 10,000 feet. Between 250 and 130 million years ago, the limestones of the Martin Bridge formation and the siliceous shales of the Hurwal formation were deposited on the shallow, warm ancestral Pacific Ocean seafloor. These oceanic rocks were later broken up and fragments were moved and added to the westward advancing edge of the North American continent. Between 60 and 130 million years ago, these seafloor and island arc rocks were intruded by the quartz diorite rocks of the Wallowa batholith. These "granitic" rocks make up the heart of the Wallowa Mountains.

Widespread volcanism, about 15-30 million years ago, created the thick Columbia River basalts which are layered over much of northeast Oregon surrounding the Wallowa Mountains uplift. Feeder dikes from some of the local eruptions are highly visible in the glacially-scoured granite peaks.

The Wallowas were glaciated at least three times, and perhaps as many as seven times, between 11,000 and 500,000 years ago. Classic alpine glacial features such as cirques, ice-carved peaks, serrate ridges, cliffs and pinnacles, and striated rock surfaces are evidence of the glaciers which fanned out from a central point near Eagle Cap Mountain. Elongated carved knobs, called roche moutonnees, and truncated ridges are found on the valley walls parallel to the direction of glacier movement. These features are typical above the fork with the East Lostine River. Quartz diorite is the predominant rock type in this area.

Below the fork with the East Lostine, the valley floor is covered with glacial morainal material reworked by the river. In addition to these deposits and recent alluvium, the bedrock downstream from Lapover Ranch is dark gray to dark brown thinly bedded siliceous or limey mudstone. In some places, metamorphism has altered these marine sedimentary rocks into very hard, dark hornfels, slates, and quartzites. This formation represents displaced fragments of sediments which were melded to the Mesozoic continental margin by folding the thrust faulting.

Throughout Lostine Canyon, a succession of park-like areas are separated by steeper gradients. These gradients ultimately slow down and speed up the flow of water. Just above the National Forest boundary where the Wild and Scenic River designation ends, a lateral moraine, 875' high, is located within the narrow gorge on the west side of the river.

As is typical throughout the Wallowa Mountains, the Lostine River valley is geologically unstable. Periods of freezing and thawing and steep slopes make rock slides of varying size a common occurrence throughout the drainage. Heavy winter snows create avalanches which also contribute to the scouring of slopes. This was demonstrated twice during the 1970's when thunderstorm-related floods filled the river with debris and heavily damaged the road, all the campgrounds, and Irondyke Camp.

In the Wallowa batholith and along its margins, gold, silver, copper, molybdenum, and tungsten are found in quartz veins. The Contact Mining and Milling company held about a dozen patented claims near Lapover Ranch, the area of private land in Lostine Canyon. Past records show that the property was discovered in 1906, and although an estimated \$30,000 was spent for development, there was no production from the property. The Lostine River drainage did not have the precious mineral resources that were found elsewhere in the geographic area, and therefore early mining played a much lesser role in settlement of the valley.

The Martin Bridge Formation (known locally as Black Marble) is a source of calcium carbonate for lime and cement, and has been developed for such uses in other areas of northeast Oregon. Limestone

had been quarried in the Lostine Valley outside of the Wilderness boundary in the past. It can be seen as the white cliffs on the east wall in the area of Lapover Ranch.

The large basin in which the Lostine River originates is surrounded by rugged peaks and steep side slopes. Hydrologically, the Lostine River is a snow-melt dominated system. Peak snow melt occurs between May through July. This natural flow regime has, however, been altered by the construction of earthen dams on Minam Lake.

Early in the 1900's when the lower Lostine River valley was being settled by Euro-Americans, a 14' earthen dam was constructed across the southern portion of Minam Lake's natural outlet (headwaters of the Minam River). A small dam was also located on the north end to manipulate flow into the Lostine River for irrigation and domestic water use in the Lostine River valley. The small lake that was present before reservoir construction was enlarged to store snow melt run off.

The pre-existing natural lake was located near the center of the present enlarged lake. Maximum water depth occurs where the natural lake was located, rather than at the face of the dam, which is typical of reservoirs. Due to Minam Lake's elevation (7300'), water temperatures remain cold even during the summer months.

While Minam Lake (reservoir) serves to manipulate water flow to some extent, Copper Creek and the East Fork Lostine River are unaltered and are significant water quantity additions to maintaining a year-round natural flow component to the Lostine River. Overall, the water quality of the Lostine River is excellent.

Finding

The features of the Lostine River drainage, while spectacular examples of several geologic processes, are typical of the Wallowa Mountains. The dams, subsequent enlargement of Minam Lake, and deflection of additional flow down the Lostine River creates a modified hydrologic flow regime. Therefore, the geologic/hydrologic resource is determined not to be an outstandingly remarkable value for the Lostine River.

VEGETATION/BOTANIC

Criteria for Outstandingly Remarkable Rating

The river or area within the river corridor contains nationally or regionally important populations of indigenous plant species. Of particular significance are species considered to be unique or populations of federally-listed or candidate threatened and endangered species. When analyzing vegetation, additional factors such as diversity of species, number of plant communities, and cultural importance of plants may be considered.

Evaluation of the Present Situation

In the upper portion (above Copper Creek) of the Lostine River corridor, vegetation is typified by subalpine meadows interspersed with patches of subalpine fir and Engelmann spruce. In the summer, abundant wildflowers such as columbine, monkeyflower, Indian paintbrush, lupine, bluebells, buttercup, blue harebell, elephants head, and mountain gentian vie for attention. Their rich hues of pinks, yellows, blues, whites, orange, and magenta provide dramatic color amidst the green grasses, sedges, and rushes. Low-growing, shrubby flowering plants such as white and pink heather, orange and yellow St. John's wort, and white Labrador-tea add color and texture to this vegetative carpet.

Once the canopy closes below Copper Creek and throughout Lostine Canyon, grouse huckleberry is a plentiful understory shrub. Flowers suited to the closed canopy, such as queen's cup, prince's pine, and the calypso and lady's slipper orchids delight the viewer who takes time to search them out on the forest floor.

The variety of tree species such as grand fir, Douglas-fir, Engelmann spruce, western larch, and lodgepole pine dominate dependent upon their site-specific requirements. The health of these species, both collectively and individually, have been subject to increasing damage by drought, insects, and disease. Pest-ridden timber stands, with high levels of mortality, take on a brown tone rather than the desired (typical) green color. This is evident in Lostine Canyon and much of northeast Oregon.

Present forest health problems are associated with advanced stand age, over-density, 90 years of fire exclusion, and selective timber harvesting that has given the competitive edge to shade tolerant tree species such as the true firs. These tree species are very prone to damage and mortality from forest pests such as bark beetles, defoliators, and root diseases. All these factors combine to cause increased tree mortality and ladder fuel buildups. This situation, mixed with summertime dry-lightning storms, creates potential for large-scale conflagration wildfires.

During the past 10 year period, the Mountain Pine bark beetle has been causing tree mortality in the lodgepole pine stands. Currently, many overstory and understory lodgepole pine contain Western Gallrust which slows tree growth and give the trees a poor health appearance.

Western Spruce Budworm defoliation, combined with five years of drought, has stressed the grand fir and Douglas-fir trees in the area. These stressed trees are thin-crowned, off-colored, and appear unhealthy. The Scolytus fir engraver and the Douglas-fir beetle have infested these weakened trees and have caused considerable mortality in the grand fir and Douglas-fir, respectively.

In the past two years, the Engelmann Spruce bark beetle has built up to epidemic proportions in the general area and now are causing tree mortality in the Engelmann spruce trees. Woodpeckers have already stripped the outer bark seeking the beetle grubs for food. With brown-needled crowns, these dead and dying trees add to the poor stand health appearance.

Overall, the dense, mature stands of the Lostine River drainage are in a poor state of forest health. These processes are natural events in the long-term progress of plant habitat succession and the dynamic passage of ecosystems through various seral stages; however, in the short-term they detract from the scenic value of the area, at least in the eyes of many forest visitors.

Despite the forest health situation, the Lostine drainage is remarkable due to the unique botanical resources found along the river. Lostine Canyon is home to the greatest variety of moonworts, ten Botrychium spp. in all, found anywhere in the country. The rarity of finding so many moonworts growing in one locality provides scientists a chance to compare morphological differences between species growing together in the same habitat.

This population of small, fern-like plants is significant for several reasons. First, it is the "type locality" of Botrychium pedunculosum, a recently described species that is known from only a few widely scattered populations in western North America. As the type locality, this population is the standard from which all other specimens of the species are compared. Second, it is also the only population of B. pedunculosum found in the United States.

Of the ten Botrychium spp. found along the Lostine River, seven are listed on the Forest Service Region 6, Regional Forester's Sensitive Species list, and three are also in Category 2 (candidate species) of the U.S. Fish and Wildlife Service Threatened and Endangered Species list. The Oregon

Natural Heritage Data Base identifies these seven Botrychium spp. as threatened and/or endangered status in the state of Oregon.

The habitat for these moonwort populations is characterized by an open canopy of lodgepole pine with a grassy understory, and a sandy loam soil.

Other plants of interest to botanical experts are Lycopodium annotinum (stiff clubmoss), which has been found in several locations in the Lostine drainage, and Listera borealis (northern twayblade), an orchid known from Oregon only within the Lostine River and Hurricane Creek drainages. The clubmoss was formerly listed by the Oregon Natural Heritage Data Base but has since been delisted due to a number of additional populations being found. It is nonetheless a rare occurrence in northeast Oregon.

The twayblade is currently not listed on the Oregon Natural Heritage Data Base. This omission results from it being overlooked by botanists. Prior to 1991 it was not known to occur in Oregon. The discovery of a very small population within the Lostine drainage lead to a herbarium search in which a specimen from the 1960's, collected along Hurricane Creek by Georgia Mason, a noted plant explorer of the Wallowa Mountains, was found. Due to the very limited distribution of this species in Oregon, it is likely that Oregon Natural Heritage will classify it as threatened or endangered in the future.

Finding

While the plant communities found in the Lostine River corridor are typical of the Wallowa Mountains, the presence of the Botrychium spp. is unique. The number of different species in one locality combined with the rarity of these plants makes the Lostine drainage a delight for botanists and scientists, and many travel long distances to pursue the study of Botrychium spp. The three candidate species for federal threatened and endangered listing, and the identification of a "type locality" moonwort (B. pedunculosum) elevates botany to an outstandingly remarkable value for the Lostine River.

FISHERIES

Criteria for Outstandingly Remarkable Rating

Fish values may be judged on the relative merits of either fish populations, habitat, or Native American cultural use - or a combination of these river-related conditions. Considerations shall be given for potential as well as existing values.

Populations. The river is internationally, nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed threatened, endangered, and sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat. The river provides or has the potential to provide exceptionally high quality habitat for fish species indigenous to the region. Of particular significance is habitat for wild stocks and/or federal or state listed or candidate threatened, endangered, and sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Evaluation of the Present Situation

Populations

The Lostine River supports populations of native and stocked rainbow trout, brook trout, bull trout, spring chinook, and summer steelhead. Trout fishing is an extremely popular recreational activity all along the Lostine River. Approximately five times prior to and during the fishing season, Oregon Department of Fish and Wildlife (ODFW) stocks the river with a total of 10,000 8-10" rainbow trout for use by anglers.

Bull trout (Salvelinus confluentus) is on the Forest Service Region 6, Regional Forester's Sensitive Species list, and is in Category 2 (candidate species) of the U.S. Fish and Wildlife Service Threatened and Endangered Species list. Historically, bull trout populations had a wide distribution in Oregon, but many populations are now extinct or near extinction. Bull trout are still found in the designated portion of the Lostine River, and they spawn in the smaller patches of gravel located in this stretch.

Summer steelhead (Oncorhynchus mykiss) and spring chinook (Oncorhynchus tshawytscha) also spawn in the Lostine River, although generally below the Wild and Scenic River designation. Spring chinook are proposed for listing by the National Marine Fisheries Service. A final determination is expected in mid-1992. Summer steelhead is currently listed on the Forest Service, Region 6 Regional Forester's Sensitive Species list.

While historically the upper (designated) section was utilized by spring chinook, summer steelhead, coho, and fall chinook, the latter two anadromous runs are now extinct. Steelhead and spring chinook still spawn here, although the much-reduced populations of spring chinook in the Snake River system rarely migrate this far due to the availability of high quality spawning gravel below. However, one area near Shady Campground still provides the spawning site for some spring chinook.

Mountain whitefish is an important fishery for Native American harvest. Less is known about their current population size and distribution, although whitefish are generally abundant throughout western North America.

Habitat

Habitat for fish in the Lostine River is generally good to high quality, despite the recreation use in the corridor. Minam Lake, the headwaters of the Lostine River, is at 7,300' and maintains very cold temperatures year-round. The lake develops a weak thermal stratification during the summer. Water quality is excellent, and the concentration of chemical constituents is very low.

The watershed and upper five miles of the Lostine River is in the Eagle Cap Wilderness. Because of this, the habitat condition is near pristine and water quality is excellent. Water temperatures remain low (low 50's F) and sedimentation is lacking. Riparian vegetation is intact along the river banks. A variety of deep pools, riffles, and shallow, slow stretches of the river is typical.

The remainder of the river corridor (eleven miles) is the roaded Lostine Canyon and used heavily by recreationists. Generally, the development along the river is minimal or primitive in nature. This is due, in part, to the steep canyon topography and shallow, unstable soils contributing to the occurrence of landslides, avalanches, and the potential for flash floods.

Management activities such as the construction of the Forest Road and salvage timber harvest for bug-killed trees has altered the Lostine River to a limited extent. Use of the river banks by anglers has eliminated some riparian vegetation and compacted or eroded some areas. Recreation site development such as campsites, trailheads, and trails has also degraded localized areas similarly.

Overall, the Lostine River itself remains clear and cold, with adequate spawning gravel for bull trout and steelhead in particular. The low water temperatures make it an important contributor to the survival of some high value fish, either presently or in the future.

Finding

The Lostine River supports anadromous fisheries such as spring chinook and summer steelhead, as well as several species of native and stocked trout. Summer steelhead, on the R-6 Regional Forester's Sensitive Species list, and spring chinook, proposed for federal listing by the National Marine Fisheries Service, are both very important locally, regionally, and nationally. The clear, cold, highly-oxygenated water of the Lostine River is important to the survival of these key species. This finding agrees with the Congressional Record that fisheries is an outstandingly remarkable value on the Lostine River.

WILDLIFE

Criteria for Outstandingly Remarkable Rating

Wildlife values may be judged on the relative merits of either wildlife populations habitat, or Native American cultural use - or a combination of these conditions.

Populations. The river or area within the river corridor contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique or populations of federal or state listed or candidate threatened, endangered and sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Habitat. The river or area within the river corridor provides exceptionally high quality habitat for wildlife of national or regional significance, or may provide unique habitat or a critical link in habitat conditions for federal or state listed and candidate threatened, endangered, and sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable.

Evaluation of the Present Situation

Populations

Many species of wildlife common to the region inhabit the area including Rocky Mountain elk, deer, black bear, mountain lion, beaver, otter, mink, other small mammals, reptiles, and amphibians. Pine marten are abundant, and fisher sign has been reported. The area is known for its high value big-game animals, in terms of viewing and hunting.

Rocky Mountain bighorn sheep are indigenous to the Eagle Cap Wilderness, but the remnants of the native population were last observed around 1940. Since then, efforts to re-introduce bighorns (around 1970) to the Hurricane Creek-Lostine River drainage has been met with varied success. Currently, the herd numbers between 40-50 animals.

Around 1950, several mountain goats were introduced near Chief Joseph Mountain (it is uncertain whether or not they had once inhabited the area). A small herd has stabilized, and efforts to release more goats in the area has centered around the Hurricane-Lostine divide. Both bighorn sheep and mountain goats are extremely high-value species for those interested in wildlife viewing. Bighorn sheep are frequently seen on the east ridge of the Lostine River drainage.

Sightings of peregrine falcons (federally listed as an endangered species by the U.S. Fish and Wildlife Service) and prairie falcons have been reported, and a goshawk nest is located in Lostine Canyon. There is an American bald eagle (listed as a threatened species by the U.S. Fish and Wildlife Service) roost below the National Forest boundary. A large variety of other birds such as woodpeckers, great horned owls, blue and ruffed grouse, and many species of song birds also exists. The black rosy finch (on the Region 6 Regional Forester's Sensitive Species list) inhabits the area as well.

Habitat

Habitat within the Lostine River drainage is varied, ranging from subalpine meadows to spruce-fir forests. The Eagle Cap Wilderness part of the corridor has impacts limited to users on foot or horseback, such as campsites and trails, and therefore, is in a near-pristine condition.

The roaded portion of the Lostine River, however, has habitat suited to a much narrower range of species. Nearly all of Lostine Canyon is forested, and many trees are dead or dying due to bark beetle and spruce budworm infestations (see section on Vegetation). The disturbance from timber salvage operations and recreational development and use has also impacted the habitat to some extent. Overall, though, the entire Lostine River corridor provides suitable habitat for a wide range of species. This is due to the expansive, diverse topography provided by the surrounding Eagle Cap Wilderness.

Finding

The diversity and importance of the habitat supports a significant wildlife population. The number of federally-listed threatened, endangered, and sensitive species sighted or which are known to inhabit the Lostine River corridor makes it an important ecosystem. The efforts in re-introducing bighorn sheep and introducing mountain goats in the Hurricane-Lostine divide is notable in this geographic region. This finding concurs with wildlife being an outstandingly remarkable value as identified in the Congressional Record.

HISTORIC

Criteria for Outstandingly Remarkable Rating

The river or area within the river corridor contains a site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare, unusual or one-of-a-kind in the region. A historic site(s) and/or feature(s) in most cases is 50 years old or older. Of particular significance are sites or features listed in, or are eligible for inclusion in, the National Register of Historic Places.

Evaluation of the Present Situation

There are a few sites in Lostine Canyon of historical interest. Lostine Guard Station was built in 1933 by the Civilian Conservation Corps (CCC), and is in the architectural style reminiscent of that construction period. The cabin is used today as a Forest Service administrative site, and it has been determined to be eligible for the National Register of Historic Places. A shed, corral, and water fountain are also located here. Like the town, river, and canyon itself, Lostine Guard Station was named for some early settler's hometown of Lostine, Kansas. The dams at Minam Lake, as well as the Lostine River trail, were constructed in the early 1900's with horse teams.

The CCC also constructed the picnic shelter at the old French Camp site. It, too, is architecturally typical of CCC construction. The shelter presently is in need of rehabilitation. In the 1930's, it once served as the kitchen, complete with a water system, as part of the CCC base camp. A rustic cabin

in the Lapover Ranch area was where Supreme Court Justice William O. Douglas summered for many years.

There are remnants of mining structures at several locations in the Lostine River corridor.

Finding

While there are some historical sites of interest, they are not notable for the geographic region nor in terms of significant events, people, or activities. Therefore, the finding for the historic resource does not warrant outstandingly remarkable value status.

PREHISTORIC

Criteria for Outstandingly Remarkable Rating

The river or area within the river corridor contains a site(s) where there is evidence of occupation or use by native Americans. Sites must be rare, one-of-a-kind, have unusual characteristics or exceptional human interest value(s). Sites may have national or regional importance for interpreting prehistory; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare or sacred purposes. Of particular significance are sites or features listed or eligible for inclusion in the National Register of Historic Places.

Evaluation of the Present Situation

The Lostine River corridor most likely had been used by several tribes for hunting, fishing, and gathering purposes. There is one known prehistoric site, and it is probable that there are more. However, only limited surveys tied to site-specific management activities on federal land have been completed.

Two known Indian gravesites are located in Lostine Canyon which are probably of prehistoric origin. It is likely, according to the Nez Perce Tribe, that there are additional gravesites in the area.

Finding

Since no extensive cultural resource inventories have been completed for the Lostine River corridor, it is undetermined what level of significance prehistoric use had in the area. In the meantime, known and discovered sites are protected under existing statutes, regulations, and policy.

TRADITIONAL USE, CULTURAL VALUES

Criteria for Outstandingly Remarkable Rating

The river or area within the river corridor contains regionally unique location(s) of importance to Indian tribes (religious activities, fishing, hunting, and gathering). Locations may have unusual characteristics or exceptional cultural value being integral to continued pursuit of such activities. Locations may have been associated with treaty rights on ceded lands or activities unprotected by treaty on ceded lands or in traditional territories outside ceded lands.

Evaluation of the Present Situation

The Lostine River drainage is included within the ceded boundaries (1855 treaty) of the Nez Perce Tribe. The area was used in prehistoric and historic times for fishing, hunting, and berry and root

gathering. The Nez Perce summered at camps along the Lostine River, and these served as a gathering place for tribal members. Two Nez Perce gravesites exist in Lostine Canyon; Tribal members believe there are probably more.

The Confederated Tribes of the Umatilla Indian Reservation (Cayuse, Walla Walla, and Umatilla Tribes) also utilized the Lostine River drainage from time-to-time to fish, hunt, gather roots, pick berries, and other traditional uses.

Finding

No extensive cultural resource inventory has been completed on the Lostine River by the Forest Service and no regionally unique sites have been identified by the tribes at this time. However, there is much interest in nearly all the drainages in northeast Oregon by various tribes as having special cultural value associated with their history and present-day activities. This is especially true of those rivers having anadromous fish runs, like the Lostine River. The tribes will continue to be consulted throughout the Wild and Scenic River management plan development to see if this value meets the criteria for an outstandingly remarkable value rating.

OTHER SIMILAR VALUES

Additional river-related values were considered during the assessment process, including but not limited to hydrologic, paleontologic, botanic, and ecological resources. Expert review of the draft Resource Assessment and further research on these topics have warranted their inclusion with other related resources (see Geologic/Hydrologic and Vegetation/Botany) except for paleontologic. No information on the latter surfaced to develop a separate section.