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Department of
Agriculture

Forest Service

Pacific
Northwest
Region

1993

Upper Sandy National Wild and Scenic River

Environmental Assessment

Mt. Hood National Forest
Zigzag Ranger District

Upper Sandy National Wild and Scenic River Environmental Assessment

USDA-FS, Mt. Hood National Forest
Zigzag Ranger District

Upper Sandy National Wild and Scenic River

Environmental Assessment

Mt. Hood National Forest
Zigzag Ranger District
Clackamas County, Oregon

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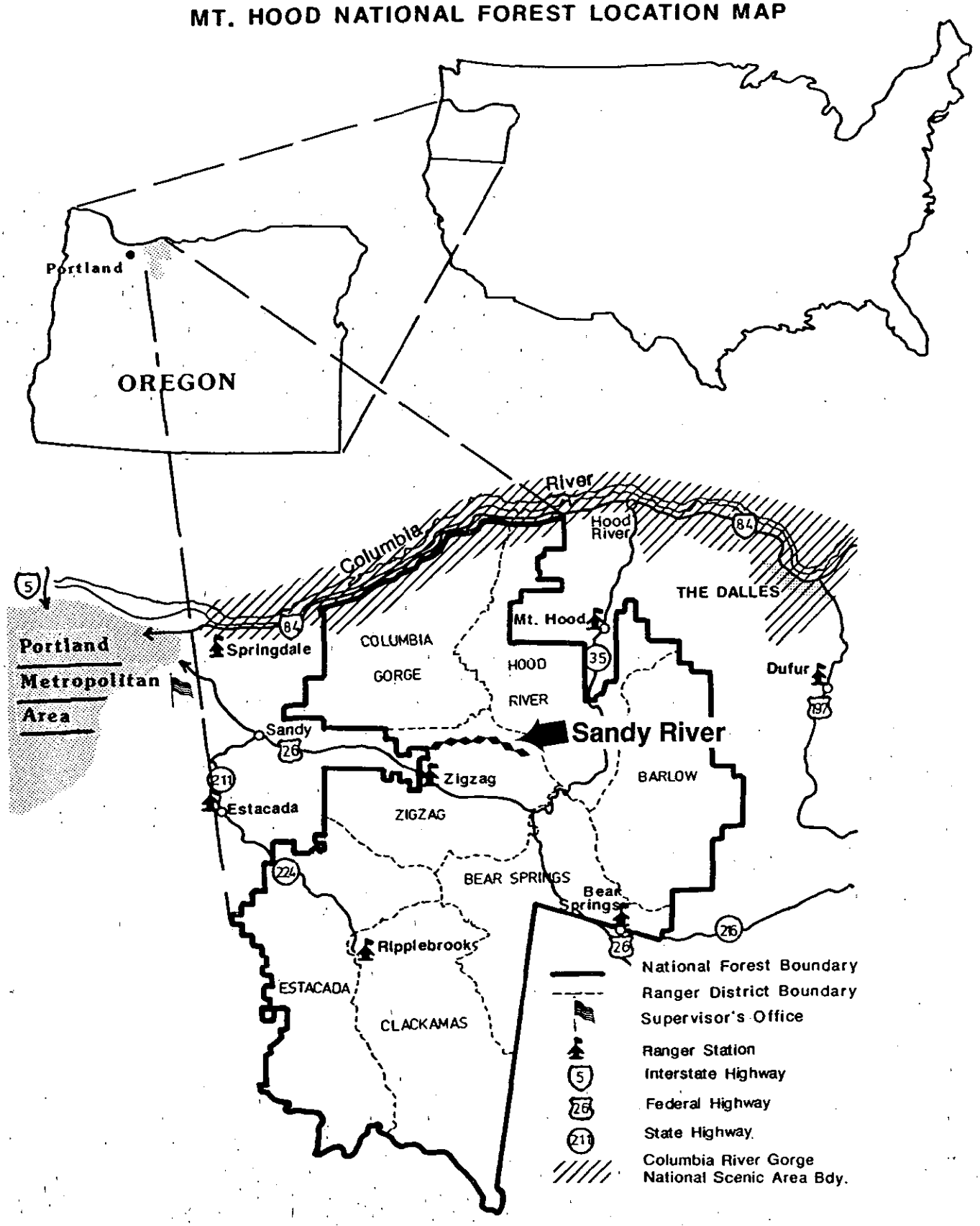
MT. HOOD NATIONAL FOREST LOCATION MAP



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Chapter I

Introduction And Need For Proposal

Introduction

The upper Sandy River became a Wild and Scenic River through the Omnibus Oregon Wild and Scenic Rivers Act of 1988. This act added segments of 40 Oregon rivers to the National Wild and Scenic Rivers system. The Sandy River was one of these 40 rivers. Three segments of the Sandy River were designated through the Omnibus Oregon Act. The upper two segments, covering a length of 12.4 miles, go from the river's headwaters on the west slope of Mt. Hood to the boundary of the Mt. Hood National Forest. The Mt. Hood National Forest is responsible for the administration of these river segments, and this Environmental Assessment/Management Plan covers that portion of the river. A third segment downstream on the Sandy River from Dodge Park to Dabney Park was also designated in the 1988 Act. A separate river management plan is being developed for that segment of the river by the Bureau of Land Management.

Much of the area in the river corridor is also identified as the Old Maid Flats Geologic Special Interest Area in the Mt. Hood Forest Land and Resource Management Plan, (also called the Forest Plan). The direction for the river management plan will also need to be protecting those attributes of the area that lead to the Special Interest Area designation. See Map 2 for the interim management boundary. Map 3 shows the boundaries for the Old Maid Flats Special Interest Area.

The purpose of developing this management plan is to establish a comprehensive approach for managing the free-flowing natural character of the river and its values. The plan is also to provide the direction, standards and guidelines, monitoring efforts, a list of projects to be implemented in the river corridor and establish final river corridor boundaries. The plan is a result of a coordinated effort with Federal, State, and local agencies as well as concerned members of the public to identify a plan for the protection and use of the river.

Wild and Scenic River Legislation

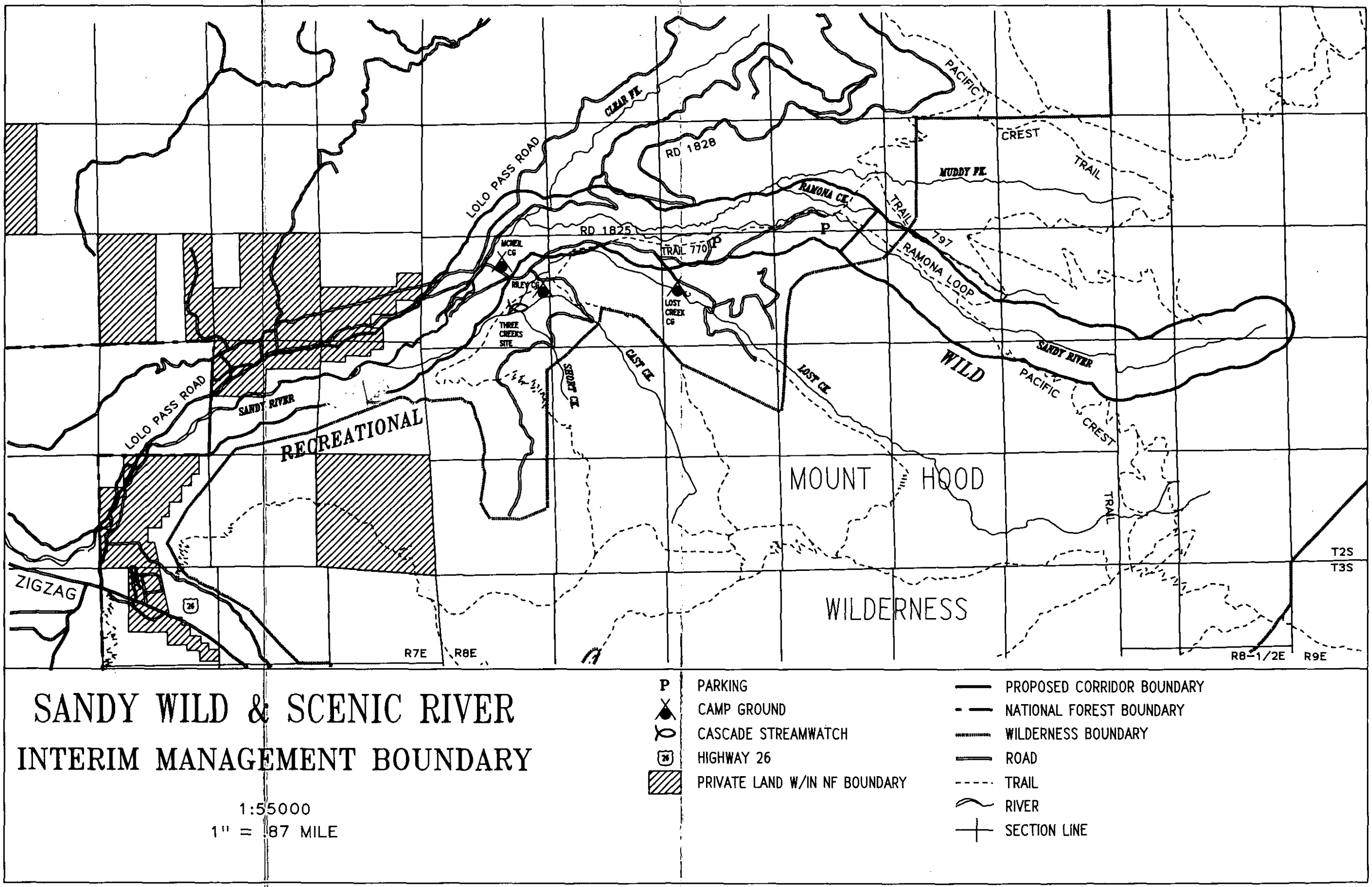
In 1968, Congress passed the National Wild and Scenic Rivers Act, establishing a nationwide system of outstanding free-flowing rivers. The primary purpose of the Act is to balance river development with river protection and conservation. The Act specifically prohibits river from future hydropower development and requires managing agencies to protect and enhance those values for which the river was designated.

As defined by the Act, a National Wild and Scenic River must be undammed and have at least one outstandingly remarkable resource value (ORV) to be included in the system. ORV's are those values which are **river related** (owe their existence or location to the river) and are **rare, unique, or exemplary** in character. Rivers may be added to the system either by an act of Congress or by order of the Secretary of the Interior upon official request by a State.

Some of the underlying principles of the Act are:

- to keep selected rivers or river segments in a free-flowing condition and to recognize their importance to our natural and cultural heritage;
- to include all types of free-flowing rivers in the system, whether in very remote areas or flowing through developed areas;
- to designate rivers because of their existing attributes and uses, including a river's natural, recreational, and cultural values;
- to recognize the need to provide for partnerships among landowners, Federal agencies, and local, State, and tribal governments in determining the future of the river area and managing its resources.

Map 2. Interim Management Boundary



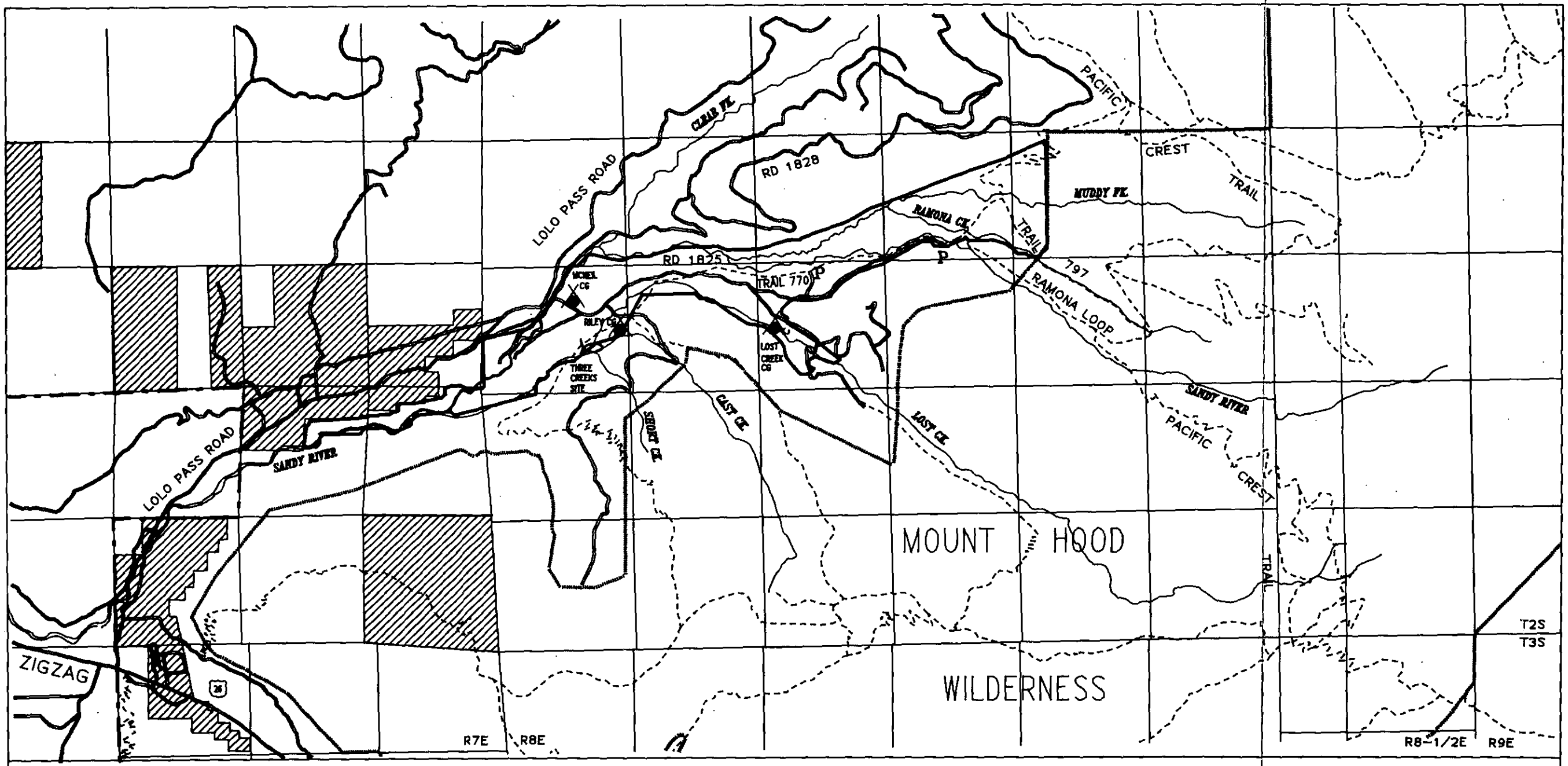
SANDY WILD & SCENIC RIVER

INTERIM MANAGEMENT BOUNDARY

1:55000
1" = .87 MILE

P	PARKING
	CAMP GROUND
	CASCADE STREAMWATCH
26	HIGHWAY 26
	PRIVATE LAND W/IN NF BOUNDARY
	PROPOSED CORRIDOR BOUNDARY
	NATIONAL FOREST BOUNDARY
	WILDERNESS BOUNDARY
	ROAD
	TRAIL
	RIVER
	SECTION LINE

Map 3. Old Maild Flat Special Interest Area



Under the Wild and Scenic Rivers Act, designated rivers were classified as wild, scenic or recreational, depending on the level of development and access present at the time of designation. Wild rivers are the most natural appearing and the least accessible. Little or no development is present, such as roads or campgrounds. Scenic rivers have shorelines that are largely undeveloped with few access points. More types of land uses and developments are compatible with management goals on a scenic river than on a wild river. On river segments with the Recreational designation, the shoreline is more developed and the road parallels the river more closely and may even dominate the landscape. There may be some development along the banks, and some existing impoundments or diversions.

Due to the different level of existing development, the upper two segments of the Sandy River as described in the Omnibus Oregon Wild and Scenic Rivers Act are:

Segment 1 - The 4.5 mile segment from its headwaters to the section line between sections 15 and 22, township 2 south, range 8 east as a **wild river**; to be administered by the U.S. Forest Service.

Segment 2 - The 7.9 mile segment from the section line between sections 15 and 22, township 2 south, range 8 east to the Mt. Hood National Forest boundary at the west section line of section 26, township 2 south, range 7 east as **recreational river**; to be administered by the U.S. Forest Service.

Purpose and Need

The Sandy River was designated by Congress as a national wild and scenic river in 1988. The Wild and Scenic Rivers Act requires the Forest Service to develop a management plan to provide for protection and enhancement of resource values in the river corridor and accommodate public uses consistent with the protecting and enhancing of those river values.

The Environmental Assessment describes alternative methods for managing the land within the river corridor, documenting the environmental effects of each alternative. The alternative that is selected for the management strategy then provides the foundation for the River Management Plan.

The River Management Plan describes the conditions to be achieved and/or maintained in in order to protect and enhance the river's values, prescribes standards and guidelines to govern activities within the boundaries that could affect the river's values. It also identifies new final corridor boundaries, identifies a schedule of activities to be implemented to meet the objectives of the river management plan, as well as identifying monitoring efforts that will be applied to to insure that river values are protected and enhanced.

Planning Process

In developing a management plan for the Sandy River, the Forest Service followed National Environmental Policy Act (NEPA) requirements, including establishing an interdisciplinary team and involving the public. Resource specialists for each of the unique river values, or attributes, were members of the interdisciplinary team, and several others served as consultants to the team. Outside experts (from universities, other agencies, and the public) were involved in the preparation of the resource assessment and the environmental assessment. A list of interdisciplinary team members, along with their qualifications, is in Chapter 5.

Public involvement has been and will continue to be a critical part of the river management planning process. Private citizens, interest groups, state and local governments, other agencies, and the Confederated Tribes of Warm Springs were all consulted throughout the development of the resource assessment and management plan. In addition to informational mailings, two public meetings, as well as informational meetings with individuals and organizations, were held at the time issues and draft alternatives were being developed. More detailed information on public involvement are contained in Chapter 5.

Agency Jurisdiction

The Wild and Scenic Rivers Act requires that a comprehensive river management plan be prepared to set final boundaries and protect and enhance the values for which the river was designated. The plan also provides goals, desired future condition and standards and guidelines for the Sandy River. It provides the necessary direction for the river corridor and adjacent areas that affect the corridor.

The river management plan is intended to be compatible with local and statewide planning goals, and will also be coordinated with planning for affected adjacent Forest Service lands.

U.S. Forest Service

The management plan for the Sandy signifies an amendment to the 1990 Mt. Hood National Forest Land and Resource Management Plan (also called the Forest Plan). The Forest Plan provides direction for management programs, practices, uses and protection measures on national forest lands within the Mt. Hood National Forest boundary. This environmental assessment is tiered to the final Environmental Impact Statement for the Forest Plan.

The Forest Plan recognized the five designated wild and scenic rivers on the Forest with a special management area designation of B1, Designated Wild and Scenic Rivers. The Forest Plan also identifies much of the Old Maid Flats mudflow as a geologic Special Interest Area with a management area designation of A4. The standards and guidelines for the B1 and A4 Management Areas, as well as the upper Sandy River Resource Assessment, have guided the interim management of the Sandy River and Old Maid Flats area, pending completion of this management plan.

Two levels of planning exist for the Mt. Hood National Forest. The first level of planning is programmatic and is represented by the Forest Plan and its amending documents such as this one. The second level of planning is the project level. Individual project plans, such as a timber sale or construction of a campground, are tiered to programmatic plans and must achieve those goals and objectives.

Confederated Tribes of Warm Springs

Members of the Confederated Tribes of Warm Springs exercise reserved treaty fishing rights at "usual and accustomed" fishing sites on the Columbia River and its tributaries, which includes the Sandy River. These reserved rights are addressed in the treaty with the Confederated Tribes of the Warm Springs Reservation of Oregon (Treaty with the Tribes of Middle Oregon, June 25, 1855, 12 Stat.963).

These rights were reserved by, not granted to, the treaty tribe. In essence, "the right of taking fish at all usual and accustomed places" guarantees that members of the treaty tribe shall have the right of access to, and fishing from, all salmon and steelhead-bearing locations on the Columbia River as well as its tributaries, including the Sandy River.

Other rights reserved in the Treaty of 1855 include the right of erecting temporary buildings for curing fish, together with the privilege of hunting, gathering roots and berries, and pasturing horses and cattle on open and unclaimed land.

Although the Sandy River is not within the ceded area as identified in the Treaty With the Tribes of Middle Oregon of 1855, it is within the "usual and accustomed" area of resource utilization at the time of the treaty. The treaty reserves to the signers of the treaty rights to perform traditional subsistence and sacred activities within these usual and accustomed areas.

Oregon Water Resources Department (WRD)

The WRD is responsible for managing and allocating the State's water resources. The Water Resource Commission typically develops policy through the preparation of basin plans for each of Oregon's 18 river basins.

The WRD issues water rights on all waters in the State and enforces the exclusion of dams, impoundments, and placer mining in scenic waterways and on tributary streams with scenic waterway boundaries. Minimum perennial streamflows are administrative designations established by the Water Resources Commission.

Minimum perennial streamflows are administrative designations established by the Water Resources Commission. A law passed in 1987 by the Legislature allows for the conversion of minimum perennial streamflows to instream water rights. Three State departments may apply for these instream rights:

- Parks and Recreation,
- Fish and Wildlife, and
- Environmental Quality.

Once granted, the instream right is held by the WRD in trust for the people of Oregon.

Division of State Lands (DSL)

Under state law, the Division of State Lands (DSL) is responsible for the management of the beds and banks of navigable waterbodies (ORS 274.005-274.590). DSL is the administrative arm of the State Land Board (the Board), composed of the Governor, Secretary of State, and State Treasurer. Under constitutional and statutory guidelines, the Board is responsible for managing the assets of the Common School Fund. These assets include the beds and banks of Oregon's navigable waterways and are to be managed for the greatest benefit of the people of this state, consistent with the conservation of this resource under sound techniques of land management. Protection of public trust values of navigation, fisheries, and public recreation are of paramount importance, too.

State ownership to the beds of navigable waterbodies was granted to Oregon in 1859 as an incidence of statehood and is an inherent attribute of state sovereignty protected by the U.S. Constitution. The beds of non-navigable waterbodies remained in the ownership of the United States or its grantees. The navigability of that portion of the Sandy River within the boundaries of the Mt. Hood National Forest, specifically that portion from the Forest boundary to the bridge where Forest Road 1825 crosses the Sandy River, and possibly further upstream, has not been established. Currently, the federal government and private property owners claim ownership of this portion of the river's bed and bank. This Management Plan does not propose to address the issue of navigability. Rather, this Plan is intended to provide a management philosophy for the above segment of the river, as well as the remainder of the river.

The original federal test for determining navigability was established in The Daniel Ball case over 100 years ago. This U.S. Supreme Court admiralty case clarified that rivers "are navigable in fact when they are used, or susceptible of being used, in their ordinary condition, as highways of commerce . . ." Interpreting this requirement, subsequent court decisions have adopted this test for title purposes and have ruled that a waterbody is navigable if it was capable of use, at the time of statehood, as a public highway for transporting goods or for travel in the customary modes of trade and travel on water.

DSL has determined that there may be sufficient evidence to support a claim of navigability and state ownership for the beds and banks of the Sandy River up to where the bridge for Forest Road 1825 crosses the Sandy River, and possibly further upstream. The position of the Forest Service is that the navigability of the river has not been established.

For purposes of managing the above portion of this river (where navigability has not been established), any non-federal activities or land uses such as new utility or transportation corridors and boat ramps or similar facilities that impose into or cross a waterway below ordinary high water will require an easement from the State Land Board. Existing non-federal facilities will require an easement at such time as they undergo major structural alteration, replacement, or relocation. In addition, removal of sand and gravel requires a royalty lease and any non-federal use that occupies any area of submerged or submersible land requires a waterway lease.

Further, the DSL also administers the State's Removal-Fill Law which protects Oregon's waterways from uncontrolled alteration. The law requires a permit for fill or removal of more than 50 cubic yards of material within the State's waterways. The permit-review process involves coordination with the natural resource and land use agencies from the local through the federal levels.

Nothing set forth herein shall limit the ability of the Forest Service to administer this segment of river.

As with any jointly managed resource, jurisdiction is not as important as care for the resource. The DSL and the Forest Service will continue to work together to assure that the public trust interest and the purpose of the Wild and Scenic Rivers Act are met.

Oregon Department of Fish and Wildlife (ODFW)

The ODFW is the responsible agency for managing and protecting Oregon's fish and wildlife resources and for recommending seasons, methods, and bag limits for recreational and commercial take of the resources. The ODFW prepares fish and wildlife management plans which are implemented through administrative rules.

Currently, the fisheries resources of the Sandy River are managed under direction provided by the Comprehensive Plan for Production and Management of Oregon's Anadromous Salmon and Trout (ODFW), and the Sandy River Subbasin Salmon and Steelhead Plan (prepared by the ODFW for the Northwest Power Planning Council in 1990.) Management of all Sandy River fish stocks will be updated by the planned Sandy River Subbasin Fish Management Plan, currently being prepared by ODFW. Fisheries management is also directed by the goals and policies stated in the ODFW administrative rules (June 1992) regarding the management and conservation of indigenous fish. All actions proposed in this plan are consistent with the letter and intent of these existing plans and rules.

ODFW is authorized to apply for instream water rights for fish and wildlife purposes, and has applied for instream water rights on the Sandy River.

Oregon Department of Environmental Quality (DEQ)

The DEQ is responsible for the implementation of the Statewide Water Quality Management Plan, which establishes standards of water quality for each of WRD's 18 basins in Oregon. Beneficial uses of rivers and streams that are to be protected by DEQ are:

- public, private, and industrial water supplies,
- irrigation,
- livestock watering,
- anadromous fish passage,
- salmonid reading and spawning,
- resident fish and aquatic life,
- wildlife and hunting,
- fishing,
- boating, and
- aesthetic quality.

Dissolved oxygen is to be kept to the highest possible levels. Temperature, bacteria, dissolved chemical substances, and toxic material are to be maintained at the lowest possible levels. The DEQ anti-degradation policy states that high quality waters are to be protected from degradation unless the Environmental Quality commission finds it necessary to make an exception based on economic or social needs.

DEQ has recently revised the State anti-degradation policy. DEQ will be developing a guidance document describing the process to follow in identifying waters it will consider for nomination as outstanding resource waters. The Sandy River has not, at this time, been evaluated for outstanding resource waters designation.

DEQ regulates direct discharges of waste into waters of the State. Industrial and municipal dischargers must obtain a permit and comply with permit provisions for protection of water quality. DEQ also has standards and procedures for on-site sewage systems, issues permits for dredge and fill of wetlands, and maintains water quality monitoring stations throughout Oregon.

Oregon Department of Forestry (DOF)

DOF responsibilities include fire protection of 16 million acres of private, State and Federal forest, detection and control of forest pests and forest tree diseases on State and private lands, and the management and rehabilitation of 785,000 acres of State-owned forest lands. DOF also administers the Oregon Forest Practices Act (OFPA), adopted in 1971 and amended in 1991, which is governed by rules developed by the Board of Forestry. The purpose of the Act and rules is to encourage and enhance the growth and harvesting of trees, while providing for the overall maintenance of air, scenery, water and soil resources, and fish and wildlife habitat. Forest practice rules regulate reforestation, road construction and maintenance, harvesting, application of chemicals, and disposal of slash.

Included within the OFPA are rules designed to protect "riparian management area." Under these rules a proposed commercial forest operation riparian management area of a Class 1 stream must be described in a written plan. These plans are submitted to the DOF for approval. Written plans required for the purposes of the OFPA must describe how the operation will be conducted to meet the minimum standards prescribed by the Act.

Land Conservation and Development and County Comprehensive Planning

The authority to regulate and control land use and development activities on private lands rests with local, county and state governments and not the federal government. The federal government does not have the authority to zone or regulate uses of private lands under the Wild and Scenic Rivers Act. However, Oregon state law does require that individual counties adopt comprehensive plans that are compatible with specially designated natural areas including federally designated Wild and Scenic Rivers and state designated scenic waterways. Statewide planning direction as established under Goal 5 directs counties and cities to resolve conflicting land uses in natural areas including Wild and Scenic Rivers in their comprehensive plans.

Oregon Land Use Planning Act

The statutory basis for Oregon's state wide land use planing program is primarily derived from the Oregon Land Use Planning Act of 1973 (ORS Chapter 197) and other city and county land use authorities (ORS Chapters 92,196, 197, 215, 221 and 227).

The Oregon Land Use Planning Act created a state-level program to set policy for and to coordinate the administration of land use planning by all levels of government in Oregon. The act established the Land Conservation and Development Commission (LCDC) to oversee management of the state planning program. The Commission is a 7-member board, appointed by the Governor, subject to Senate confirmation.

Department of Land Conservation and Development (DLCD)

DLCD is the administrative arm of the Commission and is responsible for implementation of the state planning act through review of over 275 city and county comprehensive plans and land use regulations. DLCD reviews the plans for consistency and compliance with the mandatory statewide planning requirements (called goals). The statewide planning goals, and the process for developing, approving, amending and implementing them, form the foundation for Oregon's land use management program. The goals establish important procedural guidance for all comprehensive plans statewide, require the protection and management of land, water, coastal and ocean resources, and directs cities and counties to addresses a variety of land use concerns appropriate to urban and rural areas. The planning goals are mandatory and have the force of law. They are binding upon local governments, special districts, and state agencies when they make decisions involving land use. ORS 197 declares that all of the goals are of equal importance. The goals provide both prescriptive and instructive guidance for carrying out planning, management, and regulatory responsibilities at both the state and local levels.

Goal 5

Goal 5 requires cities and counties to adopt programs as elements of their comprehensive plans with the following directives:

- ensure open space
- protect scenic and historical areas and natural resources
- promote health and visually attractive environments in harmony with the natural landscape.

The scope of the natural resources encompassed by Goal 5 is broad and includes potential and approved federal wild and scenic rivers and state scenic waterways. To comply with Goal 5, cities and counties must follow three steps:

- inventory the resource;
- identify conflicting uses which potentially impact designated river values, and
- develop and implement land use regulations to resolve conflicting uses identified.

This would include a program to coordinate changes in land use along rivers with applicable state and federal agencies. The resource values identified in the inventory will have to be protected by mandatory plan policies and zoning requirements.

Clackamas County Comprehensive Planning

Clackamas County has an approved comprehensive plan in place. This plan addresses Federal Wild and Scenic Rivers protection in a number of ways. First, all development must meet the general standards for the unincorporated area of Clackamas County described in the General Provisions of the comprehensive plan. The General Provisions set forth restrictions and considerations for natural hazards, slopes, stream corridors, wildlife and fish habitat, cultural and historic resources and natural drainage channels. Secondly, development and land uses are regulated through specific zoning classifications. Specific restrictions and regulations apply for each classification.

Any development within 1/4 mile of the Sandy River must also meet the Principal River Conservation Area (PRCA) requirements. This overlay zoning places restriction on the type of development that an occur near the river and provides specific guidelines to minimize or eliminate impacts to the river's natural and aesthetic resources. The purpose of the PRCA zoning is to maintain the integrity of the river by minimizing erosion, promoting bank stability, maintaining and enhancing water quality and fish and wildlife habitats, and preserving scenic quality and recreation potentials. See Appendix C for a copy of the PRCA regulations.

Values and Issues

Protection of identified river values or attributes, and how specific issues identified by the public area addressed through the planning process are the "drivers" of the development of a River Management Plan. The purpose of the river management plan is to protect and enhance the river values and to address issues related to the management of the river. The Congressional Record named the upper Sandy River's striking scenery as its outstandingly remarkable value.

Early in the planning process, the planning team evaluated the river area to determine if any additional resource values or attributes could be considered as outstandingly remarkable values. As a result of this further analysis, or resource assessment; recreation, fisheries, geology, and botany were added to the list of outstandingly remarkable values. In addition, specific issues were identified by the public as important that also needed to be addressed in the planning process.

Table 1. Summary of Sandy River Values and Issues

Outstandingly Remarkable Values
Scenery
Recreation
Fisheries
Geology
Botany
Issues
Protection of outstandingly remarkable values
Recreation use
Old Maid Flats Special Interest Area
Access and travel management
Fisheries
Maintaining biodiversity

Summary of the Resource Assessment

The resource assessment represents the initial phase of the development of the management plan for the Sandy River and serves as the foundation for the plan. The purpose of the assessment is to document those river-related values or features that are truly "outstandingly remarkable values" (ORV) and those, while not outstandingly remarkable, that are significant and contribute substantially to the river setting or to the function of the river ecosystem. See Appendix A for a complete copy of the Resource Assessment.

To qualify as an ORV, the value must be **river-related**, (owe their existence or location to the river), and the value must be a **unique, rare, or exemplary feature** that is significant at a regional or national level. As a basis for regional comparison, geographic regions defined in the State of Oregon Comprehensive Outdoor Recreation Plan (SCORP) were used. The upper Sandy River is within SCORP Region 7, which contains the most heavily populated area of the state and incorporates Columbia, Clackamas, Multnomah, and Washington counties. It is located in the northern Willamette Valley and is bordered on the east by the Cascade Range. This region also contains the Clackamas, Roaring, and Salmon Wild and Scenic Rivers. The Columbia River forms its northern boundary.

The findings in the resource assessment are based on existing scientific data and informed professional judgment. The resource assessment methodology uses specific guidelines that provide an objective determination of the importance of river values, as well as a degree of standardization and consistency between different rivers and river segments.

Scenery

The river corridor, from the Sandy's headwaters on the west slopes of Mt. Hood downstream to McNeil campground, provides much scenic diversity as it flows through a steep river canyon, over water falls, past rock pinnacles and large open sandy faces, and across a broader mudflow plain. The wide variety of vegetation and features with little or no evidence of human alteration, as well as impressive views of Mt. Hood throughout the river corridor, make scenic quality along the upper Sandy River an ORV.

Recreation

The upper Sandy River provides a wide variety of recreational opportunities along its length ranging from hiking, equestrian, and interpretive trails, sport fishing, developed and dispersed camping opportunities, mushrooming, and even limited kayaking opportunities for experienced kayakers. It is this wide variety of high quality recreational opportunities and the fact that they are so close to a major metropolitan area that makes recreation an ORV for this section of the river.

Fisheries

The upper Sandy River and its tributaries contains a diversity of increasingly rare, genetically important native fish stocks. The river and its tributaries provide spawning and rearing habitat for early- and late-run coho, spring chinook, and winter and summer steelhead, as well as containing native cutthroat trout populations. It is the presence of these increasingly important fish stocks and the availability and quality of suitable important habitat for those stocks that make fisheries an ORV.

Geology

There are several geologic features related to vulcanism, glaciation, and erosion found along the upper Sandy River. The Old Maid Flats area is an excellent example of a multiple debris flow deposit that provides unique interpretive opportunities with easily observable erosional processes as well as showing the free-flowing characteristics of the river. In this area, there are also buried snags and tree casts or wells (from snags completely rotted away) that are some of the best examples of a buried forest found in the Pacific Northwest. The Old Maid Flats area has also been recognized by a Geologic Special Interest Area designation in the Mt. Hood Land and Resource Management plan, further recognizing the unique geologic characteristics of the area.

Botanical

Largely tied to mudflow features mentioned above and the unique soil conditions of the mudflow, the upper Sandy River basin, especially the Old Maid Flats area, contains unique and relatively rare plant communities, especially for the west side of the Cascades. These include a unique early successional plant community consisting primarily of lodgepole pine on the recent debris flow deposit, as well as associated plants and edible mushrooms not commonly found elsewhere in the area. It is the rarity of these plant communities that make botanical values ORV's.

Planning Issues

The National Environmental Policy Act defines issues as "...unresolved conflicts regarding alternative uses of available resources." These can be identified by the public or within the agencies. The issues below were compiled from consultation with the public, other agencies, and within the Forest Service. These issues are followed by a summary of Forest Service management goals that reflect federal environmental laws and mandates, and land management goals as defined in the Forest Plan.

Summary of Planning Issues

Protection of the River's Outstandingly Remarkable Values (ORV)

The Wild and Scenic Rivers Act requires that the river attributes/values that have been identified as ORV's be protected and/or enhanced. All proposed management actions must protect those attributes/values identified above.

Recreation Use

The area in the river corridor provides a wide variety of recreation use opportunities. Being close to a major metropolitan area, use is often high and demand for additional opportunities is increasing. Some areas in the corridor are experiencing resource impacts from the current use and other areas in the corridor have the potential to accommodate additional use. There is a need to determine where to expand or limit use, what types of uses should be permitted and encouraged, to consider conflicts between different types of recreationists, and how to minimize impacts from recreational use.

Old Maid Flats Special Interest Area

Old Maid Flats has been identified as a geologic Special Interest Area because of its unique geologic features. The area's unique ecological/botanical features also need to be recognized, protected, and where applicable, interpreted in addition to its geologic features. Activities in the area may have the potential to adversely impact the unique features of the area. There is a need to determine the level and types of management activities that should be allowed for the protection, use and enjoyment of the special interest area.

Access and Travel Management

There are a number of user made and Forest Service system roads and trails in the corridor that provide access to both Forest Service lands and adjacent private lands. Some of these roads are used for access to dump garbage and hazardous waste material on the Forest. Decisions need to be made on which roads or areas should be closed to public access to reduce law enforcement problems, trespass on private lands, and other adverse resource impacts. In addition, decisions are needed on what types of roads and trails are needed in the future to meet the needs of recreationists and other resource users. There is a need to determine what level and type of use in the corridor is acceptable, and if it is, where that use should be allowed.

Fisheries

The entire Sandy River drainage has been identified as very important for anadromous and resident fish, including rare wild stocks which are at low population levels at this time. There are numerous opportunities to increase the available spawning/rearing habitat for the wild fish stocks in the river corridor. Some of these opportunities may affect kayakers using the river and all actions must protect the free-flowing characteristics of the river. In addition, the Forest Service needs to continue to work cooperatively with the Oregon Department of Fish and Wildlife who has the ultimate responsibility of managing fish populations. There is a need to identify what types of actions should be taken to improve fishery habitat and protect other resource values in the river corridor.

Ecosystem Function/Biodiversity

Proposed activities have the potential to positively and/or negatively impact the resiliency of the natural attributes of the area. Management actions should protect, and where possible, improve those attributes. Maintaining biodiversity in the corridor helps by allowing an area to better regenerate and heal itself. There is a need to determine how the area in the corridor should be managed to maintain the diversity and natural processes which allows the natural regeneration and healing process to take place and if there are actions that need to be taken to improve/protect those natural attributes.

Summary of Forest Service Management Goals

- ☐ Protect the river's free-flowing character, and protect and enhance its outstandingly remarkable values.
- ☐ Provide opportunities for a wide range of recreation opportunities along the river corridor.
- ☐ Protect and enhance the quality of river water. Maintain acceptable levels of water temperature, suspended sediment, chemicals, and bacteria.
- ☐ Protect and enhance habitat for fish and wildlife species. Protect and enhance the stream channel conditions that provide high quality fish habitat.
- ☐ Maintain and/or enhance the integrated ecological functions of rivers, stream, floodplains, wetlands, and associated riparian areas.
- ☐ Help to reduce conflicts between recreationists and private property owners and reduce trespass on private property.
- ☐ Strive for a balance of resource use and permit other activities to the extent that they protect and enhance the quality of the river's ORV's.
- ☐ Develop a partnership among landowners, county and state governments, and federal agencies in determining the future of the upper Sandy River and share in management responsibilities for the river.
- ☐ Emphasize user education and information. Establish as few regulations as possible and ensure that any regulations established are enforceable and enforced.
- ☐ Protect threatened, endangered, and sensitive species of plants, fish and wildlife found in the corridor.
- ☐ Consider the needs of local communities regarding economic development. Recognize the public with its varied needs as partners and participants in managing the river corridor through awareness, interaction, and communication.
- ☐ Protect integrity of wilderness areas and associated wilderness values.
- ☐ Seek to restore natural ecological and hydrologic functioning along the river.

How this Document is Organized

Chapter 1 *(Need for Proposal)* outlines the purpose and need of this document, provides information on the planning process, relationship of this plan to other jurisdictions and authorities, the outstanding resource values within the corridor, and an overview of the planning issues used in this assessment.

Chapter 2 *(Affected Environment)* contains a more complete description of the resource values and uses in the designated portion of the upper Sandy River corridor, as well as a summary of the current plans and policies relevant to the planning mandates discussed in Chapter 1.

Chapter 3 *(Alternatives)* contains descriptions of actions that could take place in the corridor, assuming the current management described in Chapter 2 were pursued over the next 10 years. Where current management is not sufficiently specific, or potentially at odds with the planning mandates described in Chapter 1, additions or changes are proposed. These proposals are expressed in terms of "Alternatives;" with continuation of current management described as Alternative A - No Action.

Chapter 4 *(Environmental Effects)* includes the evaluation of the effects of the Alternatives described in Chapter 3, on the values and conditions described in Chapter 2.

Chapter 5 includes a list of persons and agencies consulted.

The Appendices provide support information to the main document and include the Resource Assessment, general information about effects of wild and scenic river designation on private lands, Clackamas County PRCA zoning regulations, information on the Recreation Opportunity Spectrum and Wilderness Resource spectrum, references, and glossary.

Chapter 2

Affected Environment

Introduction

This chapter describes the character and resources of the designated Sandy River Corridor, for one-quarter mile on each side of the river and adjacent lands. The current conditions, as well as any known trends, are described to acquaint readers with the corridor and to provide a basis for assessing the consequences of various alternatives presented in Chapter 3.

The upper Sandy River is located on the west side of the Cascade Range and to the south of the Columbia River Gorge. The Sandy River flows for 55 miles from its headwaters to its mouth with the Columbia River. It is the upper 12.4 miles of designated river from the its headwaters to the Mt. Hood Forest Boundary that are being evaluated in this analysis. An additional 12.5 miles of the river between Dodge Park and Dabney Park that has also been designated as a Wild and Scenic river. That portion of river is under the administrative responsibilities of the Bureau of Land Management and a river plan is being developed under a separate planning effort.

The upper Sandy River begins in the Mt. Hood Wilderness, flowing primarily through National Forest lands and before entering private lands outside the National Forest boundary. The designated river corridor within the National Forest boundary does include a small amount of private lands at its lower end. The communities of Zigzag, Welches, Wemme, and Rhododendron are located along State Highway 26, near the designated portion of the river.

Recreation/Public Use

The upper Sandy River and adjacent area provides a wide variety of recreational opportunities throughout its length. Recreational opportunities range from very primitive types of recreation such as hiking, fishing, and backpacking, to a more developed type of recreation in one of the 3 developed campgrounds in and adjacent to the river corridor.

The river corridor itself contains two classes of the Recreational Opportunity Spectrum (ROS). The area of the river corridor in the Mt. Hood Wilderness is within the semi-primitive non-motorized opportunity class. It is here where the most primitive recreation opportunities are found. The remainder of the river corridor is within the roaded natural opportunity class.

Within the wilderness itself, parts of the river corridor and the Ramona Falls Trail # 797 and Pacific Crest National Scenic Trail #2000 are contained within the three classes of the Wilderness Resource Spectrum (WRS) found on the Forest. The WRS classification applies specifically to wilderness management and takes precedence over the ROS system. The WRS classification system should not be confused with the ROS classification system. A summary of both systems can be found in Appendix D.

Under the WRS classification system, approximately 1/2 of the river area in the wilderness is in the transition classification and it is here that wilderness users can expect the greatest level of recreational use within the wilderness. It is in this area of the river that the Ramona Falls Trail is found. The rest of the river area within the wilderness is split between the two remaining WRS classifications, semi-primitive trailed, adjacent to the Pacific Crest National Scenic Trail, and the primitive trailed for the remainder of the corridor. Most use does take place along the trails listed above. In locations in the wilderness where the trails are not near the river, use along the river is generally very low, especially near the river's headwaters.

Camping

There are 3 developed campgrounds within or immediately adjacent to the interim corridor. They are Riley Horse Camp, Lost Creek Campground and picnic ground, and McNeil campground. Riley Horse Camp is a campground with campsites specifically designed to accommodate horses. The campground also serves as a trailhead for equestrian trails to Ramona Falls and trails up towards Zigzag Mountain to the south of the river. Lost Creek Campground is the newest campground in the area and has been designed to be a fully accessible campground and picnic ground, complete with an accessible interpretive nature trail. McNeil campground is the third campground near the river. The campground itself is somewhat run down and the water system for the campground does not meet current water quality standards in effect, though development of a new system is under consideration. Until the new water system is in place, campers are allowed to camp free of charge with no water or garbage service provided.

Camping at undeveloped or "dispersed" sites takes place at various places along the river, primarily along the lower 1/3 of the river on National Forest lands. At most of these sites, there are some impacts to riparian vegetation and some litter problems occurring, though the problem is not considered severe at this time. There are a few sites, however, where the problem is more severe than others, with greater impacts to the riparian vegetation and where illegal dumping of garbage and even hazardous waste materials is taking place.

River Access and Trails

Along the lower two miles of the river, access is very limited because of private lands between public roads and the river. The first point that recreationists have to access the river is by the junction of the Lolo Pass Road and Forest Road 1825. From that intersection and an adjacent large open area, a low standard road accesses the river and some dispersed camping sites. It is down this road that there has also been illegal dumping of garbage and some other hazardous wastes in the past. Road 1825-143 parallels the southeast side of the river and provides access to several dispersed camping sites on the river. There are also other dispersed sites off of road 1825-050 which are near the river.

Ramona Falls trail #797 is the most popular trail in the river corridor providing a relatively easy 5-7 mile round trip hike (depending upon which trailhead you park at) to see a well known and very scenic waterfall. There are two trailheads which serve the trail in addition to the trail which comes up from Riley Horse Camp. The lower trailhead is served by road 1825 and 1825-100 and is maintained for passenger car traffic. Between the lower and upper trailheads, road 1825-100 is maintained for high clearance vehicles only. The trail is very popular and on a nice summer weekend day and it is not uncommon to have 300 or more visitors hiking the trail, far exceeding wilderness standards in terms of social contacts. The area around Ramona Falls itself is also heavily impacted in terms of ground compaction, erosion and lack of adequate riparian vegetation along Ramona Creek. Proposals have been raised in the past to close the road to the upper trailhead in order to make the hike longer to Ramona Falls (1 mile each way for a 2 mile total) to help reduce use at the falls.

The bridge crossing the Sandy River at the upper trailhead is a large concrete and metal structure that is not visually appealing and, at this time, one of the bases is being undercut by the river, threatening the stability of the bridge.

The Pacific Crest National Scenic Trail #2000 ties into the Ramona Falls trail for a distance of 1/2 mile and then crossing over the Sandy River to the south of the Ramona Falls Trail. Use on this trail is moderate at this time. This portion of the Pacific Crest Trail is also part of the Timberline Trail which circles Mt. Hood.

As mentioned above, there are also trails leaving from Riley Horse Camp that provide access to Zigzag Mountain to the south. All the trails in the corridor are important to equestrians and hikers alike. It is important to stress the importance of those trails to equestrians since there are a limited number of trails on the Forest that are available for equestrian use.

Interpretive Opportunities

The unique geological, botanical and ecological values along the river provide a number of opportunities for outdoor interpretation, education and photography. These activities were projected by the 1989 Statewide Comprehensive Outdoor Recreation Plan (SCORP) as having a high future growth potential. The Old Maid Flats area provides an outstanding example of true primary succession with some relatively unique plant communities for the west side of the Cascades. In addition, the area also provides easily observed examples of a volcanic debris flow deposit and associated features. These features include an easily observed cross section due to downcutting of the Sandy River as well as a ghost forest and buried stumps. There are many areas along the river corridor and on roads adjacent to the river that provide opportunities for developing overlooks and other areas to interpret these unique features associated with the river.

There are proposed fisheries interpretive trails and facilities associated with the Cascade Stream watch facilities being considered also at Wildwood Recreation site. The proposed site along the upper Sandy is known as the "Three Creeks Site" and is immediately adjacent to the interim corridor off of Road 1825-143. Facilities would consist of interpretive trails, and parking and support facilities where visitors could view a variety of fish spawning and rearing habitats and learn more about native and anadromous fish, their life cycles and their importance in the forest ecosystem.

Boating Use

The upper Sandy River provides a unique kayaking opportunity for experienced kayakers. The river in this segment is kayaked primarily from McNeil Campground downstream to the Lolo Pass Bridge (5.5 miles) and is described in Soggy Sneakers, Guide to Oregon Rivers, published by the Willamette Kayak and Canoe Club. The stretch is classified as class 4 to 4+, and is described as "among the steepest runable river sections anywhere in the state." Use is low and is estimated at approximately 100-200 user days annually along this section of river, primarily during high water flows and this use is increasing slightly. There is no commercial boating taking place on the river at this time.

Nordic Skiing

Nordic, or cross-country skiing is popular during winter months when the snow level drops to a low enough elevation level. Use occurs primarily on Forest Road 1825 with some use on Forest Road 1828. Dependent upon snow conditions, Road 1825 is closed to motorized vehicles from November 15 to April 1 from above where the road crosses the Sandy River. Road 1828 also receives use by snowmobiles and all-terrain vehicles when snow conditions permit. At this time, there is no formal sno-park facility to provide adequate parking for winter recreationists and residents on private land by the junction of Road 1825 with Lolo Pass Road have had problems with their driveways being blocked by the recreationists. Because of this, the Forest Service has been considering developing a formal sno-park in this location.

Fishing

Some fishing occurs for native cutthroat and planted rainbow trout. The river and its tributaries are open for steelhead angling from the fourth Saturday in May to December 31 each year though actual use of the upper section of the river for steelhead angling is considered to be relatively low in comparison to the lower portions of the river. Lost Creek, a tributary to the river is probably the most heavily fished tributary on the river. Fishing use on Lost Creek is considered to be moderate.

Other Recreational Activities

Recreational activities other than those mentioned above take place within the river corridor. In the spring and fall, personal mushroom collection has been popular. The geology of Old Maid Flats provides unique ecological conditions for a variety of mushrooms, including the morel and the matsutaki, both of which are highly prized, wild edible mushrooms. Because of this, mushroom hunters from around the region are drawn to the area. Unfortunately, in the past couple of years, the increasing interest in mushrooms has caused the demand for harvesting mushrooms to increase and commercial pickers have picking in the area, even though commercial use is not now permitted in the area.

Off-Highway vehicle use has been taking place to a limited degree, primarily in the lower end of the river corridor. There is vegetation loss associated with this use and because of the soil characteristics, it is hard to revegetate impacted areas. There have also been trial motorcycle events taking place, primarily at the lower Ramona Falls trailhead, and these events have had very little environmental impacts, because of the nature of the event, which is not a speed event, but one of testing the riders skill level in the handling their motorbikes at very low speeds.

Mountain bike use is increasing in the river corridor with most use taking place on lower standards roads and on road 1825. Use is currently estimated to be low to moderate.

There is an area just off the Lolo Pass road above its junction with Road 1825 that is used for target shooting. Concerns have been raised about continuation of this use because of the litter and garbage that accumulate at the site and because of the potential for stray bullets to reach McNeil campground. Experience has shown, though, that if a site where historical target shooting has been taking place is closed, that those who have been using the site will generally just move to a different location. Because of this, if the shooting site were closed, another safer site should be provided for this use.

Bear and limited deer hunting also take place in the river corridor during the hunting seasons. Use for these activities is estimated to be low to moderate at this time.

Wilderness

The upper four miles of the river are within the Mt. Hood Wilderness. The wilderness is an area where human induced impacts are to be virtually unnoticeable. In the lower 1 to 1 1/2 miles of the river corridor, there is actually a very high level of recreation use, with associated resource and social impacts, taking place. Most of this use is associated with the Ramona Falls Trail, (see Recreation - River Access and Trails section above). It is here, that extremely heavy use on the trail is not providing a true wilderness experience of solitude for those using this portion of the trail and is not meeting Forest Plan standards for wilderness in terms of the number of social contacts during high use periods such as summer weekend days. Once a person can get off the trail, however, there are few impacts to the wilderness resource and opportunities for solitude and wildness can be more easily realized. In addition, in this heavily used area, some natural plant communities and disturbance to wildlife species is taking place as a result of the heavy use in the area.

Access And Travel Management

Existing System

The main access to the upper Sandy River is via State Highway 26, Lolo Pass Road, and Forest Collector Road 1825 to Forest Local Road 1825100. At this point further access to the river is by the Ramona Falls Trail #797 and Pacific Crest Trail #2000.

State Highway 26 is multi-lane, maintained by ODOT. Reconstruction of several sections is being considered at this time.

Lolo Pass Road is maintained by the Clackamas County Department of Transportation. It is a double lane paved road serving residential areas, as well as providing access to a portion of the western slopes of Mt. Hood within the Mt. Hood National Forest.

Forest Collector Road 1825 is a paved road maintained for use by passenger cars. This road serves three developed campgrounds, several trail heads, dispersed camping sites and wilderness entry points to the Mt. Hood Wilderness. In section 1 of the road, the two lane section, the intersection of roads 1825 and 1828 and where road 1825 crosses the bridge over the upper Sandy River, does not meet design standards for safety at this time. The gradient of 1828 results in poor sight distance when approaching 1825. The radius of the curve (at the bridge approach) does not permit vehicles in excess of 20 feet to negotiate the curve in the appropriate lane. During heavy recreation use, especially with larger recreational vehicles, or during log hauling, there may be traffic congestion along this section of road and the problems in this area raises concerns for the safety of Forest users.

The single lane section does not have intervisible turnouts and some traffic delays may occur as traffic volumes increase due to the improvement of Lost Creek Campground. Both sections of road 1825 from its intersection with the Lolo Pass Road to Lost Creek Campground, have been submitted for Capital Investment Funds to upgrade the road to meet projected traffic demands, both in increased use and to meet the needs of larger recreational vehicles.

Road 1825100 section 1 is a paved single lane road without intervisible turnouts maintained for passenger car use and serves the lower trailhead for the Ramona Falls Trail #797 by way of Road 1825024. Road 1825100 is designed for low use levels.

The lower trailhead is located in an old sand quarry site and the large open area provides parking for recreationists. Trailhead improvements have been proposed in this location. Road 1825024 is a one lane road designed for a low level of use. Increased use in this area would necessitate improvements to the road to meet the necessary demand.

Section 2 of road 1825100 serves the upper trailhead for Ramona Falls Trail and is a native surface not maintained for passenger car use. This section of road, even though not maintained for passenger cars and is quite rough, receives relatively heavy use, especially during summer weekends. It is this heavy use, and lack of intervisible turnouts, which requires traffic to pull off of the roadway to allow other vehicles to pass. This action is causing some resource damage to the sensitive vegetation and drainage facilities adjacent to the roadway and the damage is expected to increase with continued use.

Other Roads That May Affect the Upper Sandy River

Local roads 1825043 and 1825080 are located to the south of road 1825. They are native surface roads designed for a low level of use. The Cascade Stream Watch Three Creeks site, (see Interpretive Opportunities in Recreation Use section) proposes to reconstruct these roads as part of that facility. These roads currently provide access to a number of dispersed camping sites along the Sandy River and Lost Creek.

Geology/Mining/ Minerals

Geology

The shape and character of the upper Sandy River valley is a product of the geologic events and processes that have occurred there, primarily glaciation and the volcanic activity of Mount Hood.

The Sandy River begins high on the west slopes of Mt. Hood, fed by the Reid Glacier. Three major tributaries to the upper Sandy River originate from neighboring glaciers. Lost Creek and Rushing Water Creek drain part of the Zigzag Glacier, just south of the Reid Glacier, and the Muddy Fork drains the Sandy Glacier in the next valley north of the Reid Glacier.

The present glaciers are small remnants of the ice tongues of 15,000 years ago that joined in the upper Sandy River valley and advanced to the Horseshoe Ridge area. In the previous ice age, about 100,000 years ago, the glacial ice advanced southwest to the Zigzag River valley and continued as far as Brightwood. The Sandy River valley side slopes east of Horseshoe Ridge are steeper and have a sharper slope break where they meet the valley floor than the valley side slopes to the west of Horseshoe Ridge, reflecting the age difference of the glacial erosion that occurred there. West of Horseshoe Ridge several large ancient landslides that occurred after the older glaciation have changed the appearance of the valley walls considerably and have narrowed the valley floor.

The glaciers widened and deepened the Sandy River valley, exposing volcanic rocks of many different ages in the valley walls. The Reid Glacier carved a steep-sided basin on the flank of Mount Hood. This action, combined with the activity of other glaciers, partially dissected the composite volcanic cone and reduced the height of the volcano from about 12,000 feet to 11,235 feet. The two narrow ridges on either side of the Reid Glacier, Yocum Ridge and Illumination Ridge, are outcrops of inclined andesite flows and pyroclastic flows from Mount Hood.

At about 4200 feet elevation the river flows through a narrow bedrock gorge. This is below the Reid Glacier but before the Sandy River is joined by a major unnamed tributary (referred to here as Illumination Creek). In the gorge the ice has exhumed part of an older volcano, the predecessor to Mount Hood. The older volcano was completely covered after Mount Hood began growing less than 700,000 years ago. This older cone is called the Sandy Glacier Volcano since it was centered near the present terminus of the Sandy Glacier in the Muddy Fork valley. The steep lower cliffs between the Sandy River and Illumination Creek contain thin basalt flows and breccia flows from the Sandy Glacier Volcano.

From here to the Ramona Falls area the bedrock underlying both sides of the valley is andesite flows and pyroclastic flows from Mount Hood. Ramona Falls spills over several of the andesite flows. The andesite and pyroclastic rocks underlie Yocum Ridge to its western end. The south side of the Sandy River valley to the west of Ramona Falls is underlain by andesites, basalts, and pyroclastic flows that are older than 5 million years. These older volcanic rocks comprise most of the bedrock in the valley from here to Zigzag. The exception is the north end of Horseshoe Ridge, where 1 million year old lava flows have covered the upper slopes. These flows are believed to have come from a small volcanic vent near 3600 feet elevation on the ridge.

The glacially carved upper Sandy River valley has been partially filled in by mudflows and pyroclastic flows from two recent significant eruptive periods at Mount Hood. These eruptive periods are known as the Timberline eruptive period and the Old Maid eruptive period. The vent area for both was Crater Rock, the remnant of a dacite dome situated above the Zigzag Glacier. The extrusion and mass wasting of Crater Rock produced the mudflows and pyroclastic flows. Crater Rock is flanked by two regions of fumarolic activity. The fumaroles have temperatures at or near the local boiling point, and they serve as reminders that Mount Hood is still an active volcano.

The Timberline eruptive period occurred between 1400 and 1800 years ago. A series of mudflows and pyroclastic flows created a large debris fan that covered the southwest slopes of Mount Hood from Illumination Ridge to the White River. Along the northern edge of this large debris fan, mudflows swept down the Illumination Creek and Rushing Water Creek drainages to enter the Sandy River valley just below the bedrock exposures of the Sandy Glacier Volcano. Timberline age mudflows and pyroclastic flows may have overtopped Illumination Ridge in places and may have come down the main stem of the Sandy River but no deposits remain there, perhaps due to the steepness and narrowness of the gorge. Today most of Rushing Water Creek flows along the margin of the Timberline age deposits, pushed there by the series of flows which completely covered the old drainage.

Timberline age flows continued to the west, filling the upper Sandy River valley with more than 200 feet of sediments in places and creating the generally flat and broad valley bottom we see today. From the Upper Sandy Guard Station a 180 foot high terrace is visible on the south side of the valley. This terrace was constructed by a series of Timberline age mudflows. Buried logs as much as 3 feet in diameter are visible in the terrace bank. The height of the terrace gradually decreases downstream until it is buried by Old Maid age deposits near the wilderness boundary. The Timberline age mudflows continued to Zigzag where they joined other Timberline age mudflows that had come down the Zigzag River valley and continued to the Sandy River delta. Most of the delta is assumed to be made up of Timberline age mudflow deposits.

The Old Maid age eruptive period occurred about 200 years ago. Once again, Crater Rock was the source area for the mudflows and pyroclastic flows. These flows came down the Illumination Creek drainage and fanned out on the upper Sandy River valley floor, covering most of the pre-existing terraces and surfaces of the Timberline age deposits with a veneer 1 to 3 feet thick. The large Timberline age terrace south of the guard station remained uncovered. West of this terrace the Timberline age deposits are visible only in the banks of the Sandy River until the Zigzag area. In some places on Old Maid Flat the Old Maid age flows filled in previously existing side channels in the valley floor and reached depths of 21 feet. West of Zigzag they were confined to the Sandy River channel. The Old Maid age flows were much less voluminous than the Timberline age flows. A muddy runout from the Old Maid age flows did reach the Sandy River delta.

Evidence for the age of this recent eruptive period comes from historical accounts and dendrochronological work. The Lewis and Clark expedition (1805) described a river that they named Quicksand River in terms that are reminiscent of the Toutle River shortly after the Mt. St. Helens eruption of 1980. It appears they arrived while the Sandy River was still flushing out the sediment of the Old Maid event. The name "Quicksand River" was later shortened to Sandy River. Ring counts on trees rooted on the Old Maid age surface confirm the approximate 200 year age.

In the Old Maid Flat area the mudflows inundated a mature forest rooted on the Timberline age deposits, killing the trees. In several places the remains of these trees are still visible in the form of tree wells up to 21 feet deep and standing snags up to 90 feet tall. Tree wells formed when the dead trees rotted away after many years, leaving a vertical "cast" of the trunk as tall as the depth of the mudflow. The more resistant cedar tree wood survived as standing snags.

A temporary lake was formed in the lower Muddy Fork valley when the Old Maid age mudflows temporarily dammed the tributary. The lake extended about 1/2 mile up the Middle Fork valley and is believed to have lasted several years. The lake drowned a mature cedar forest and over 100 tall snags are still visible today. Over 3 feet of fine grained sediments accumulated in the lake bed. Today the soil of the old lakebed supports a dense growth of alders, a dramatic contrast to the conifer forests on the valley side slopes. Another smaller temporary lake formed at the mouth of the Lost Creek valley.

Soils on Old Maid Flat are thin and sandy due to the young age and nature of the parent material. The 200 year old mudflow deposits are a mix of sand, gravel, and larger rocks, with very little fine sediment. The rapid drainage through the sandy material has contributed to a distinctive "droughty-soil" vegetation assemblage. The surface is covered by moss and lichen, with stunted pines and fir. There is a very open understory of occasional rhododendron and huckleberry.

Soils on the valley walls have had much longer to develop. These soils are soft, dark brown, very gravely loams and they support mature forests and a dense undergrowth.

The unusual character of Old Maid Flat is due to recent eruptions of Mount Hood. The volcano is one of the more active ones in the Cascades and could still cause potentially hazardous phenomena. The upper slopes of the Mount Hood volcano and the Sandy River valley down to the wilderness boundary is considered a zone of possible hazard that could be affected by pyroclastic flows, mudflows, and floods, should Mount Hood erupt. The remainder of the Sandy River valley, including all of Old Maid Flat, is considered a zone of possible hazard that could be affected by mudflows and floods, should Mount Hood erupt.

Mining/Minerals

Little actual mining activity has taken place in the upper Sandy River valley in the past. At this time there are no active mining claims, no oil and gas leases, and no geothermal leases within the corridor. In the late 1970's and early 1980's there was intense interest in the geothermal potential of this area and active geothermal leases covered the upper Sandy River valley. After the results from two United States Geological Survey test holes on Old Maid Flat showed that geothermal development would be difficult at those locations, the leases were terminated or withdrawn. The geothermal potential for this area is moderate, given present energy costs. The locatable mineral potential for this area is considered low.

There are three Forest Service common variety mineral sources within the Wild and Scenic River corridor. Two of these are abandoned borrow sources. One is located near the end of Forest Service Road 1825043, the other is located at the end of Forest Service Road 1825050. Both of these sites have been unused for about 20 years and have partially rehabilitated by natural processes. The third source is the Old Maid Sandpit, located at the end of Forest Service Road 1825024. This source was still used occasionally until recently. It has been closed since 1990. The entire Old Maid Flat has a high potential for sand pit development. A stockpile site along Forest Service Road 18 is also within the Wild and Scenic River corridor. This is still used occasionally for storage of processed aggregate. The area is also used regularly as a target shooting site.

Hydrology and Water Resources

Water Resource Values and Characteristics

River Profile and Character

From its source in the Reid Glacier, at an elevation of 6,200 feet on the steep, rugged slopes of Mt. Hood, the upper Sandy River falls 4,600 feet in 13 miles to its confluence with the Zigzag River. The 4.5 mile "wild river" segment, from the river's headwaters to the Mt. Hood Wilderness boundary, is characterized by steep canyons, waterfalls, cascades, and narrow boulder-choked chutes. The 7.9 mile "recreational river" segment, extending from the Wilderness boundary through Old Maid Flats to the confluence with the Zigzag River, is characterized by moderate stream gradients and somewhat wider cobble and gravel dominated channels.

Major tributaries to the upper Sandy River include the Muddy Fork, the Clear Fork, Rushing Water Creek, Lost Creek, and Cast Creek. The upper Sandy River has no impoundments and is considered free-flowing throughout the segments addressed in this Environmental Assessment. The watershed encompasses approximately 31 square miles or nearly 20,000 acres.

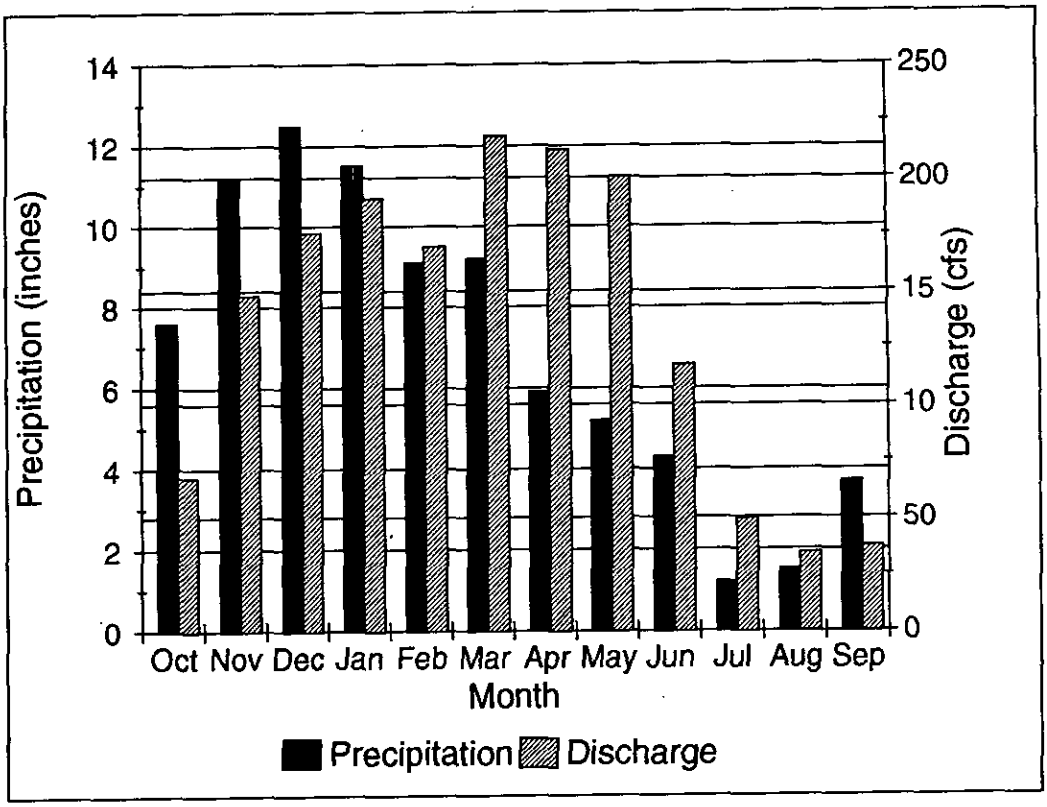
Varying geology and topography in the Sandy River drainage system have produced features such as waterfalls, side channels, and adjacent wetlands. Periodic glacial outbursts and extreme peak flow events have caused the River to change its course in several places during the relatively recent past. One such notable location is in the vicinity of the old Upper Sandy Guard Station, within the Mt. Hood Wilderness.

Precipitation, Discharge, and Flow

Annual precipitation in the upper Sandy River watershed ranges from around 110 inches in the upper elevations to about 70 inches near the mouth, with the greatest precipitation occurring from November to January, and the least occurring in July and August. Mt. Hood sustains a snowpack year-round in its higher elevations, which directly affects stream discharge in the upper Sandy River by providing water storage over the winter and supplemental flows in the summer. Actual gauged flow records for the Sandy River above the confluence with the Zigzag River are not available. Estimates of flow have been calculated by comparison with measured flows from the Salmon River. Figure 1 illustrates the difference in timing between precipitation and runoff from the upper Sandy River watershed by comparing average monthly precipitation at Government Camp with an estimate of flows at the confluence with the Zigzag River. Average discharges gradually increase during the months of October through January. Spring snowmelt has a major influence on the flow regime of the upper Sandy River, which is illustrated by the higher discharge levels during the months of March through May, depicted in Figure 1. Mid-winter variability in flows is attributed to the dominance of rainfall and transient snow in much of the lower elevations of the watershed.

Average or mean discharge figures, by themselves, may be misleading. Major peak discharges associated with rain-on-snow events have been recorded for the adjacent Salmon River (gage located at Brightwood), and at the Sandy River gauging station located near Marmot. While not measured, similar dramatic peak flows have occurred with regularity in the upper Sandy River watershed, primarily during the months of November through February. While the general character of stream channels is influenced by the average bank-full discharge levels, the less-frequent rain-on-snow induced peak flows have the potential to dramatically affect stream channel characteristics, aquatic habitat, and riparian features. Moreover, the condition of riparian areas has a profound influence on how the stream channel responds to these peak flows. Owing to the fact that the upper Sandy River flows through fairly recent lahar or mudflow deposits (resulting from volcanic activity on Mt. Hood), these less-frequent peak flows have resulted in channel migration, bank erosion, and variable conditions of aquatic habitat and riparian areas.

Figure 1. Average Precipitation and Discharge for the Upper Sandy River



Water Uses and Rights

All waters within Oregon are publicly owned and controlled by the state, in accordance with state laws. With few exceptions, a permit from the Oregon Water Resources Department (OWRD) must be obtained to claim rights to surface water or groundwater. This includes both instream uses and diversions of surface waters. State laws recognize prior appropriation as the basis for water right allocation. During periods of water shortage, the permit holder with the the oldest water right has priority over junior claims. In addition, a water right can be attached to the land where the permit was established, and transferred to subsequent owners. An established water right is canceled after five consecutive years of non-use (OWRD). OWRD has issued permits or certificates for a total of 17 water uses on tributaries to the Upper Sandy River. A summary of permitted water uses and rights from the upper Sandy River Watershed as of July 1993 is displayed in Table 2.

Table 2. Water Rights Summary for the Upper Sandy River Watershed (1993)

	Domestic	Irrigation	Recreational	Power	Miscellaneous
CFS [1]	1.00	0.07	0.01	0.10	0.05
AFT [2]			0.20		

[1] cubic feet per second (total xxxx)
[2] acre feet (total xxxx)

Source: Oregon Water Resources Department, Water Resources Information System (WRIS)

Groundwater and Aquifer Recharge

There is little or no information pertaining to the nature and extent of the groundwater resources in the immediate area. The slopes of Mt. Hood consist of interbedded "layers" or strata of unconsolidated debris, mudflow deposits, pyroclastic materials and lava flows, and are the source areas for much of the groundwater in the valleys below. The groundwater supplying springs and contributing to stream base flows originates upslope as precipitation and snowmelt, which migrates vertically downward through a wide range of strata until it encounters an impermeable barrier. The groundwater then moves down gradient along a circuitous pathway through the various volcanic deposits. Subsurface features and groundwater occurrences are difficult, if not impossible, to interpret from surface features.

Hyporheic zones, that is well-oxygenated, aquifer layers supporting populations of aquatic macroinvertebrates, and extending out from the margins of streams have been documented elsewhere in Oregon and are likely to occur at various locations along stream margins in the watershed. To date, evidence of such occurrence has not been observed in this area. Efforts at developing wells in existing campgrounds on 200-year old mudflow deposits adjacent to streams have met with mixed success. The presence or absence of waterbearing strata is not easily determined, though one might assume its presence due to proximity to streams.

OWRD Water Basin rules governing the issuance of water rights in the Sandy Basin assume that ground water occurring within 1/4 mile of a stream is "hydraulically connected" to said stream. Current limitations on the issuance of surface water permits extend to groundwater applications, unless the applicant can prove that the groundwater is not hydraulically connected to the stream.

Water Quality

Major sources of water in the upper Sandy River include glacial melt, waters from spring-fed tributaries, and high Cascade lakes, which in general provide high quality, low temperature waters. The actual water quality of upper Sandy River varies seasonally depending on climatic events and human influences within the watershed. Particularly noteworthy is the presence of fine suspended sediment known as "glacial flour". The "flour" originates on the glaciers at the river's source and is formed by the grinding of rock under the tremendous weight of the glaciers on the slopes of Mt. Hood. The glacial flour gives the Sandy a pale green opacity or milky-gray color, which is most apparent in middle to late summer during the peak of glacial melt, when the flow contribution from non-glacial tributaries is relatively less. The Sandy River has been attributed as having one of the highest percentages of glacial melt of all the major Oregon rivers (USDI-BLM Sandy River Wild and Scenic River and State Scenic Waterway Plan Environmental Assessment, 1992). The Muddy Fork, a major tributary, is aptly named and contributes a relatively high proportion of suspended sediments as a result of bank erosion and landslides associated with steep, unstable volcanic mudflow deposits through which this tributary flows. Turbidity is most apparent during periods of peak flows associated with intense rain or rapid snowmelt. Road construction and other surface disturbances associated with forest management activities and major powerline corridors within the watershed, as well as ground disturbances associated with residential development (in the lower reach) affect water quality as nonpoint sources of sediment.

The State Department of Environmental Quality (DEQ) has established water quality standards for the Sandy River Basin, including the upper portion addressed in this environmental analysis. These basin-wide standards encompass physical and chemical characteristics including: pH, water temperature, dissolved oxygen, fecal coliform, turbidity, and other parameters. Existing data on the upper Sandy River is sparse. Available data and anecdotal observations, as summarized in the DEQ publication Oregon Statewide Assessment of Nonpoint Sources of Water Pollution, 1988" indicate that the upper Sandy River and several tributaries are impacted to varying extent in terms of observations related to turbidity (as described previously) and temperature (related to vegetation removal associated with powerline corridors and past forest management -- private and federal). The DEQ summary rated the Muddy Fork as severely impacted, though as discussed previously, much of the sediment and turbidity can be attributed to natural sources (landslides, bank erosion, and glacial flour) occurring within the Mt. Hood Wilderness.

It is apparent that water quality, while generally good, varies throughout the year and further study is needed to adequately assess conditions and trends in the watershed. Existing water quality data has been only sporadically collected and does not provide a clear or consistent picture of baseline conditions.

Table 3. Selected State Water Quality Criteria for Sandy Basin

pH	6.5 to 8.5
Water temperature	no increase above background if temp. 58 degrees F. or greater
Dissolved oxygen	> 90% saturation
Fecal coliform	< 200 per 100 ml.
Turbidity	< 10% increase

Table 4. Water Quality Summary for the Sandy River

Summer maximum temperature	75 degrees F.
Summer minimum temperature	52 degrees F.
Summer average temperature	63 degrees F.
Winter maximum temperature	52 degrees F.
Winter maximum temperature	35 degrees F.
Winter average temperature	44 degrees F.
Maximum pH	7.9
Minimum pH	6.5
Average pH	7.1
Dissolved oxygen maximum	105% saturation
Dissolved oxygen minimum	92% saturation
Dissolved oxygen average	99% saturation

Fisheries

Introduction

The Sandy River, originating on the west slope of Mt. Hood, is one of the five major drainages on the Mt. Hood National Forest. The greatest amount of surface water produced per unit area which feeds to the Columbia River comes from the Sandy River Drainage. Most of the water in the river comes from either melting of snow or glaciers on Mt. Hood. The pale green or milky gray colored water which is seen during periods of glacier melt, is termed glacier "flour". The suspended sediment is a natural phenomenon resulting from the grinding of rock under the weight of the glaciers, (See Hydrology and Water Quality section above).

The designated portion of the upper Sandy River provides very important spawning and rearing habitat for anadromous and native fish stocks, as well as being important for providing high quality water used by fish and other plants and animals downstream. Restoration of or destruction of the fisheries environment in the upper reaches of the basin (which lie on federally administered lands) may have a profound impact on the condition of fisheries stocks present in the lower reaches, the lower Columbia River, and in ocean harvest. The descriptions below discuss not only the designated portion of the river, but also areas and activities that may affect fisheries or fish habitat within the corridor but they themselves are outside the corridor (and beyond the scope of this analysis) or activities or actions within the designated portion of the river that may affect areas further downstream. A broader perspective of the entire Sandy Drainage needs to be evaluated to understand the scope of complexity involved with management decisions on the federally designated Wild & Scenic portion.

Riparian Areas

Introduction

Riparian areas are defined as areas which are adjacent to all stream, lakes, and ponds as well as areas comprising seeps, springs, and wetlands. These areas are directly influenced by the quality and quantity of water present. Water affects both the physical characteristics of the area, and the types and abundances of vegetation present. Riparian areas provide important habitat niches which support fish, wildlife, and vegetation, many of which are considered sensitive.

The condition of a water way's aquatic habitat is profoundly influenced by the associated riparian area and the quality of the water in the water way. Within forest ecosystems along streams, vegetation moderates water temperatures by shading, provides increased structural stability for the channel, and augments fish habitat diversity. Overstory provides shading that reduces water temperatures which is essential for the survival of many fish. Vegetation also stabilizes streambanks, filters sediments, and provides habitat for insects which can later become a food source for fish and other wildlife. The presence of large wood and logs stabilizes stream channels, controls the routing of sediment, and provides the complexity of aquatic habitat by shaping pools, glides, riffles, and gravel bars.

If changes are made to the ecosystem of the riparian zone, impacts to the vegetation and water quality may occur which may in turn increase or decrease the abundance of fish and wildlife in the area.

Existing Condition

Throughout the entire Sandy River drainage, especially downstream from the planning area, though within the planning area as well, major alterations of the riparian ecosystem have already occurred. Rural development along its streambanks, water diversion for hydroelectric production, channelization of the stream for flood control, and timber harvesting have all taken place. Activities induced by humans downstream of federal lands have affected the distribution of fish, wildlife, and plants in the upper Sandy Basin. Management activities in the upper Sandy Basin have also influenced fish, wildlife, and plant distribution in the lower reaches of the basin.

The riparian environment within this planning area can be divided into the wild segment and the recreational segment. The wild segment of the river flows primarily in a V-shaped river valley. In this portion, the valley banks average 150 to 300 feet wide with steep eroding slopes between 45 and 85 degrees. The stream bottom and banks are primarily sand and small boulders with little vegetation present. Overstory vegetation is either lacking or too far from the river to provide shading or large woody debris input to the stream system. There is no evidence of fish present within this stretch of the mainstem Sandy.

Tributaries to the wild segment do offer suitable fish rearing habitat. There is evidence to support the presence of resident fish in Ramona Creek and it is suspected that resident fish may also be present in Rushing Water Creek. Ramona Creek is a tributary to the Muddy Fork of the Sandy and Rushing Water Creek is a tributary to the mainstem of the Sandy. Rushing Water Creek is located entirely within the Mt. Hood Wilderness. Impacts to the riparian areas along these tributaries may affect their fish habitat and fish populations. No riparian surveys of these tributaries have been conducted, and there is no data on fish habitat or fish populations for these tributaries. No stream surveys have been done on these streams at this time.

The valley within the recreational segment is a much broader U-shaped valley. The banks throughout most of the area are covered with alder and willow with isolated bare, steep banks similar to what would be found in the wild segment. Cottonwood and Douglas-fir are the primary overstory vegetation with occasional cedars, hemlocks, and pine. Alder and willow are predominate understory vegetation with grass-forbes providing ground cover. Some wetland areas are present but not common.

Recreational use (fishing, camping, hiking, horseback riding) is heavy in this area and has resulted in localized soil compaction and vegetation removal in areas along the mainstem Sandy River and in Lost Creek. Evidence of this can be seen at McNeil Campground, off roads 1825043 and 1825055, and behind Riley Campground on road 1825382.

Dispersed campsites between road 1825043 and Lost Creek were also the site of illegal transformer burning, and were contaminated with the hazardous material PCB. These sites were within 200 feet of Lost Creek. Resident trout and anadromous salmonids utilize this portion of the Sandy River and its tributaries. Further degradation of or restoration of these riparian zones could have either a negative or positive effect on the fish populations and habitat depending upon the actions taken.

Other tributaries to the recreational segment of the Sandy include: Muddy Fork of the Sandy, Clear Fork of the Sandy, Cast Creek, Horseshoe Creek, Short Creek, and Long Creek. Currently, riparian surveys have only been completed for the Muddy Fork and Clear Fork. The Muddy Fork has an overall riparian rating of low to moderate with canopy closure important for providing shading along the river of only about 20-30 percent. The Clear Fork has an overall riparian rating of moderate with a canopy closure of about 30 percent.

Riparian surveys have not been conducted for Short Creek, Long Creek, Cast Creek, and Horseshoe Creek. Information about these areas comes from observations made by personnel working in these areas. A more formal evaluation of these drainages is needed. Though a substantial amount of logging has occurred in the upper portion of these drainages, the lower stretches are in an old growth state dominated by Douglas fir. Riparian areas appear to be heavily vegetated and well shaded.

Aquatic Habitat

Introduction

Fish habitat has been degraded in some of the planning area. Large floods in 1964 and the 70's scoured the channel and transported much of the large woody material out of the system. Following these floods, flood control efforts by the Army Corps of Engineers, the Forest Service and other public agencies and private individuals removed any remaining large logs and boulders from the mainstem channel. In addition, large log debris jams were removed under the notion that they posed migrational barriers to anadromous salmonids. The river channel was deepened and straightened along the Sandy River and its tributaries, both on and off the National Forest. This ended up cutting off meanders, oxbows, and side channels that provided very important spawning and rearing habitat. Besides the physical loss of substantial amounts of habitat, the diversity and quality of habitats in the lower river was also impacted.

In addition to the work mentioned above, timber harvest has removed large logs from the channel and floodplain of Lost Creek, Clear Fork, and portions of the mainstem Sandy; removing long term sources of large woody debris as well as triggering some landslides from poor road construction and/or unstable soils.

Management on private adjoining lands along tributary systems has also had dramatic effects; many small low gradient tributaries and wetlands that were prime habitat for coho Salmon have been channelized, drained, and/or filled.

Heavy recreational use within the basin has impacted streambank stability and removed riparian vegetation at several sites. Unplanned primitive dispersed campsites have become established at areas along the river, primarily along the lower 2 miles of the recreational segment. These heavily used sites have no sanitary facilities and are usually immediately adjacent to the streambank. Adverse impacts at these sites include localized soil compaction, bank erosion, damage to trees, vegetation and large woody debris along and in the stream channel.

Fish habitat improvement projects, including placement of large boulders and logs to develop additional spawning areas and provide hiding cover, have been implemented in Clear Fork and Lost Creek by the Forest Service. The projects are intended to improve the quality of the spawning and rearing habitat for coho and spring chinook salmon, as well as winter steelhead and resident trout. Opportunities exist for further rehabilitation of habitat on the lower mainstem and the tributaries in this area. Pool creation through the placement of large logs and boulders, as well as the restoration of side channels and off-channel pool areas are some of the opportunities identified.

Existing Condition

The aquatic habitat in the wild segment of the Sandy River provides poor quality habitat in terms of fisheries production. This is because the stream has a high gradient with very few pools. Woody debris accumulations are not common due to the swift water and lack of obstructions in the channel. The potential for future recruitment of large wood is poor since large trees are uncommon in the riparian zone. In addition, the high turbidity in the river from the glacial flour in the water and sedimentation from the naturally occurring, unvegetated steep banks causes siltation on what few spawning gravels may be present in this section of the river.

Tributaries to the mainstem Sandy and Muddy Fork (Rushing Water Creek and Ramona Creek respectively) within this reach do provide good fish habitat. No stream or riparian surveys have been conducted on these creeks, however observations along Ramona Creek have revealed clear water with good pool development with large amounts of woody debris, all components of good quality fish habitat. No data is available for Rushing Water Creek, however, its location within the Mt. Hood Wilderness and lack of historical man induced disturbance suggests that this creek is in its natural state.

The recreational segment of the Sandy River is also considered poor in terms of fish habitat and production for reasons similar to that in the wild segment. Coho salmon have been observed in intermittent side channels though little effective cover or shading is present. As in the wild segment, the river has high turbidity levels with large amounts of sand in the water. Generally, spawning gravels are filled with silt and unsuitable for spawning.

Tributaries to the recreational segment provide most of the aquatic habitat necessary to maintain fish populations in the upper Sandy River basin. The Clear Fork and Lost Creek tributaries are the most significant contributors of aquatic habitat in this portion of the basin, and the tributaries for which the greatest amount of information is available. There is good access for fish to the tributaries from the mainstem of the Sandy. The water runs clear from these creeks and they contribute significant flow to the mainstem. As mentioned above, during the 1960's and early 1970's there was a loss of large woody debris from natural high water events and management stream cleaning activities. The result was a severe reduction in fish habitat composition and complexity as well as degradation to the stream.

The Clear Fork of the Sandy River originates near Lolo Pass with all the stream being on National Forest land. A survey was conducted in 1988 on the Clear Fork which found that fish habitat is rated fair to good for the portion of the stream from its confluence with the mainstem of the Sandy to road 1828. From road 1828 to the edge of the planning area, habitat quality is rated much higher due to the presence of good spawning gravels and slower stream velocities. This provides better rearing habitat for fry and juvenile fish. A survey conducted in 1992 indicated that the removal of some wood within the stream caused downcutting within the channel, adversely impacting fish habitat. A stream restoration project was implemented during the summer of 1992 to rehabilitate this negative impacts from the wood removal and resulting downcutting.

Lost Creek originates from the Zigzag Glacier on Mount Hood where it flows 9.2 miles, all on National Forest land , to its confluence with the Sandy River. Riparian surveys were conducted in Lost Creek in 1992. For the section of the creek in the planning area, the survey showed that there was a shortage of large woody debris in the stream channel and that habitat complexity is not at the desired levels. Although restoration projects have helped, the overall habitat complexity of the system has not been restored. Additional restoration projects are proposed for the future.

The Muddy Fork of the Sandy originates from the Sandy Glacier on the West slope of Mt. Hood at approximately 5,000 feet, flowing for 5.3 miles, all on National Forest land. Approximately 3 miles are within the proposed river corridor. The Muddy Fork provides a significant contribution to the Sandy River's flow. Riparian surveys conducted in 1992 showed the river had high turbidity levels, relatively few pools with little spawning habitat available in the mainstem of the stream. There is a substantial amount of side channel habitat available above river mile 2.5 which offers potential rearing habitat for fish. No habitat restoration projects have been implemented on this stream and none are planned at this time.

Other tributaries to the Sandy: Short Creek, Cast Creek, Horseshoe Creek, and Long Creek, have had no riparian surveys completed at this time. Specific habitat information is not available for these creeks.

Fish Distribution

Introduction

Information on fish occurrence in the Sandy River drainage has been gathered from a variety of sources. Biologists from the Oregon Department of Fish and Wildlife (ODFW), Portland General Electric (PGE), Bureau of Land Management (BLM), and Mt.Hood National Forest (MHNF) have contributed substantial data on habitat, native species distribution, and historical abundance as well as fisheries population management in the drainage area. Much of this data was gathered, however, throughout the Sandy River basin above the Marmot Dam (operated by PGE), and therefore is not specific to the planning area for designated portion of the upper Sandy River. Data on exact population numbers, areas of use, and/or population trends within the upper Sandy River drainage do not exist for many of the species present. The Oregon Natural Heritage database also yielded documentation of historical sightings and distribution of various species. Local residents and public groups have also assisted with information on historical habitat condition and species distribution information as well as documenting habitat changes due to prior land use activities and natural events such as fires and floods.

Several habitat and population surveys were conducted in 1991/92 for selected fish species by the ODFW, BLM, and MHNF. Annual spawning surveys (ODFW/MHNF) are being conducted within the drainage to determine the distribution and relative numbers of the native stock of coho salmon, a State of Oregon and Forest Service listed sensitive species.

Although a great deal of information has been recently collected, additional information is needed for further baseline data. This is especially true for salmonid populations which are generally highly cyclical in abundance and at very low levels at present.

The Mt. Hood National Forest uses salmonids (salmon, steelhead, trout, and char) as management indicator species for aquatic habitats. Because of their value as gamefish, and their sensitivity to habitat changes and water quality degradation, they have been selected to monitor trends in the streams and lakes of Mt. Hood National Forest. Although there are other fish species present in the river (sculpins and dace for example), there has been no inventory work done and population trends are unknown though anecdotal evidence suggests that their populations are stable. More information exists on salmonids presenting another reason for utilizing this group of fish to represent the other cold water aquatic organisms in their habitat.

The Sandy River contains both anadromous (sea-run forms) and resident species of salmonids. Within these species are distinct stocks, some native to the upper Sandy basin and some introduced. The native stocks are unique in that they have adapted to the special conditions found in the upper Sandy River basin. In general, the populations of native stocks of salmonids are substantially reduced from historical levels due to habitat degradation, hydroelectric dam operation and overfishing. The ODFW has developed a Wild Fish Policy to protect these stocks. Several stocks present in the Sandy River are listed and monitored as species of concern under this policy (winter steelhead, spring chinook and coho salmon). A critical factor for maintenance of these stocks is high quality habitat.

Only one impoundment, Marmot Dam (operated by Portland General Electric), is located on the Sandy River and is between the upper portion of the Sandy River and the Pacific Ocean. This dam is equipped with a fish ladder for returning adults and with screens to aid the downstream migration of smolts. These facilities were improved in 1983 and both downstream and upstream passage conditions are considered good at this time. A fish counting system at the fishway photographs each fish passing by the facility, providing accurate counts of fish runs to the upper Sandy River basin.

Existing Condition

The Sandy River and its tributaries are very important for their anadromous fishery values. The lower river is nationally renowned for its summer steelhead fishery bringing anglers from outside Oregon to fish the river. In addition to summer steelhead, the river also contains: winter steelhead, coho salmon, spring chinook salmon, cutthroat and rainbow trout as well as other non-game fish. Many of the tributaries contain resident cutthroat, rainbow and brook trout. Sculpin are the dominant non-game species. Some of the numerous salmonid stocks are native to the upper Sandy River, others have been introduced and are naturally sustaining themselves through wild reproduction, while still others are regularly supplemented with hatchery reared stock released by the ODFW to augment recreational fisheries on the Sandy River. Below is a brief description of some of the more distinct gamefish stocks found in the upper Sandy River. Little information is available on actual fish numbers in the upper Sandy River drainage. Salmon and steelhead counts passing Marmot Dam are presented to give a point of reference.

Summer Steelhead

Summer steelhead were introduced to the Sandy basin in 1975. The introduction of this stock has created a very popular and successful fishery throughout the lower Sandy mainstem and its tributaries. Average adult return to the upper Sandy has averaged 3,200 fish since introduction of the stock, with a peak in 1987 of 5,395 fish. The stock was introduced to the basin assuming that with its mid-winter to early spring spawning period, and a very high harvest rate imposed, that there would be little to no success in natural reproduction and no negative interactions with the native winter steelhead. The run has been maintained with annual smolt outplanting in the Salmon and other upper Sandy tributaries (averaging 70,000 for the upper Sandy.) The smolts have their adipose fins clipped as a fishery management tool to allow evaluation of the hatchery stock. Increasing annual returns of non-fin clipped summer run steelhead have indicated that there is successful reproduction of this stock and that it may be establishing a natural spawning population in the Sandy River Basin. Summer steelhead have not been released into the upper Sandy River and no conclusions can be drawn on whether or not this stock has strayed into the planning area.

Winter Steelhead

The existing stock of winter steelhead of the Salmon River and upper Sandy basin are primarily derived from native upper Sandy late run stocks. Prior to 1964, early run Clackamas stocks (Big and Eagle Creek stocks) were released throughout the upper Sandy basin. More recently, stocking was limited to below Sleepy Hollow bridge (below the confluence of the Salmon and Sandy Rivers.) Since 1989, no hatchery stocking of winter steelhead has occurred above the Marmot Dam. The native stock returns to the river from December to March, and spawns from March through May. Due to later spawning periods, fry of this stock emerge later than summer run stock, and therefore may be at a competitive disadvantage because of the age/size difference between the two stocks. Estimates from ODFW revealed that the Sandy River ranked second in the state for total steelhead catch. Management for winter steelhead has been primarily for sport with the emphasis to maximize the sport catch below Marmot Dam, while reserving the upper river for natural production. Adult returns to the upper basin have been fairly stable averaging around 3,000 fish for the past 30 years, with a high count of 5,531 in 1965. This stock significantly contributes to one of the most popular and successful steelhead fisheries in the state of Oregon.

Spring Chinook

Spring chinook salmon of the upper Sandy basin are composed of two stocks, a native early run and the later run Willamette stock, which has been planted in the Sandy since the mid-70's. The native run, historically very abundant, has been decimated by a number of factors:

- early hatchery egg-taking operations,
- by high harvest levels in commercial and recreational fisheries, and, most significantly
- by early operations at Marmot Dam.

Water withdrawal from the Sandy River starting in 1912 dewatered long reaches of the river until 1974. A canal diverting water from the river was unscreened until 1951, and much of the smolt production was diverted into and killed by the turbines of the Bull Run power generating facilities during this period.

The native run is presently at very low population levels. The stock was listed as possibly extinct in the recent evaluation of Pacific coast Salmon and Steelhead stocks published by the American Fisheries Society (AFS Fisheries; Nehlsen, Williams, and Lichatowich; March

1991). The stock was reduced to less than 100 fish returning over Marmot Dam during most of the period from 1955-1970.

The hatchery stock returns have gradually increased from the first returns in 1977 (349 fish.) Returns over Marmot Dam have been 700-1500 fish since 1986. Tributaries such as Clear Fork and Lost Creek may provide important spawning habitat for this species. In the upper Sandy basin the hatchery pre-smolts and smolts are unmarked, so it is impossible to determine the hatchery and natural production contributions. Hatchery introductions have increased over this period. However, from observations on other rivers, (Still Creek and Salmon River), it appears that natural production is increasing and contributing significantly to the increased run size. What effect the increased production of the hatchery derived stock has on any remnant run of the native stock is unknown, although the potential for interbreeding and hybridization is very high due to overlap of spawning periods in September.

Coho

The coho salmon run is also composed of two stocks: a native late-spawning stock (November-February) and an early-spawning hatchery stock (September-November) derived from mid-basin Sandy River fish. The late-run stock is listed by the state of Oregon and Forest Service as a sensitive species. It is listed in high risk of extinction in the AFS stock evaluation. It appears that habitat degradation, overfishing in a mixed stock fishery with the more numerous hatchery stocks, and competition/hybridization with hatchery stocks have combined to reduce numbers of this fish. Periodically, ocean rearing conditions are also impacted by "El Nino", which has conditions that adversely affect coho. El Nino conditions were present in the early 1980's and again in 1992. This stock is at critically low levels, with very few counted at Marmot Dam in recent years. ODFW average index spawning counts for this stock have declined from 22.8 fish/mile in the 1960's to about 3 fish/mile in the 1980's.

The early spawning stock was outplanted in the 1980's as adults, pre-smolts and smolts in the upper Sandy basin to supplement depressed native coho stocks. Although very poor returns have been suspected for coho pre-smolt supplementation, there appears to have been some success in increasing escapement to the upper basin with this stock. Unfortunately, as with spring chinook, the fish are not marked and the relative contribution of hatchery raised fish, naturally produced early run and native late run fish to the upper basin escapement is unknown. Counts at the dam have increased from 283 in 1977 to about 1,500 in 1985-87. Virtually all stocking of coho has been limited to below Marmot dam since 1990. Sport harvest is almost exclusively below Marmot Dam while spawning occurs mainly above the dam. Currently, there are no harvest management goals coho.

Cutthroat Trout

The cutthroat trout population in the Sandy River drainage is composed of at least two native stocks: an anadromous (sea-run) form that is likely present in the mainstem and associated tributaries, and a resident stock that is present throughout the drainage, particularly in the smaller tributaries.

The sea-run stock is currently listed as a sensitive species by the state of Oregon. It is classified as coastal cutthroat by the ODFW, and the population trend has been in severe decline throughout its range. The AFS report lists the stock as in moderate danger of extinction. Most of the sea-run production has been in the lower Sandy basin, but there has been a run of these fish into the upper basin. Adult fish returns at Marmot Dam have plummeted; very few are counted passing the dam. Whether these fish spawn in the Sandy River is unknown. Cutthroat smolts continue to be observed in the fish trap at Marmot Dam in diminishing numbers. The fish are relatively easy to catch, and the adult fish are prized by fisherman. It appears that overfishing and degradation of habitat are two likely factors in the decline of this stock.

The resident form is well distributed throughout the drainage, but several factors may combine to limit its numbers in some areas. It too is easily caught, and areas near roads and development may literally be "fished out" in a short period of time. It does not compete well for food and space with some other salmonid stocks and may be displaced from its habitat. Cutthroat also readily hybridize with rainbow trout and this likely happened historically in areas accessible to anadromous fish where both species were naturally present. The introduction of hatchery strains of rainbow trout present the opportunity for hybridization with cutthroat. For these reasons, the "refuge" habitat provided in remote drainages, above migration barriers, is especially important to sustain this stock of fish.

Rainbow Trout

Rainbow trout from several sources have been utilized by hatcheries to develop stock for outplanting into the upper Sandy basin. Resident trout populations were likely heavily impacted by intensive harvest decades ago. For this reason, the ODFW has supplemented trout populations with catchable-size fish at several points on the river. This practice has become a regular program, and many people visit these areas to fish specifically for these stocked fish. It appears that if these stocked fish are not quickly harvested, they do not usually survive through the following winter. Although the majority of these fish are harvested, there are indications that some of these fish successfully over winter. These fish compete with resident and juvenile anadromous fish for food and space, and potentially interbreed with native stocks, changing the genetic make-up of the populations.

Other Stocks of Interest

The bull trout is a candidate for Federal Threatened or Endangered Species listing and is listed as a sensitive species by the State of Oregon and the Forest Service. There are historic reports of bull trout in the Sandy River drainage, but its presence has not been confirmed. Suitable habitat and isolation exists to support this species in Sandy River tributaries such as Rushing Water and Ramona Creeks.

Lower Columbia River fall chinook salmon are listed as state sensitive species and are identified as in high risk of extinction by the AFS report. This stock was apparently present in the Sandy River until the development of Marmot Dam. The fish were not able to adapt to pressures from egg-take for hatcheries, intensive fisheries, and the extended periods of low mainstem flows, poor upstream passage conditions and high smolt mortality that were imposed by dam operations from 1912-1951 (and later). The fish are now found only in the lower reaches of the Sandy River. There are two stocks present there: an early spawning hatchery-derived "tule" stock, and the native late-spawning "bright" stock.

Wildlife

Introduction

The Sandy River provides diverse habitats for a wide variety of wildlife species. The Sandy River flows from its alpine habitats on Mt. Hood supporting populations of gray jays and mountain chickadees to subalpine steep canyons and wide flood plains supporting a more diverse bird community including ruffed grouse, band-tailed pigeon, Stellar's jay, rufous hummingbird, and mountain bluebird. Much of this area has been disturbed by cyclical debris floods yet provides relatively stable habitat for these species. The lower elevation portions of the river are bound by mature conifer stands that provide excellent habitat for common flickers, hairy and downy woodpeckers, pileated woodpeckers, red-breasted sapsuckers, wrens, kinglets, nuthatches, chickadees, dippers, kingfishers, harlequin ducks, mergansers, warblers, and flycatchers. Other species of birds that use the Sandy include osprey, great blue herons, night hawks and bald eagles.

Mammalian species that may inhabit or are known to occur along the Sandy River include Roosevelt elk, black-tailed deer, black bear, coyote, cougar, bobcat, otter, raccoon, beaver, mink, and wolverine.

The habitats adjacent to the river and tributaries provide important travel corridors for wildlife movement along the river and dispersal to and from adjacent areas. The lower portion of the river is easily accessible by humans due to roads, trails and private land parallelling the river. As the river flows into the Mt. Hood Wilderness, human accessibility lessens. Animals may use the Sandy as a travel corridor to escape harassment or disturbance from humans or dogs.

A complete survey of documented or suspected animals within the designated river corridor does not exist. However, there is substantial information from formal surveys and field observations to document a wealth of species.

Birds

Peregrine Falcon

One Federally listed endangered species, the American Peregrine Falcon, Falco peregrinus anatum, is managed by the state of Oregon and the federal government. Suitable nesting habitat in the form of rock cliffs are available in the drainage and the proposed corridor. No formal surveys have been conducted in the drainage but surveys are beginning this year to identify and document potential nesting habitat. Currently, peregrine falcons are being reintroduced on the cliffs above Camp Creek approximately 7 miles south of the WSR corridor. If the peregrine becomes re-established in the area, resident birds may use the Sandy River as foraging and nesting habitat.

Northern Bald Eagle

The Bald Eagle, Haliaeetus leucocephalus, is managed as a federally listed threatened species and has been observed along the Sandy River. No nest sites have been found though no thorough surveys have been conducted either. Bald eagles likely use the Sandy River for foraging and migration and use snags and large trees along the river as perch sites.

Harlequin Duck

Harlequin ducks, Histrionicus histrionicus, are identified as a sensitive species by both the state of Oregon and the Forest Service. Harlequin ducks inhabit turbulent mountain streams in coniferous forests (mixed conifer, white fir, lodgepole pine, and subalpine fir); in winter they prefer rocky intertidal areas along the Oregon coast. Nests are on the ground near a stream, in a cavity of a tree, or in a cliff (National. Geographic Society., 1983; Peterson, 1961; USDA, FS PNW Region, 1985). Harlequin ducks have been observed using the Sandy River and its tributaries. Most observations have been in the lower portion of the river. The area of the Sandy River above Old Maid Flats is often affected by debris floods flushing out large woody debris and vegetative cover. This may limit the amount of loafing sites and cover within the river and therefore, limit its use by harlequin ducks. Both young and adult birds have been observed in Lost Creek (tributary within W&SR boundary) and Clear Creek (tributary just southwest of the west W&SR boundary). These areas apparently provide foraging, loafing, nesting and brood rearing habitat for the ducks. The only nest site found was on Clear Creek. Harlequins use areas away from human activity with a dense shrub component, woody debris for loafing sites, and meandering channels for brood rearing (Cassirer, 1989).

The Sandy River functions as a migration flyway for the harlequin duck between its nesting habitat on generally higher elevation rivers and streams and its coastal wintering habitat (USDI, 1992).

Northern Goshawks

Goshawks, Accipiter gentilis, identified as a sensitive species by the state of Oregon are forest-dwelling raptors that are distributed across most of Canada, the northern and western United States, and into Mexico. Goshawks utilize mature or late seral stage forests for nesting. The Old Maid Flats area may provide suitable nesting habitat structure (Austin, 1992). No known sites have been found yet only one survey was conducted in summer of 1993.

Osprey

The Osprey, Pandion halieatus, can be found in areas of fresh or salt water where an adequate food source, almost exclusively fish, can be found. Nests are found near water in large diameter trees or platforms specially constructed for ospreys.

Osprey have been observed along the Sandy River. No known nest sites have been found within the W&SR corridor but no formal surveys have been conducted.

Northern Spotted Owl

The northern spotted owl, Strix occidentalis caurina, is listed as a threatened species under the federal Endangered Species Act of 1973. Old-growth coniferous forest is the preferred nesting, roosting, and foraging habitat of spotted owls in Oregon. Old growth habitat components that are typical for spotted owls are: multi-layered canopy structures, closed canopies, large diameter trees, abundance of dead or defective standing trees, and abundance of dead and down woody material. (Forsman, 1980; Forsman, 1982; Peterson, 1961).

Suitable nesting habitat along the Sandy River is minimal, yet the tributaries to the Sandy provide high quality nesting habitat. The Sandy River corridor is likely used by young birds as they disperse to other areas. Continuous stands of coniferous trees along the rivers provide refuge from predators and are an important characteristic of dispersal routes for young owls.

Surveys for spotted owls have not been conducted in the entirety of the drainage. Responses of single spotted owls have been elicited but no known pairs are located along the Sandy River.

Pileated Woodpecker

The pileated woodpecker, Dryocopus pileatus, is listed as a sensitive species by the state of Oregon. The woodpecker, a primary excavator, is identified as a management indicator species for mature and old-growth forest-dependent species on the Mt. Hood National Forest. The woodpecker's ecological and biological needs appear to be best met in mature and old-growth communities, yet is adapting well to human encroachment and becoming more common and more tolerant of disturbed habitats and second-growth woodlands (National Geographic. Society., 1988).

In the Mt. Hood National Forest Land and Resource Management Plan, one area within the Sandy River drainage, adjacent to the proposed corridor, was established to be managed specifically for the pileated woodpecker. These areas provide a core of 300 acres of suitable habitat within each 600 acre pileated woodpecker management area. Pileated woodpeckers require large contiguous forest stands to forage for their preferred food source, the carpenter ant, and for other insects such as bark beetles. Pileated woodpeckers have been observed or heard excavating holes within the Sandy River drainage. It is unknown whether these are foraging or nesting cavities.

Mammals

California Wolverine

The California wolverine, Gulo gulo luscus, is managed as a sensitive species by the Forest Service and as a federal Category 2 species. Populations of wolverine in the Cascade Mountains are suspected to be sparse. Habitat in Oregon is confined to remote, timbered areas generally ranging in elevation from 3,000 feet to timberline. Territories may encompass 10 to 80 square miles. Wolverine are believed to prefer areas of minimal human presence and high levels of solitude and seclusion (Burt, 1976; Ingles, 1965; Forest Service, PNW Research Station, 1985). A literature review conducted in June, 1990, confirmed large home ranges and an aversion to human presence to be characteristic of wolverine populations throughout their range. Wolverine may occur in the drainage and are more likely to occur in the "wild" portion of the river due to high elevation habitat and seclusion.

White-footed vole

The white-footed vole, Phenacomys albipes, is managed as a sensitive species by the Forest Service and the state of Oregon. Considered the rarest vole in North America, this species is restricted to the forests west of the Cascade crest in Oregon. It uses riparian forests as its preferred habitat, and red alder leaves are its preferred food. It is found in all successional stages (Burt, 1976; Ingles, 1965; FS, PNW Region, 1985). No surveys for the white-footed vole have been conducted in the drainage to date, and no anecdotal evidence has been located to indicate their presence of suitable habitat and food.

Marten

The pine marten, Martes americana, was selected as an indicator species for mature and old-growth forest by the Mt. Hood National Forest. It is listed as a sensitive species by the state of Oregon. No habitat management areas are located within the drainage. Fallen trees and branches are an important component of marten winter habitat. The marten enters the snow-free area beneath the down logs to hunt tree squirrels. Marten also travel extensively above the ground on logs and branches in certain snow conditions. Its "shy" behavior makes it a rarely observed animal of the forest. Forest Service surveys have documented presence in upper Sandy River corridor.

Black-tailed deer and Roosevelt Elk

Deer and elk have been selected as Management Indicator Species for the Forest because of their economic/recreational importance. They are used as an indication of the condition of the grass/forb, and seedling/sapling habitat.

The area south of the Sandy River, the area between the Sandy River and Lost Creek, and the Old Maid Flat area provide Forest Plan inventoried severe winter range for deer and elk. Clear Fork Creek and the upper portions of Old Maid Flats provides Forest Plan inventoried normal winter range. Winter range is critical habitat because it supplies deer and elk with thermal cover, a constant food supply, and hiding cover.

The intensely managed drainage to the north of the Sandy drainage (Clear Fork of the Sandy) and the high elevation meadows provide quality summer range. The drainage provides a good seasonal migration corridor linking the high elevation deer and elk summer ranges with the lower elevation winter ranges.

Although no in-depth population data are available for either deer and elk in the drainage, hunter surveys indicate that the deer population is stable. The elk population is suspected to be very small, although no population estimate is available at this time. In the lower portion of the Sandy (adjacent to private land), the most limiting factor appears to be harassment by humans and free-ranging dogs.

Other Large Mammals

Bobcats, cougars, coyotes, and black bear are present in the drainage and are observed occasionally along the Sandy River. Deer and cougar are managed as game species in Oregon, but only the black bear is common enough to be legally hunted in the Sandy Basin under current ODFW regulations. The black bear is a generalist in its eating habits. It survives on a diet of insect larvae, carrion, young tree bark, and the abundant huckleberries and salmonberries found in the drainage. The bobcat is a predator of small game and the cougar preys predominantly on deer. Coyotes are predators of small game, but also scavenge for carrion.

Beavers are managed as a furbearer under ODFW regulations, and can be trapped for their pelts. The amount of trapping that occurs in the drainage is unknown. Beaver populations appear to be cyclical and relatively low in numbers. The cause is unknown, but may be due to the intensity and duration of winter periods, disease, trapping levels, food availability/plant succession, and land use practices. Beaver will tolerate human activity, and can frequently be found in developed areas. Where animals are active on private land and cause property damage, they may be removed by ODFW and released on National Forest land. Beavers were released in a tributary of the Sandy River in 1993; those individuals appear to have left the area. Harassment by free-ranging dogs can also keep beaver populations low, even where habitat quality is otherwise good.

In their food gathering and dam building activities, beavers are a powerful force in controlling plant succession along streams and wetland areas. They move up and down stream systems, toppling and consuming streamside trees and plants, constructing dams, and flooding wetland areas. These occasional disturbances help maintain open meadow areas and enhance diversity of vegetation. Beaver ponds provide a high nutrient source for stream systems, and support several amphibian and fish species.

Amphibians

The red-legged frog, western pond turtle, painted turtle, and Cope's giant salamander are managed as sensitive species by the Forest Service and the state of Oregon. Cope's giant salamander is found in cold streams, seeps, and sometimes in mountain lakes and ponds. The red-legged frog inhabits ponds, marshes, rivers, and streams in coniferous forests, where vegetation at the water's edge provide good cover. The western pond turtle inhabits ponds, marshes, rivers, and streams that typically have rocky or muddy bottoms. The painted turtle is an aquatic turtle that frequents ponds, marshes, small lakes, ditches and streams where the water is quiet or sluggish and the bottom is sandy or muddy. They are often seen sunning on mudbanks, logs or rocks near water. (Nussbaum, 1983; Stebbins, 1985). All these habitats exist within the Sandy River drainage, and these species could be present.

Other amphibian species of interest are the cascade frog, spotted frog, and tailed frog. The tailed frog is known to occur in tributaries of the Sandy River (Clear Fork of the Sandy). The cascade frog requires similar habitat to that of the red-legged frog and is likely to occur in the drainage. The spotted frog requires warmer waters for breeding than the other frog species and is not likely to occur in the drainage.

Table 5. Threatened, Endangered and Sensitive Species on the Zigzag Ranger District

Species	Habitat	Listing	Population Trend
Cope's giant salamander	streams; seeps; moist, coniferous forests	sensitive	declining
Red-legged frog	ponds, marshes, rivers, and streams in coniferous forests; vegetation at water's edge	sensitive	declining
Western pond turtle	bodies of water with rocky or muddy bottoms	candidate (C-2)	declining
Painted turtle	bodies of water where water is quiet and bottom is sandy or muddy	sensitive	declining
Northern bald eagle	large open bodies of water near mature or old-growth coniferous forest	threatened	stable or increasing
American peregrine falcon	rock cliffs close to water	endangered	stable or increasing
Greater sandhill crane	prairies, marshes, mountain meadows or grasslands	sensitive	declining
Northern spotted owl	old-growth coniferous forest	threatened	declining
Harlequin duck	turbulent mountain streams in coniferous forests	sensitive	stable or declining
White-footed vole	riparian forests; found in all successional stages	candidate (C-2)	declining
California wolverine	remote timbered regions 3,000 feet to timberline	candidate (C-2)	declining
Pacific big-eared bat		candidate (C-2)	declining

Table 6. Management Indicator Species on the Zigzag Ranger District

Species	Habitat Type	Population Trend
Northern spotted owl	mature and old-growth forest	declining
Pileated woodpecker	mature and over-mature	stable or declining
Pine marten	mature and over-mature	stable or declining
Deer	early forest succession mature/old-growth	stable
Elk	early forest succession mature/old-growth	stable

Botanical/Ecological

Diverse and unique life zones and plant communities exist in the Sandy Wild and Scenic River corridor from its start on the Reid glacier on Mt. Hood (approximately 7,000 ft.) to where it leaves the Forest boundary near Old Maid Flats (approximately 1,500 ft.). Steep river canyons, rock pinnacles, open sandy faces and volcanic mudflows are some of the features creating a variety of ecological conditions along the river. Plant communities growing in these and other habitats include:

- open subalpine,
- shrubby riparian,
- lush forest, and
- early successional plant assemblages.

No threatened, endangered or sensitive plants grow in the current river corridor. However an uncommon clubmoss and grass, both on the Mt. Hood NF sensitive plant list, are known from just outside the corridor. Lycopodium selago, fir clubmoss, inhabits rotting logs and mossy duff in shaded riparian areas and wet forest. Poa laxiflora, loose-flowered bluegrass, also lives in riparian areas but likes the gravely margins of streams. Habitat for both these sensitive plants exists within the corridor.

Starting in the alpine zone as glacial meltwater, the Sandy River flows down the west slope of Mt. Hood in a deeply incised channel. Vegetation is quite limited along the river channel in its upper reaches because of the unstable sandy/rocky soils and the continual erosion of those soils. Willows, alders and a few herbs line the ever-changing channel.

Below the ice and rock, the mountain hemlock plant zone begins. Predominate tree species include:

- mountain hemlock,
- subalpine fir,
- noble fir, and
- silver fir.

Herb-dominated openings with corn lily, arrowleaf groundsel, and sitka valenaria are scattered in the forest. On Yocum ridge, wildflower meadows sparkle with color from spring until autumn.

In the silver fir plant zone, the river passes by a canopy of silver fir, western hemlock, Douglas fir, and western red cedar. The shrubby understory may include pacific yew, vinemaple, rhododendrons and several kinds of huckleberries. Beargrass, Oregon grape, dogwood bunchberry, twinflower and foamflower are common on the forest floor.

Below 2800 ft., the river channel becomes less incised, the floodplain widens and the riparian plant communities are better developed. Hardwoods, willows and a diversity of herbs line the channel including coltsfoot, horsetails, willow herb, monkeyflowers and grasses. The forest transitions into the western hemlock zone plant communities. A mixture of conifers and hardwoods such as hemlocks, cedars, pines, maples, and alders forms a diversely textured canopy. An ancient western hemlock forest and an ancient western red cedar forest that includes a 500+ year-old western cedar have been identified in this zone. A lush understory may include red huckleberries, salal, swordfern, oxalis, starry solomon's seal and other moist site herbs. A tangle of salmonberry, devil's club, stink currant, skunk cabbage and lady fern marks strings of forested wetlands.

In this plant zone, the Old Maid Flats area is ecologically significant. A unique early successional plant community occupies a discrete mudflow area. The soils here are young and poorly developed with low moisture holding capacity. Lichens and mosses carpet the debris flow deposit and drape the stunted lodgepole pine forest. Occasional deep tubular holes in the ground are casts of trees destroyed in the mudflow event. A sparse understory consists mostly of low growing kinnickinnic. This vegetative assemblage is an outstanding textbook example of primary successional stages associated with volcanic activities. Such an assemblage, especially of this size, is rare on the west side of the Cascade Range.

Over 100 species of mushrooms, including matsutaki and morels, flourish in the Old Maid Flats area. The abundance of highly prized edible mushrooms draws mushroom hunters from around the region. Disturbance to the forest floor, particularly the lichen/moss community, is visible during peak harvest periods.

Timber and Other Forest Products

Timber management and the application of prescribed silvicultural techniques and practices been relatively limited within the existing Sandy River Wild and Scenic River corridor. The upper four miles are entirely within the Mt. Hood Wilderness boundary where timber harvest is not allowed. The balance of the corridor, approximately 8.5 miles from the wilderness boundary to the National Forest boundary, primarily encompasses the Old Maid Flat area, a mudflow dating back 180 to 270 years. The remainder of this section of corridor contains forest lands on the adjacent slopes of Slide Mountain, Last Chance Mountain, several ridges extending northward from Zigzag Mountain and the extreme west and northwest slopes of Zigzag Mountain. This stretch also includes 490 acres of private land; much is undeveloped although there is increasing pressure to develop additional housing.

Timber management as a resource management activity has been primarily on National Forest lands and has been predominately limited to forest stands located on the slopes above Old Maid Flat. Within the Old Maid Flat area, timber management has been primarily for salvage of hazard trees in campgrounds, removal of trees for campground expansion and the salvage of blowdown for firewood.

Intensive timber management on private lands has been primarily on forest lands away from the river and the wild and scenic corridor. On private lands closer to the river and within the wild and scenic corridor, timber harvest has been primarily for clearing land for housing and the related timber management activities. In this area, reforestation, precommercial thinning etc., have generally not been practiced to any significant degree.

The majority of the forest stands found within the Sandy River drainage are second growth stands with ages generally less than 100 years of age. Such stands have resulted from a variety of disturbance agents including fire, flooding of the Sandy River, mudflows from Mt. Hood and timber harvest. Stands whose ages exceed 100 years are generally located along streams and/or higher on slopes where floods and mudflows could not/did not reach, where fire or other disturbance agents such as wind were less likely to occur, or where management activities such as intensive timber harvest or prescribed fire have not been implemented. Within the existing wild and scenic corridor, there are few stands which can be defined as old growth. Individual trees as well as scattered pockets are present primarily adjacent to Lost Creek, Cast Creek, Horseshoe Creek, and the Clear Fork of the Sandy, all tributaries to the mainstem of the river.

Douglas fir is the dominant species within the drainage. Below 3000 to 3500 feet, it is commonly found with western hemlock, western red cedar, red alder and Pacific yew. From 3000 to approximately 4500 feet, a transition to true fir and mountain hemlock begins. Douglas fir and western hemlock become increasing less common. Red alder and cedar tend to favor riparian sites and ultimately disappear. True fir, both Noble and Pacific silver, begin to dominate the understories. Pines, especially lodgepole and western white pine, are common inhabitants of disturbance areas. Above 4500 feet elevation, stands are dominated by a mix of silver fir and mountain hemlock. As elevation continues to increase subalpine fir begins to appear. Near timberline, local conditions may limit or eliminate all species but clumps of subalpine fir and potentially whitebark pine.

The mudflow area of Old Maid Flat provides a dramatic contrast to the lowland forest common west of the Cascade Crest. Forest stands here tend to be relatively open with relatively few tree species. Lodgepole pine locally dominates, especially where moisture is limiting. As moisture levels increase, Douglas fir and western hemlock become more common and can locally dominate. Riparian zones find western red cedar, red alder and black cottonwood dominating. Understory vegetation such as shrubs and forbs is also limited. Mosses dominate an understory of limited quantities and extents of manzanita, rhododendron, salal, Oregon grape and golden chinkapin. Tree regeneration, common on adjacent slopes after disturbance, is limited and slow to establish itself on the lower flats where moisture is limited.

One tree species previously viewed and valued as primarily as a weed is Pacific yew, Taxus brevifolia. Particularly common in riparian areas and adjacent to streams, it is locally common on the slopes above the Sandy River. Its presence is severely limited in the Old Maid Flat area.

Timber Management

Timber management activity within the drainage has been relatively limited in location, area and intensity. Timber management activities on Federal lands started in the 1950's with most activity concentrated in the Lost Creek, Horseshoe Creek and Clear Fork of the Sandy drainages. Clearcutting using highlead cable yarding and tractor skidding harvest systems were the predominate harvest methods used. The resulting units were generally broadcast burned and replanted with Douglas fir. Regeneration success was generally good although site conditions prior to harvest coupled with severe site preparation methods occasionally resulted in low tree stocking and brush fields. In other locations, harvest activities created optimal habitat for a variety of animal species which further impacted the survival of both planted and natural seedlings from the grazing on the seedlings. Subsequent activities have included replanting to improve stocking levels, precommercial thinning to control both stocking levels and species composition and fertilization to improve growth.

The exception to the above management involves the Bonneville Power Administration (BPA) powerline right-of-way which brushes the northwest corner of the wild and scenic river corridor. Timber harvest to create the corridor was started in the late 1940s and was completed in the 1950s. Since its creation, the Forest Service and/or BPA have worked to keep the corridor relatively free of tree vegetation for the purpose of line and tower safety. In most areas, including that portion within and adjacent to the wild and scenic corridor, the right-of-way is maintained in a state ranging from a young plantation (two to four years after reforestation) to a maximum of pole sized timber (9-20 inches dbh). This has generally required BPA to periodically cut down all trees within the right-of-way corridor once they reach a certain height.

Since the early 1980s, the focus of timber management on federal lands in this area has been changing. Stand ages and silvicultural priorities have indicated a need to start a program of commercial thinning to control stocking levels, reduce the impacts from indigenous insects and diseases and improve stand growth rates. This has been coupled with an evolution of management strategies and direction toward leaving more residual green trees after harvest.

Although some clearcut harvesting is still practiced, recent timber sale planning has focused more on alternative regeneration systems and the greater use of commercial thinning. Plantations developed since their regeneration in the early 1950s through the early 1960s are now reaching sizes where economically viable commercial thinning operations can be undertaken.

Planning efforts for three timber sales which have units or portions of units located within, adjacent to or are potentially visible from areas within the current wild and scenic corridor have been completed or are nearing completion. The first sale is Muddy Fork. Located on the south aspects of Last Chance Mountain, it is primarily a commercial thinning. Although most units would be visible from the corridor, only two are located either entirely or in part within the current corridor boundary.

The second sale is the Hickman Timber Sale which is located primarily within the Clear Creek drainage, a tributary to the west of the Sandy River. It is also primarily a commercial thinning. It has several units located on the south aspects of Sugarloaf Mountain, none of which are located within the corridor but which will be visible from some areas in the corridor.

The third sale is Lower Lost, a commercial thinning in two plantations established between 1952 and 1959. Originally sold in 1991, the bid was repudiated and the sale not harvested. Current economic conditions may make this thinning sale more viable.

Timber management activities on lands owned by other landowners has occurred primarily on lands located between the National Forest Boundary and the junction of Forest Roads 18 (E. Lolo Pass Road) and 1825. Within and adjacent to the wild and scenic river corridor, lands are primarily owned by individuals.

Timber management activities on private lands within and adjacent to the wild and scenic corridor have been more varied in extent, duration and intensity. Most lands within the corridor are owned by private individuals; timber management has been predominately timber harvest either for the development of housing or to subdivide and sell also for new housing. Timber management includes not only timber harvest but also the range of related silvicultural practices (reforestation, precommercial and commercial thinning, etc.), and has primarily been restricted to forest lands outside the corridor and on adjacent slopes where landowners tend to be forest products firms or individuals interested in timber management.

Timber management type and intensity, and specifically timber harvest, varies by landowner. Landowners who own forest land and manage it for timber production have traditionally utilized the clearcut regeneration silvicultural system. This type of management can be expected to continue but perhaps with modifications depending upon local, state and federal laws and regulations. More intensive silvicultural practices such as precommercial thinning, release, fertilization and commercial thinning may or may not be utilized depending upon landowner objectives, local and state laws and regulations or economics. However, current trends suggest that more intensive timber management in the relatively flat flood plain areas of the corridor itself will likely be either extremely limited as such lands tend to be held for residential or commercial development, personal recreational use or for other personal reasons. Timber harvest, if it occurs, is done primarily to clear land for development and not with the intent of replanting the lands for future timber production. As such, these lands are effectively removed from future timber management and timber harvest activity.

Other Forest Products

A variety of forest products other than timber are found within the Sandy River drainage. Historically, local Native American groups have harvested a variety of foods, medicines and other plant parts to make baskets, clothing and shelter. Meadows were important for roots, ridgelines and upper slopes were burned to provide huckleberries, as well as providing beargrass for baskets and other items and riparian areas provided cedar for baskets, clothing and shelter. These same areas and others also provided habitats which contained a variety of plant to be used for medicinal purposes.

Modern society has expanded the traditional forest uses to include Christmas trees, boughs, tree and shrub transplants, cedar and non-cedar posts, poles and rails, floral greenery from beargrass, salal, swordfern and other plants, and commercial sales of berries and mushrooms. The use of forest plants for medicinal products has recently become well known with the success in treating ovarian and other cancers with Taxol, a compound produced from the bark, wood and needles of the Pacific yew.

The BPA powerline right-of-way and the Old Maid Flat area are two historic areas for the harvest of these other forest products. The Zigzag Ranger District has utilized the right-of-way to provide not only transplant materials to forest visitors but it has also functioned as a popular area for the harvest of Christmas trees and boughs. Such activities have helped in meeting BPA's objectives in maintaining transmission line and tower safety.

Old Maid Flat has a long history of providing certain products. "Matsutake" or pine mushrooms have reportedly been harvested from this area for 60 years or more with many current harvesters having learned from their parents, grandparents or great grandparents with three or even four generations having harvested here. This historic use is being augmented by others interested in the diverse variety of other species found within this area. This increasing demand and use is increasing the amount of disturbance and has the potential to reduce the ability of the area to continue to produce not only the matsutake but also the other species currently found there.

Moss is the second product of interest which has been harvested within the Old Maid Flat area. Used primarily in the development of specific types of landscapes (Portland Japanese Garden), the demand is limited to certain species and often those of more limited populations. Both quantities harvested and the area of harvest have been limited. Limited monitoring of past harvest areas has resulted in the development and application of harvest requirements which appear to encourage the regeneration of moss within harvest areas.

Scenic Quality

The Upper Sandy River is a glacier-fed stream, originating from the Sandy and Reid Glaciers near the summit of Mt. Hood. The river flows westerly through canyons surrounded by diverse scenery. The diversity of land form, rock form, and vegetative patterns that the river flows through provides unique scenic experiences.

The upper Sandy River was divided into three sections for the purpose of describing the river's landscape character and analyzing scenic quality.

River Character 1 (Wild Segment): Headwaters to Upper Ramona Falls Trailhead

All of this section (4.5 miles) is on National Forest System lands, mostly within the Mt. Hood Wilderness and was classified as "wild". The Existing Visual Condition for this river section is Natural Appearing. It was found to meet the scenic criteria for outstandingly remarkable. A steep river canyon, waterfalls and cascades, open sandy faces, rock pinnacles and outcrops, high mountain meadows, and diverse vegetation patterns comprise this river character with little or no evidence of human alteration.

The river flows through a deeply incised channel with steep cliffs and rocky faces on the west slope of Mt. Hood. The dominant landscape feature in the upper reaches is volcanically formed Mt. Hood. Lavas from the Sandy Glacier volcano are visible from the trail to Paradise Park in the upper end of this section. Excellent photographic opportunities occur along its upper portion where open areas provide views to the west face of Mt. Hood and other features along the river. There is no trail in the most upper reaches of the canyon.

Vegetation is quite limited along the river itself in its upper reaches because of the unstable sandy/rocky soils that form the river channel and the continual erosive action of the river. The river starts above timberline in the alpine zone; then flows into the Mt. Hemlock Zone. Tree species found within this zone consist primarily of mountain hemlock, subalpine fir, noble fir, silver fir and possibly some whitebark pine.

Ramona Falls and portions of Ramona Creek and the adjacent trail are approximately 1/4 mile north of the Sandy River. The viewing area for Ramona Falls has been heavily impacted by visitor use causing a loss of some of the natural beauty of the area. The trail area northeast of Ramona Falls shows the impact of equestrian traffic and poor drainage design. Unique vertical rock cliffs line the north side of Ramona Creek for approximately 2/3 mile. The stark cliffs contrast sharply with the adjacent lush rolling moss and pine landscape on the south side of the trail. Views from the Ramona Falls Loop Trail #797 to Mt. Hood or to the Sandy River are almost entirely blocked by vegetative screening. There is little trail access to the river itself.

River Character 2 (Recreation Segment): Upper Ramona Trailhead to McNeil C.G.

All of this section (3.5 miles) is on National Forest System land and was classified as "recreational". The Existing Visual Condition for this river section is Natural Appearing. This section was found to meet the outstandingly remarkable scenic criteria because of a variety of vegetative and erosional patterns. Open sandy faces, erosional streambeds, and volcanic mudflows are some of the diverse features which create a variety of rare ecological conditions to be experienced along the river. A series of volcanic debris flows, all originating from Mt. Hood, form the Old Maid Flats area. Cross sections of these geologically young deposits are easily observed and can be readily interpreted due to the erosional downcutting of the Sandy River. There are also buried snags and tree casts or wells that are some of the best examples of a buried forest found in the Pacific Northwest.

The river flows into a Silver Fir Zone which contains western hemlock, pacific yew, Douglas-fir, western white pine, and western redcedar. In wetter areas black cottonwood and willows can also be seen. Below the Silver Fir Zone, the river flows through a Western Hemlock Zone consisting primarily of western hemlock, Douglas-fir, pacific yew, western redcedar, big leaf maple, and lodgepole pine.

Contained within the Western Hemlock Zone, is the unique vegetative and geologic area called Old Maid Flats. The combination of vegetation such as stunted pines, mosses, lichens and mushrooms; combined with rocky, poorly developed soils provide natural "rock garden" landscapes that are enjoyed by many visitors. Such an area, especially of this size, is rare on the west side of the Cascade Range. The change in forest type from the surrounding forest is very apparent to visitors. Old Maid Flats has been designated as a Special Interest Area in the Forest Plan. Other plant communities within the river corridor include two ancient forest (oldgrowth) areas.

There are many areas along the river corridor and on roads adjacent to the river that provide opportunities for developing overlooks and other areas to interpret unique features associated with the river. There is an area in the lower river corridor known as the Three Creeks site which is presently being considered one of two proposed environmental education and interpretive site for Cascade Stream Watch, a joint agency effort to develop interpretive facilities focusing on the importance of fisheries in the Sandy River basin and the Pacific Northwest. Portions of the project area, primarily the entry road and parking area, are within the interim river corridor. The entire facility and associated trails would be within other proposed corridor boundaries. However, no portion of the project will be visible from the Sandy river itself.

There are several areas where existing facilities do not meet the Recreation Opportunity Spectrum (ROS) scenic standards for Roaded Natural, which state that facilities should appear rustic, subtle, and be of native materials. The trail bridge near the upper Ramona Falls Trailhead is contrastingly tall and of angular design and galvanized metal construction. It is more suited to an industrial landscape than this forest setting. Two trailhead parking lots lack subtle site hardening to minimize resource impacts from vehicles. The parking areas are less than 200 yards from the Sandy River and need improvement. In addition, many areas along the access road show signs of indiscriminate vehicle use.

River Character 3 (Recreation Segment): McNeil Campground to Forest Boundary

This section (4.4 miles) includes both National Forest lands and 186 acres of private lands (0.2 river miles on north shore only). The Existing Visual Condition for this river section ranges from Slightly Altered to Heavily Altered. Within the private land portion of this section there are several scattered cabins and houses, and a small family-operated sawmill. This section was not considered an outstandingly remarkable scenic feature even though Old Maid Flats extends into the area as it is more characterized by human alterations. These include power lines, roads, campgrounds, private housing developments, previous timber harvest areas, and a rock/shooting pit. The Bonneville Power Administration maintains a 100 to 200 yard wide powerline right-of-way containing three high voltage (230 KV) powerlines in the lower three miles of the corridor. There is a distinct change in the visual quality of this section.

Cultural and Heritage Resources

Pre-European Contact

Although there is presently no specific archaeological evidence of pre-European use of the upper Sandy River by American Indians, the area may have been visited by people as early as 10,000 years ago. Columbia River occupation has been established to that date near The Dalles (Cressman, 1960). Occupation of the Sandy River valley was most likely the result of specific seasonal resource utilization by small autonomous bands or from use of travel corridors that crossed the Cascade Range in the vicinity. It is well documented that The Dalles area was an important trading center prior to Euro-American contact and attracted people from the Willamette valley. One popular trail from the Willamette valley to this trading center reportedly was up the Sandy River and across Lolo Pass. Daniel Lee used an existing trail over Lolo Pass when he drove cattle from the Methodist mission in the Willamette valley to a newly established mission at Wascopam in 1838 (Lee, 1844). Many pioneers subsequently used this trail to drive their livestock across the mountains while floating their other belongings down the Columbia River prior to the opening of the Barlow Road in 1846.

The Old Maid Flats area along the Sandy River offers opportunities for important cultural resource discoveries. There is the potential for well preserved cultural resource sites buried under the debris flow deposits from the Old Maid eruptive period of 180 to 270 years ago. The preservation of these potential sites would depend on the mechanics of the depositional event. Frequent erosional events may someday expose evidence of sites.

Historic

As mentioned above, the first documented Euro-American presence in the area was Daniel Lee. Daniel Lee was the nephew of Jason Lee, a Methodist missionary in the Willamette Valley. The Lees established another mission at Wascopam (later called The Dalles). In 1838, Daniel Lee traveled to the Willamette mission and returned with 14 head of cattle using an existing Indian trail across Lolo Pass (Lee, 1844). This trail was subsequently used by pioneers to drive their livestock across the Cascades before the opening of the Barlow Road in 1846.

Increased grazing, logging and mining activities on forest land in the United States led to the creation of Forest Reserves to protect these and other resources from overuse. The Cascade Range Forest Reserve was created in the 1890s, out of which the Mt. Hood National Forest was eventually established in 1924. Management in these early days of the Forest Service focused on fire suppression and overseeing grazing permits. Administrative trails and guard stations were built throughout the Forest. Trails and structures within and adjacent to the river corridor were constructed in part due to early Forest Service administrative activities. These include:

- the Upper Sandy River Guard Station,
- the Clear Fork Guard Station, and
- a CCC work camp along the Muddy Fork.

Upper Sandy Guard Station

The Upper Sandy River Guard Station was constructed in 1935 by the Forest Service with cooperating funds from the City of Portland. The objective was to provide housing for a Bull Run watershed guard. The Timberline Trail had just been completed and provided access into what was then part of the City of Portland watershed preserve. Prior to this trail the area was pristine with limited access. The watershed guard was to ensure that users of the trail stay on the trail and not degrade the water resources.

Gail Throop, Regional Historian, prepared a nomination in 1988 to include the Timberline Trail on the National Register of Historic Places. She included the Upper Sandy River Guard Station as well as the trail shelters, as features of the Timberline Trail system. As of February, 1993 the formal nomination of the Timberline Trail System has not been pursued.

The Programmatic Agreement for Depression-era Buildings required an inventory and classification of this category of building. The Guard Station was classified as secondary. The goal for management of secondary buildings is to preserve the existing character, appearance, and historic authenticity of the building. The maintenance objective is to retain the existing historic fabric. The Guard Station is in relatively good condition. Inclusion in the Programmatic Agreement allows the Forest Service to perform a wide range of appropriate maintenance activities on the structure although there is no scheduled maintenance program . The historic significance and values are already established. There seems to be an informal "Friends" group already committed to preservation of the building. Proof of their existence is from the periodic undirected maintenance that has occurred in spite of the non-action of the Forest Service. Although the public is not encouraged to utilize the structure and its presence is not signed on the nearby trails, the building remains unlocked and use of the public is accepted. The relatively short easy trail from the Ramona Falls upper trailhead, the popularity of the Ramona Falls as a day hike destination, and heavy use of the Timberline Trail and the Pacific Crest National Scenic Trail have all combined to create a condition that may result in adverse impacts to this historic structure. The increasing number of trail users and visitors to the site, most of whom have little or no historical preservation appreciation, will undoubtedly result in serious damage. Already the results of felling trees and snags in the area of the cabin for firewood is quite evident and can be expected to increase. Well meaning yet misdirected maintenance efforts by the public will further degrade the structure and create challenges for the Forest Service in meeting the requirements of the Programmatic Agreement.

Clear Fork Guard Station

The Clear Fork Guard Station is in close proximity to the Sandy River. This station was probably constructed in the 1920s which would make it one of the older administrative sites on the Zigzag District. All that exists of the site today are ruins of the various features of the site and a dump that was used by occupants of the station over the years. The site has been severely degraded from continued modern day trash dumping and littering. The Clear Fork Guard Station has not been evaluated for its significance nor its eligibility for inclusion on the National Register of Historic Places.

Timberline Trail

The Timberline Trail is a 40 mile trail encircling Mt. Hood at or near timberline. The trail was constructed by the Civilian Conservation Corps in 1933-1935 to provide a single continuous trail around the mountain. The Timberline Trail is significant under National Register criterion because of its association with early USDA Forest Service recreation planning and development, the political and legislative events of President Franklin D. Roosevelt's New Deal, and the lives of Francis E. Williamson, Jr. and Fred W. Cleator who were F.S. pioneers in recreation development. The Timberline Trail has been determined to be eligible and a nomination for inclusion on the National Register of Historic Places has been prepared.

The trail crosses the Sandy River near the Upper Sandy Guard Station. The segment of the trail within the Sandy River corridor has lost its historic integrity as a result of repeated washouts over the years and a rerouting in 1971 that by-passed the Guard Station. The historic alignment near the Guard Station is still evident but no longer formally maintained.

Other Features of Historic Interest

There are other points of historic interest within or in proximity to the river corridor that have historical interest that have not been formally recorded or verified. There are reported petroglyphs, peeled cedars, structure remains, trails, and trail construction work camps. References to these features can be found in the cultural resource files at the Zigzag Ranger Station.

American Indian Traditional

No extensive ethnographic study has been undertaken for the Upper Sandy River to date. Lack of specific references or information does not however preclude the possibility of the Upper Sandy River being a traditional use area. The Lolo Pass trail was reportedly a popular travel corridor used by the American Indians in crossing the Cascades. Users of this trail may have practiced some yet unidentified resource utilization patterns along the Upper Sandy. Extensive huckleberry fields currently exist in the high elevations between Rushing Water Creek and the Sandy River. These fields, or others in the vicinity, may well have been an attractive resource. Isolated lithic finds would indicate presence of American Indians in the general area. A peeled cedar tree discovered along the Muddy Fork is further indication that American Indians frequented the river environs.

Air Quality

Air quality and visibility in the upper Sandy River corridor are impaired at times from a variety of sources. Forest Service management activities have little impact on air quality and visibility due to the type of activity and their duration. The principle Forest Service activity that would affect air quality would be smoke from prescribed fires, but this is strictly regulated through the State of Oregon Smoke Management Plan. Other activities that could affect air quality such as field burning or light industrial operations occur on private land outside of the National Forest boundary, and these activities are not regulated as strictly as Forest activities. Recreation activities inside the river drainage could also affect air quality and visibility. The impacts would vary depending on the amount of activity and on weather conditions.

Air cleansing within the drainage is good with the local wind flows. At times the wind transports particles from other areas that would impair air quality and visibility. Inversions occasionally form over the drainage trapping haze, smoke and other airborne particles, but these inversions generally occur for short periods of time in the morning hours. No air quality or visual monitoring stations are in place in the river drainage and no data has been collected to determine the type and length of visual impairments.

Fire

The fire history within the drainage has been limited to small fires caused by lightning and human activity. Most recent fires have been suppressed with relatively small acreages burnt. The drainage on normal years is relatively moist and is not conducive to fire spread. The potential exists for large fires when weather and fuels conditions are dry. Fires can also enter the drainage from outside the river corridor, but downhill spread would depend on fire behavior and weather conditions.

Due to high recreation use on some stretches of the river, risk of fire is fairly high. This risk is somewhat lessened by road right-of-way clearing, and prevention activities, such as signing, patrols, public contacts and restrictions during abnormally dry periods.

Wildland fire protection within the Forest is primarily shared by the Forest Service and the Oregon Department of Forestry. The Forest Service protects the drainage from the headwaters to the Forest boundary and the remaining portion is protected by the Oregon Department of Forestry. Within wild and scenic river corridors, suppression activities should not degrade river values if at all possible.

At this time, no prescribed natural fire policy exists for the river drainage and the use of prescribed fire is limited to treating areas for fuels reduction as a result of timber sales.

For the private lands on the lower river, the Hoodland Fire District #74 responds to house and property fire calls.

Military Operations

No Military Flight Training Route (MTR) exists over the upper Sandy River Drainage. MTRs are present in both the Clackamas and White River drainages but do not overlap into the Sandy River corridor.

Private Land Use/ Socioeconomics

Within the designated river corridor, private land use is almost exclusively residential in nature. Much of this use in the past has been for second homes for use as vacation type homes, but in recent years, there is a shift to a higher percentage of homes becoming primary residences. Although no specific data exists for this area, studies on the Mt. Hood Corridor as well as data on Clackamas County may give some indication of general trends for the region.

Recently released 1990 Census data show a 9 percent population increase from 1980 in the Mt. Hood Corridor area. During this period there was a 41 percent increase in housing units. This indicates that population growth is stabilizing after the rapid increase that occurred in Oregon in the 1970's. A high "quality of life", a temperate climate, and numerous job opportunities in the Portland Metropolitan area led to this substantial population increase. Between 1970 and 1980 Clackamas County grew by 45.7 percent, while the city of Sandy, located in Clackamas County, experienced an 88.1 percent increase in population (Oregon Employment Division, 1992). During this period, Multnomah County grew by 1.4 percent, while the city of Portland decreased in population by 3.1 percent. This indicates that the population growth during this period was entirely concentrated in the "bedroom communities" and unincorporated areas that surround the city of Portland.

A severe recession in 1981-1982 brought about a decline in the annual rate of population growth as compared to the 1970's. This recession was cyclical in nature, the result of a business downturn which left an inadequate demand for workers in the economy. Between 1980 and 1990 Clackamas County expanded by 15.3 percent, while the city of Sandy expanded by 42.9 percent. Population trends returned to pre-recession patterns in the late 1980's as a result of Portland's strong economy in 1988-1990 (Oregon Employment Division, 1990).

In 1988, there were an estimated 6,500 residents in the Mt. Hood Corridor. The corridor consists of the communities along Highway 26 from Brightwood East to Government Camp. Fifty-eight percent of the residents are seasonal residents. The United States Forest Service forecasts that by the year 2000 the population will be 15 to 20 thousand people. New residents will be drawn in by the many outstanding recreational opportunities as well as nearby urban amenities (University of Oregon, 1988).

Past trends have indicated that Clackamas county has had higher median family incomes than many other counties in the state, with many residents commuting to work in the Portland metropolitan area (1980 Census).

The majority of the people who do not commute work in jobs related to recreation and service. Alternating between a summer and winter job is common. In this type of employment, the pay is low and the work is seasonal (University of Oregon, 1988).

Economic Environment

The top industries, by employment, are as follows: manufacturing 19 percent, professional and related services 17.4 percent, and retail trade 14 percent. Together, these three industries constitute 50 percent of the employment of the residents (1980 Census). It is important to note that this information is based upon people who live in, but do not necessarily work in, the Mt. Hood Corridor area near the upper Sandy River.

The data on employment by industry in the upper Sandy River area are compatible with the overall industry earnings for Clackamas County in 1989. Services, the top earning industry for Clackamas County, accounted for 23.0 percent of earnings. Manufacturing accounted for 14.8 percent, and retail trade 14.1 percent (Oregon Employment Division, 1991). The fastest growing industry in Clackamas was wholesale trade, which increased by 19.6 percent from 1988 to 1989.

In the Mt. Hood Corridor, 40 percent of the community's commercial activity is generated by three ski areas. Businesses other than ski resorts (about 100 in the corridor) tend to be small, with 90 percent employing less than six people. A study conducted in 1988 revealed that nearly one-third of the businesses indicated that over 80 percent of their business is tourism-related. Over one-half indicate that over 60 percent of their business is tourism related. Tourism accounted for 73.3 percent of the gross revenue for businesses in the Mt. Hood Corridor in 1987. According to the businesses surveyed, tourism and outdoor recreation play a more significant role in the local economy than does timber. The timber industry accounts for only 13.5 percent of their gross revenue (University of Oregon, 1988).

Resources and facilities on national forest lands are important for generating revenue in the tourism and timber industry sectors. Non-commodity values in the upper Sandy River corridor contribute to the high quality environment enjoyed by both residents and visitors.

Table 7. Upper Sandy River Ownership in Acres (Interim Boundaries)

Private	Public USFS	Total
186	3,782	3,968

Clackamas County Comprehensive Planning

Clackamas County has in place an approved comprehensive plan. This plan addresses Federal Wild and Scenic Rivers and State Scenic Waterways protection in a number of ways. First, all development must meet the general standards for the unincorporated area of Clackamas County described in the General Provisions of the comprehensive plan. The General Provisions set forth restrictions and considerations for natural hazards, slopes, stream corridors, wildlife and fish habitat, cultural and historic resources and natural drainage channels. Secondly, development and land uses are regulated through specific zoning classifications. Specific restrictions and regulations apply for each classification. There are four primary classifications in effect for the land along the lower eight miles of the river and within the interim Salmon Wild and Scenic River boundaries. They include:

- Recreational Residential District (RR and RRFF-5) and Hoodland Residential District (HR and MMR): The principal purpose of these classifications and their application is to maintain and enhance the natural environmental and living qualities of those areas which are recreational residential in character through conservation of natural resources and carefully controlled development. These areas are usually divided into parcels of two acres or less although some are up to 20 acres in size.

- General Timber District (GTD) and Transitional Timber District (TTD): The principal purpose of these classifications are to designate, conserve and protect areas for the continued use of lands for timber growing and production. They are also intended to conserve and protect watersheds, wildlife habitats, recreational and other values associated with the forest. These areas are usually divided into parcels of 20 acres or greater in size.

In addition, any development within 1/4 mile of the upper Sandy River must also meet Principle River Conservation Area (PRCA) requirements. This overlay zoning places additional restrictions on the type of development that can occur near the river and provides specific guidelines to minimize or eliminate impacts to the river's natural and aesthetic resources. The purpose of the PRCA is to maintain the integrity of the rivers by minimizing erosion, promoting bank stability, maintaining and enhancing water quality and fish and wildlife habitats, and preserving scenic quality and recreation potentials. It sets standards for development set backs, size and color of structures, and parameters for soil, slope, and vegetation factors. A copy of the PRCA regulations can be found in Appendix C.

Chapter 3

Alternatives

Introduction

The alternatives represent a variety of ways to manage the river, and protect its outstanding values while responding to public issues and management goals raised during scoping. Each alternative represents a reasonable strategy if implemented. None emphasizes one value over another to the extent that one or more would be seriously compromised, or that any environmental regulations would be violated.

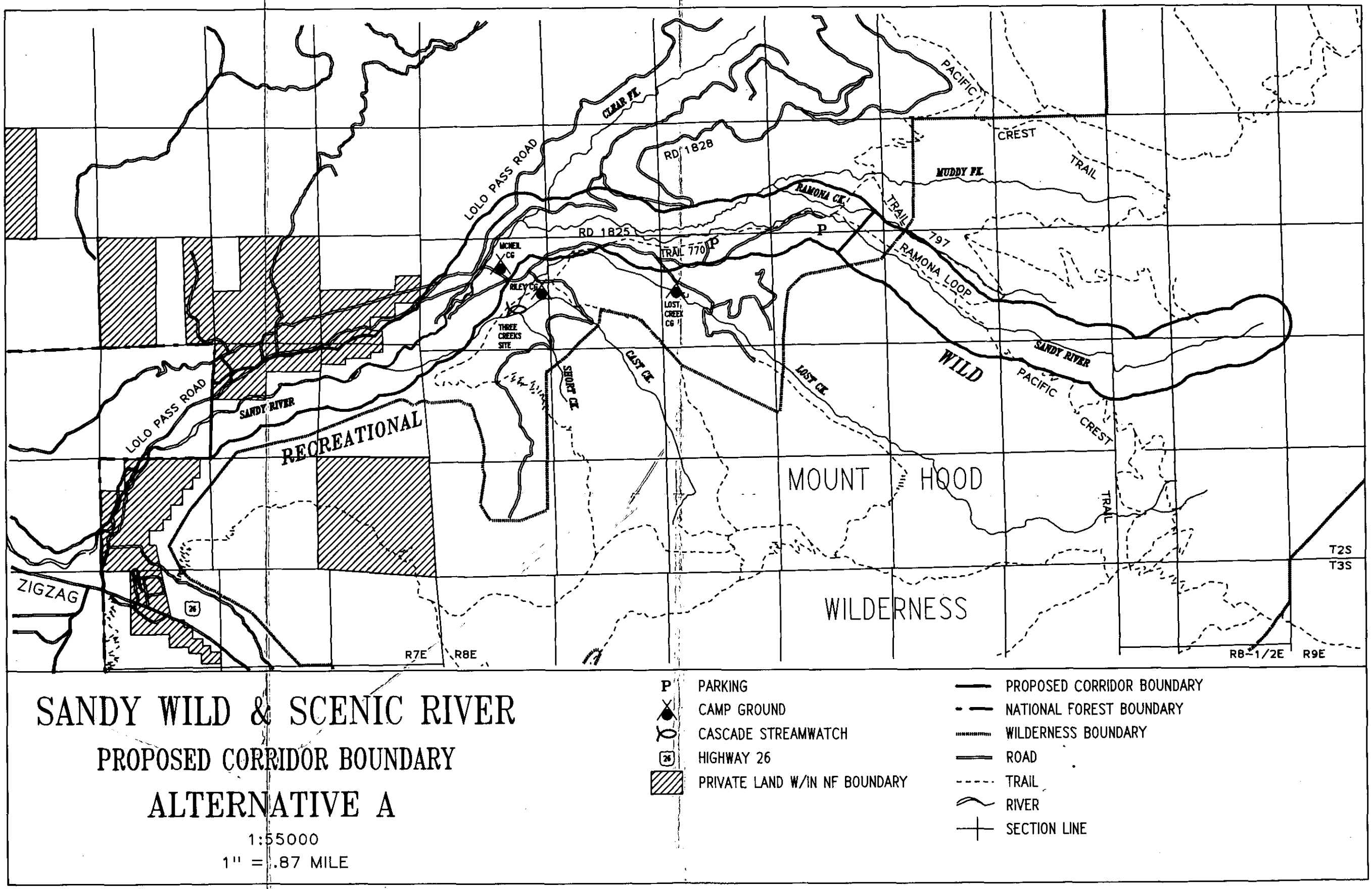
Alternative A is the "no-action" alternative that is required by the National Environmental Policy Act. The term "no-action" can be confusing as in reality, actions will still take place if this alternative is implemented. This alternative continues with current management direction for all lands within the river corridor and actions that would meet the current direction could still be implemented. The other four alternatives offer strategies different from current direction strategies different from current direction or better define what management strategies will be emphasized along specific areas of the river. The alternative that is finally selected as the preferred alternative will provide the basis for the final river management plan, which will contain the final management direction for the river corridor, the schedule for implementation of specific activities in the corridor, and necessary monitoring requirements in the river corridor to insure the goals and objectives of the river management plan are being carried out.

River corridor boundaries change between some of the alternatives in order to better protect the outstanding river values being emphasized as well as reflect more logical placement with respect to natural landforms, and identifiable features such as roads, trails, streams and other area boundaries.

Actions Common to all Alternatives

- ☐ Continue inventories and surveys of fish and aquatic organism on an as-needed basis.
- ☐ Meet Region 6/USFS direction for protection and management for spotted owls and their habitat throughout the management area.
- ☐ Complete all habitat and species inventories required by the Forest Plan.
- ☐ Protect the river's free-flowing characteristics.
- ☐ Maintain the river's current classifications of wild and recreational.
- ☐ Allow existing developments within the river corridor to remain, though some may be modified in different alternatives.
- ☐ Restrictions on use within the Mt. Hood wilderness will be developed through the Mt. Hood Wilderness Management planning efforts in order to provide for continuity of management throughout the entire wilderness.
- ☐ Necessary surveys as required by law and regulation such as cultural resource surveys, and biological evaluations and assessments will be conducted prior to implementation of any project, and if necessary, consultation will be done with the appropriate agencies.
- ☐ Forest Service land management direction would apply only to Forest Service lands. On private lands, applicable State, County, and local regulations would apply.

Map 4. Proposed Corridor Boundary - Alternative A



The following sections summarize the overall management direction/emphasis for each alternative, and briefly describes the management direction as it relates to specific resource areas. Actions proposed under each alternative are ones that would be compatible with the goals of that alternative. Site specific analysis and further public involvement would be needed to implement most of the actions proposed. **Implementation of specific projects is dependent upon available funding.**

Below is a description of the objectives of each of the alternatives considered in detail. Following that, Table 8 gives a detailed description of specific actions by resource areas that may be implemented in order to meet the objectives of the alternative. This summary will enable the reader to easily compare differences between alternatives as they relate to specific resource areas. Next, Table 9 briefly summarizes the outputs, effects and costs of each alternative and is at the end of this chapter.

Alternative A - No Action Alternative

This alternative will continue with current management direction as it is in the Forest Land and Resource Management Plan for Forest Service Lands. Current State, County, and any applicable local regulations would apply to private lands within the river corridor. While called a "no action" alternative, it does not mean that no actions will take place within the corridor. A number of activities may take place if they meet the intent of current direction and are currently proposed in the Forest Plan.

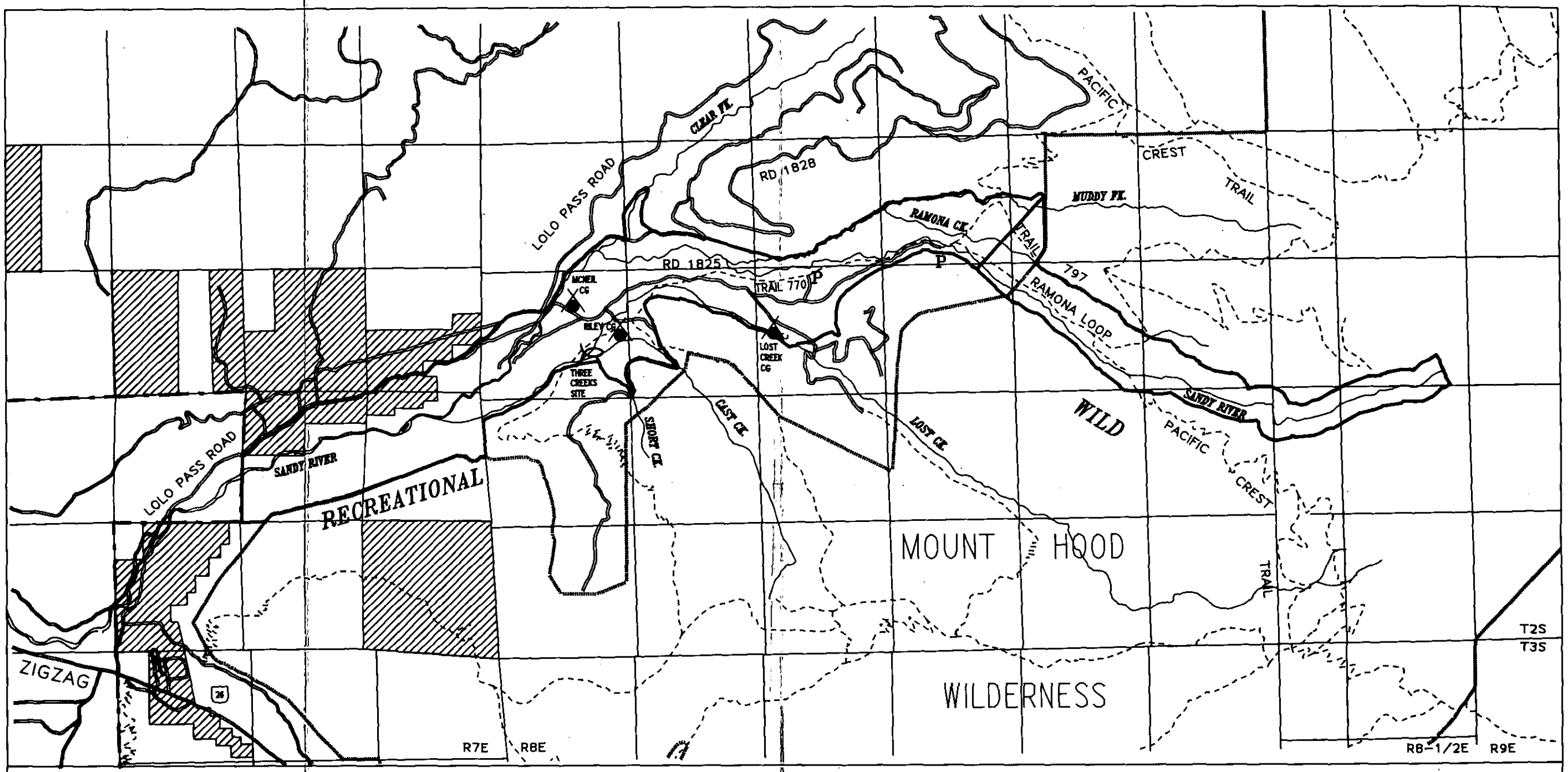
Alternative B

The goal of this alternative would be to minimize further human influence in the river corridor, maximizing natural values and attributes and allowing natural process to operate to the maximum extent possible within the river corridor. Public use opportunities would be provided where they are not in conflict with maximizing those values. Existing developed recreation facilities would remain but would be improved to reduce adverse impacts coming from those facilities. Overall focus of the management in this alternative would be to enhance habitat for wild fish stocks and wildlife, protect the unique botanical and geologic characteristics found in the corridor, and to maximize the hydrologic functioning of the natural ecosystem. There would be no programmed, or regulated timber harvest allowed in the river corridor, and the Old Maid Flat Geologic Special Interest Area would also be managed with an emphasis as a botanical Special Interest Area.

Alternative C

The goal of this alternative is to enhance the natural values and attributes of the river and to provide for public use opportunities that would focus on enhancing those values. There would be a greater emphasis on providing interpretive opportunities to inform visitors about the attributes of the area and some additional recreation opportunities provided that would not be provided in alternative B. Overall management focus would be to enhance geologic, fisheries, botanical and other river attributes while providing for a moderate level of public use in the area. As in alternative B, no programmed, or regulated timber harvest would be allowed in the river corridor and the geologic Special Interest Area would also be managed as a botanical Special Interest Area.

Map 5. Proposed Corridor Boundary - Alternatives B & C



SANDY WILD & SCENIC RIVER

PROPOSED CORRIDOR BOUNDARY

ALTERNATIVES B & C

1:55000

1" = .87 MILE

P	PARKING
	CAMP GROUND
	CASCADE STREAMWATCH
26	HIGHWAY 26
	PRIVATE LAND W/IN NF BOUNDARY

	PROPOSED CORRIDOR BOUNDARY
	NATIONAL FOREST BOUNDARY
	WILDERNESS BOUNDARY
	ROAD
	TRAIL
	RIVER
	SECTION LINE

Alternative D

The goal of this alternative is similar to alternative C but to provide a higher level of public use opportunities. Not all public use opportunities would need to focus on the natural values or attributes of the river corridor. Any new public use opportunities provided would still need to provide a high level of protection to river values. In this alternative, programmed, or regulated, timber harvest may take place as long as river values are protected. The Special Interest Area would be managed with just the geologic Special Interest Area emphasis as it currently is. The area's unique botanical values would continue to be protected as one of the river's outstanding resource values.

Alternative E

The goal of this alternative is to emphasize public use potential and opportunities in the river corridor while still protecting the river's natural values or attributes. Of all the alternatives, this alternative would provide the highest level of opportunities for public use of the river corridor. Like alternative D, programmed, or regulated timber harvest may take place as long as river values are protected and the Special Interest Area would be managed just with the geologic Special Interest Area emphasis as it currently is. The area's unique botanical values would continue to be protected as one of the river's outstanding river values.

Map 6. Proposed Corridor Boundary - Alternatives D & E

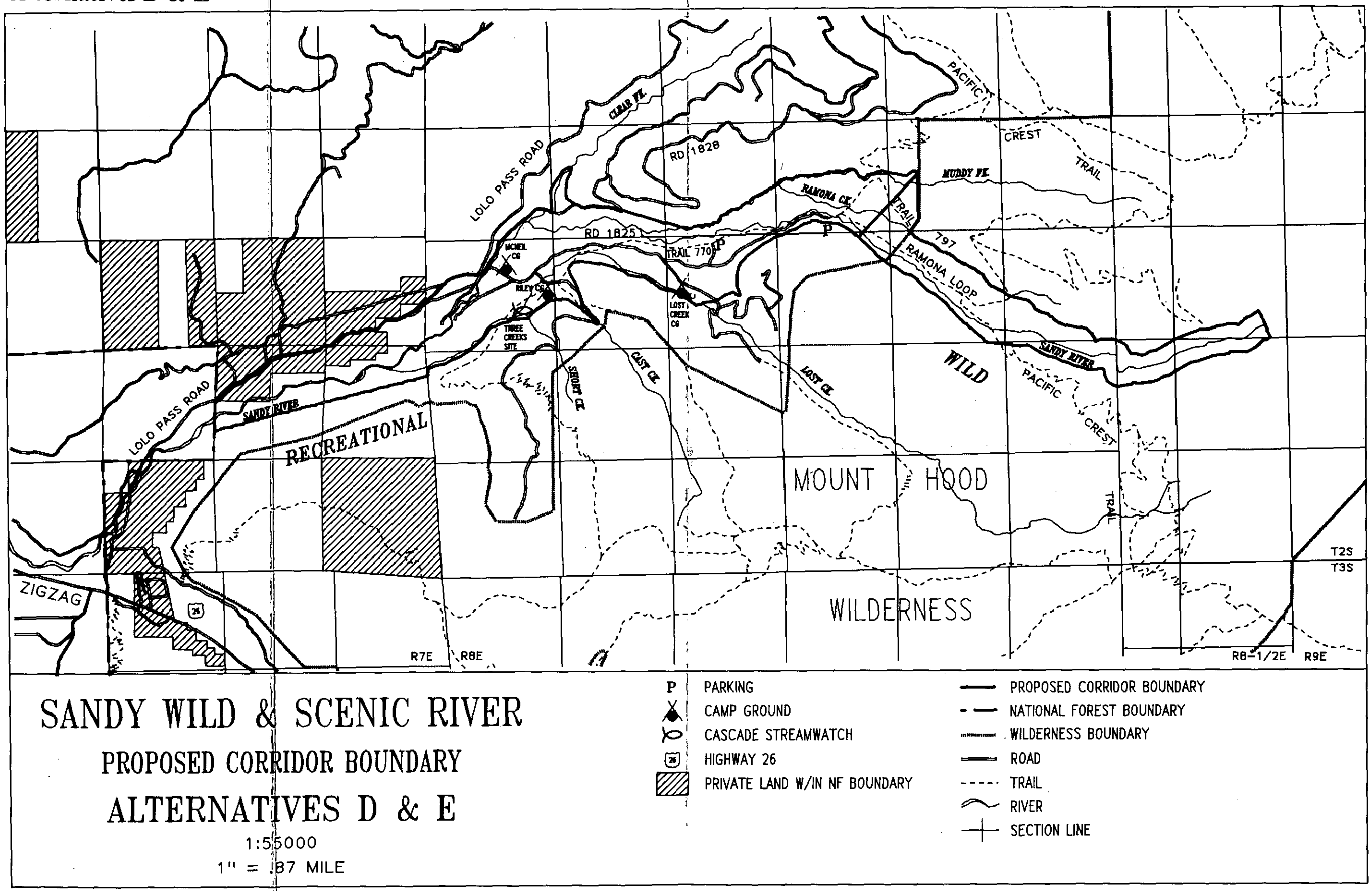


TABLE 8. SANDY WILD AND SCENIC RIVER OLD MAID FLATS SPECIAL INTEREST AREA MANAGEMENT ALTERNATIVES

The actions listed in the table below are actions which are likely to be implemented if the alternative is selected. Additional site specific analysis to assess environmental effects will be needed prior to implementing any project. Dependent upon that analysis, the project may not be implemented or modified to mitigate unacceptable impacts that may result from project implementation. *Project implementation is based on available funding.*

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
KEY PLANNING THEMES	**GOAL:** Continue with present management direction and manage under existing laws and authorities. **INTENT:** Continue current management. No additional federal funding or management would occur within the corridor. Existing jurisdictions and authorities would remain in place. Current Forest Plan direction would apply on Forest Service Lands and State and County laws and regulations would apply on private lands.	**GOAL:** Minimize the influence of human activities within the river corridor and allow natural processes to operate to the *maximum extent possible.* **INTENT:** This alternative would emphasize natural values within the corridor, providing public use opportunities only when they are not in conflict with those values. Focus of management would to be enhance habitat for wild fish stocks and wildlife, unique botanical characteristics and maximizing the hydrologic functioning of the ecosystem.	**GOAL:** Enhance natural attributes of the river and provide for those public use activities that focus on those attributes. **INTENT:** This alternative would allow natural processes to operate in the river corridor. Focus of management would be to enhance geologic, fisheries, botanic, and other river attributes while providing for public use opportunities relating to these natural attributes of the river.	**GOAL:** Similar to alternative C except would allow additional public use activities that may not focus on natural attributes of the river but would still provide a high level of protection to the river values. **INTENT:** This alternative would provide numerous public use opportunities in the river corridor in addition to allowing natural processes to operate in the river corridor. Not all public use opportunities provided would have to focus on the natural attributes of the river.	**GOAL:** Emphasize public use potential and opportunities in the river corridor while still providing protection of river values. **INTENT:** Seek to enhance public use opportunities within the river corridor. This would include emphasizing recreation sites, trails, and access within the corridor. Existing sites could be improved or expanded and new facilities provided to meet existing and anticipated demands with a higher level of development as long as they would protect river attributes.
BOUNDARIES (See Maps III-1 to III-3)	Continue with current interim boundaries for entire river (1/4 mile each side of river). River corridor would be 3968 acres, or 320 acres/mile average. Approximately 186 acres of private lands within corridor. (See map III-1)	Corridor widened in some places and narrowed in others in the recreational and lower portion of the wild segment to include most of the Old Maid mudflow deposits within the National Forest boundary as well as to make it easier to identify on the ground. Mt Hood Wilderness boundary would be southern corridor boundary for lower 2 miles. In the wilderness, the upper portion of corridor would be 1/8 mile each side of river. River corridor would be 3474 acres, or 280 acres/mile average. Approximately 192 acres of private land within corridor. (See map III-2)	Same as alternative B	Similar to alternative B except would use narrower boundary in lower end of recreational segment and would not use Mt. Hood wilderness boundary as corridor boundary. In wilderness, the upper portion of corridor would be 1/8 mile each side of river. River corridor would be 3114 acres, or 251 acres/mile average. Approximately 192 acres of private land within river corridor. (See map III-3)	Same as alternative D.

SANDY WILD AND SCENIC RIVER
OLD MAID FLATS SPECIAL INTEREST AREA
MANAGEMENT ALTERNATIVES

The actions listed in the table below are actions which are likely to be implemented if the alternative is selected. Additional site specific analysis to assess environmental effects will be needed prior to implementing any project. Dependent upon that analysis, the project may not be implemented or modified to mitigate unacceptable impacts that may result from project implementation. *Project implementation is based on available funding.*

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
KEY PLANNING THEMES	**GOAL:** Continue with present management direction and manage under existing laws and authorities. **INTENT:** Continue current management. No additional federal funding or management would occur within the corridor. Existing jurisdictions and authorities would remain in place. Current Forest Plan direction would apply on Forest Service Lands and State and County laws and regulations would apply on private lands.	**GOAL:** Minimize the influence of human activities within the river corridor and allow natural processes to operate to the maximum extent possible. **INTENT:** This alternative would emphasize natural values within the corridor, providing public use opportunities only when they are not in conflict with those values. Focus of management would to be enhance habitat for wild fish stocks and wildlife, unique botanical characteristics and maximizing the hydrologic functioning of the ecosystem.	**GOAL:** Enhance natural attributes of the river and provide for those public use activities that focus on those attributes. **INTENT:** This alternative would allow natural processes to operate in the river corridor. Focus of management would be to enhance geologic, fisheries, botanic, and other river attributes while providing for public use opportunities relating to these natural attributes of the river.	**GOAL:** Similar to alternative C except would allow additional public use activities that may not focus on natural attributes of the river but would still provide a high level of protection to the river values. **INTENT:** This alternative would provide numerous public use opportunities in the river corridor in addition to allowing natural processes to operate in the river corridor. Not all public use opportunities provided would have to focus on the natural attributes of the river.	**GOAL:** Emphasize public use potential and opportunities in the river corridor while still providing protection of river values. **INTENT:** Seek to enhance public use opportunities within the river corridor. This would include emphasizing recreation sites, trails, and access within the corridor. Existing sites could be improved or expanded and new facilities provided to meet existing and anticipated demands with a higher level of development as long as they would protect river attributes.
BOUNDARIES (See Maps III-1 to III-3)	Continue with current interim boundaries for entire river (1/4 mile each side of river). River corridor would be 3968 acres, or 320 acres/mile average. Approximately 186 acres of private lands within corridor. (See map III-1)	Corridor widened in some places and narrowed in others in the recreational and lower portion of the wild segment to include most of the Old Maid mudflow deposits within the National Forest boundary as well as to make it easier to identify on the ground. Mt Hood Wilderness boundary would be southern corridor boundary for lower 2 miles. In the wilderness, the upper portion of corridor would be 1/8 mile each side of river. River corridor would be 3474 acres, or 280 acres/mile average. Approximately 192 acres of private land within corridor. (See map III-2)	Same as alternative B	Similar to alternative B except would use narrower boundary in lower end of recreational segment and would not use Mt. Hood wilderness boundary as corridor boundary. In wilderness, the upper portion of corridor would be 1/8 mile each side of river. River corridor would be 3114 acres, or 251 acres/mile average. Approximately 192 acres of private land within river corridor. (See map III-3)	Same as alternative D.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Old Maid Flats Special Interest Area (SIA) Vegetative Management Guidelines	Vegetation management actions can be undertaken if meets Forest Plan Standards and Guidelines (S&G's). Area would not be designated a botanical SIA but would remain a geologic SIA.	Allow natural successional changes to plant communities to take place to the maximum extent. Do not undertake management actions with the specific objective or retaining earlier plant community successional stages in the corridor. Area would be designated a botanical SIA as well as a geologic SIA.	Allow vegetative manipulation to set back natural successional processes to only to implement other approved resource management purposes such as wildlife and fish habitat improvement projects. Area would be designated a botanical SIA as well as a geologic SIA.	Possible vegetative manipulation may be undertaken on a larger scale to retain specific early successional plant communities. This can be done by controlling stocking levels and species composition to keep areas of mushrooms, mosses, etc. Area would not be designated a botanical SIA but would remain a geologic SIA. Botanical values will still be protected as an outstandingly remarkable value of the river.	Same as alternative D but allow a greater extent of vegetative manipulation to retain early successional plant communities. Area would not be designated a botanical SIA but would remain a geologic SIA. Botanical values will still be protected as an outstandingly remarkable value of the river.
PUBLIC USE Recreation Experience and Opportunities Summary	Continue current level or type of recreational services, facilities and management. New facilities developed only if they meet current Forest Plan Standards and Guidelines. Continue current management for recreation use and maintain existing levels of patrols on USFS lands. No change to current Recreation Opportunity Spectrum (ROS) for the river corridor.	Reduce the current development level of recreational services facilities and management in the corridor and seek to meet elsewhere on the Forest. Closure of some user-made trails and dispersed sites in the corridor. Manage remaining facilities to protect/enhance natural river attributes. ROS to remain Roaded Natural but to move towards Semi-Primitive Motorized in Recreational Segment. No change in Wild segment.	Focus management of recreational services, facilities towards protection and enhancement of natural attributes. New trails and facilities may be developed as long as they focus on protection/enhancement of natural attributes. No change to current ROS classes.	Similar to Alternative C except it allows for additional recreation facilities to be developed and existing facilities to be improved to meet increasing demand, as long as the development/improvement protects river values. Additions/ Improvements would still focus towards protection/enhancement of natural attributes where possible. No change to current ROS classes.	Emphasize public use opportunities throughout the river corridor as long as other river values are protected. ROS class would remain Roaded Natural in recreational segment but some areas in corridor would move towards rural, or more developed, end of ROS spectrum. Developed sites, trails, and other facilities would be designed and managed to a higher development scale than other alternatives. ROS would remain Semi-Primitive non-motorized in wild segment.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
RECREATION Facilities	Facilities may be developed as long as they protect or enhance river values, protect free flowing character of river, and meet current Forest Plan S&G's	No new developed campgrounds in the river corridor. Improve Riley and McNeil campgrounds to correct poorly defined sites, localized erosion, noxious weeds, etc., and to provide necessary services. Construct entrance facility near junction of Forest Roads 1825 and 1828 to provide information on regulations in the river corridor and how to protect natural attributes. Necessary permits such as wilderness, mushroom, etc., could also be issued at facility. Do not modify existing campgrounds to meet the needs of recreational vehicles (RV). Do not alter existing RV campsites at Lost Creek. Improve parking area and provide sanitation facilities at lower Ramona Falls trailhead. Evaluate feasibility of setting up a reservation system for Riley CG to give priority usage to equestrians at Riley.	No new developed single family campgrounds in corridor. Group campground may be constructed if it can meet objective of focusing on natural attributes of area. Riley and McNeil campgrounds to be improved as in alternative B but design standards would also meet the needs of smaller RV's. Construct entrance facility near junction of Forest Roads 1825 and 1828 to provide information on regulations in the river corridor and how to enjoy river values as well as issue any necessary permits. Evaluate developing barrier free fishing platform on tributaries or mainstem of river. Improve parking area and provide sanitation facilities at the lower Ramona Falls trailhead. Where appropriate, develop small scale interpretive facilities to interpret river values. Evaluate feasibility of a reservation system for Riley CG as in Alternative B.	Same as alternative C except: Allow a group campground even if it did not have focus on natural attributes in area. Allow for parking and sanitation facilities at both the upper and lower Ramona Falls trailheads. Final recommendations on trailhead facilities to be determined through the Mt. Hood Wilderness Plan implementation efforts.	Improve existing facilities to provide higher development level recreational experience and correct resource problems. Facilities to be designed to accommodate larger RV's. Develop a group campground in the river corridor. Evaluate site on Clear Fork of Sandy for new campground and develop if suitable and demand shows need for new facility. Entrance facility may be built if it would meet the needs of public for providing information and enhancing enjoyment of the river corridor. Develop barrier free fishing facilities on tributaries or mainstem. Allow for parking and sanitation facilities at both the upper and lower Ramona Falls trailheads. Final recommendations on trailhead facilities to be determined through the Mt. Hood Wilderness Plan implementation efforts. Evaluate feasibility of a reservation system for Riley CG as in alternative B.
RECREATION Trails and Dispersed	Reconstruct existing trails when necessary and when funding allows. Do not close any existing trails or trailheads. Hiking and equestrian use to continue as currently permitted. Do not develop new public access points along mainstem or tributaries. Bicycles permitted on designated trails only.	Reconstruct and realign existing trails as necessary. Hiking and equestrian use to continue as currently permitted. Provide interpretive signing to inform visitors of importance of river attributes and their protection. Bicycles permitted only on system roads. No trails designated for bicycle use.	Same as alternative B except: New interpretive trails and trailhead facilities may be developed that focus on river values.	Reconstruct and realign existing trails as necessary. Provide interpretive signing to inform visitors of river values and its proper use and protection. Bicycles permitted on designated trails and all open roads.	Reconstruct and realign existing trails as necessary. Develop additional loop trails on north side of river. Provide a high level of interpretive signing where suitable to inform and educate visitors and provide for their enjoyment.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
RECREATION **Trails and Dispersed (cont)**	Construct new trails or trailhead facilities only where river values are protected or enhanced or existing Forest Plan S&G's can be met. Close and rehabilitate existing dispersed camping sites along river in riparian areas where resource damage is present. Develop sno-park to meet the needs of winter recreationists. *If possible, incorporate sno-park facilities with other year round uses.* Road 1825 closed at Sandy River bridge to motorized vehicle use during winter months to protect snow for nordic skiing. Allow Off Highway Vehicle (OHV) use in the river corridor outside Old Maid Flats Special *Interest Area only if suitable* locations may be found and trails suitable for use could be designated. OHV use not permitted in Special Interest Area as defined in Forest Plan. Evaluate closure of dispersed shooting location and if possible, try to provide alternate location.	Close road to and upper Ramona Falls trailhead to vehicular access, rehabilitate, and develop lower trailhead as the main trailhead *with sanitation facilities. Remove* existing trail bridge at upper trailhead and do not replace. No new trails or trailhead facilities other than at the lower Ramona Falls trailhead. Reroute Pacific Crest Trail away from Sandy River Guard Station and provide natural screening to reduce impacts to Guard Station. In corridor, no trails designated for mountain bicycle use. Use limited to system roads. Evaluate implementation of a permit/reservation system for use of the Sandy River Guard Station. Close all dispersed camping sites *within the riparian zone of the* river and harden other sites to reduce further resource impacts. Allow development of sno-park to meet the needs of winter recreationists as long as natural attributes are protected. Road *1825* bridge closed in winter as in alternative A. OHV use prohibited in corridor. Direct users to *alternate locations* on Forest. Close dispersed shooting location, rehabilitate site and direct users to alternate location.	Identify and evaluate dispersed camping sites and access points and harden acceptable locations to minimize user impacts at heavily *impacted locations along the* river. Close and rehabilitate locations where resource damage is causing substantial impacts within the riparian zone. Evaluate the closure of the lower Ramona Falls trailhead if a suitable alternative can be developed on the north side of the river. If no suitable alternative can be developed, allow construction of a trailbridge *across the river that meets visual* objectives and protects the free-flowing character of the river.	Allow for road to upper Ramona Falls trailhead to remain open, correcting drainage problems but not maintaining for regular passenger vehicles. Allow for sanitation and parking at both trailheads if consistent with wilderness management objectives. Replace existing trailbridge *with a* bridge that better meets visual objectives and protects the free-flowing character of river. Reroute Pacific Crest Trail away from Sandy River Guard Station and provide natural screening to reduce impacts to Guard Station. Develop additional trails to provide for additional hiking, equestrian, and biking opportunities. Bicycles allowed only on roads and designated trails. Identify and evaluate dispersed camping sites and access points and harden acceptable locations to minimize impacts at heavily used locations along the river. Close and *rehabilitate locations where resource* damage is causing substantial impacts within the riparian zone. Develop sno-park to meet needs of winter recreationists. incorporating with other year round uses. Road 1825 bridge closed in winter *as in alternative A.* Evaluate the potential for OHV use in the river corridor and allow only if suitable locations can be found. If suitable locations are not found in corridor, direct users to alternate locations on Forest. Close dispersed shooting location, as in alternative B.	Improve road to upper Ramona Falls trailhead and provide sanitation facilities for both upper and lower trailheads, if consistent with wilderness management objectives. Provide new bridges at both trailheads that meet visual objectives and *protects the free-flowing* character of the river. Reroute Pacific Crest Trail away from Sandy River Guard Station and provide natural screening to reduce impacts to Guard Station. Develop additional trails and trailhead facilities to provide additional hiking, equestrian, and biking opportunities. Identify and harden most dispersed camping sites to minimize future impacts. Close and rehabilitate locations with significant resource damage but provide additional sites elsewhere in the corridor. Develop sno-park to meet the *needs of winter recreationists,* incorporating year round uses where possible. Road 1825 open to winter motorized vehicle use. Evaluate the potential for OHV use in the river corridor as in alternative D. Close dispersed shooting location, as in alternative B.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
RECREATION Interpretive Facilities, Services, and Public Information	Create new informational materials or signing as opportunity allows. Interpretive material would not have to be focused on river attributes. Cascade Stream Watch's Three Creeks facility would be fully compatible as currently proposed.	Cascade Stream Watch's Three Creeks facility compatible only if developed to a smaller level of development than currently proposed. Allow no other new developed interpretive sites in corridor. Develop comprehensive public information/interpretation/ education plan for river corridor. Plan would outline locations and types of interpretive efforts to be undertaken in the river corridor. Focus interpretive efforts only on importance of river attributes and how to protect them. Efforts would be primarily through brochures or signing.	Same as alternative B except: Cascade Stream Watch's Three Creeks facility would be fully compatible as in Alternative A. Additional interpretive trails and smaller facilities (ie. kiosks and more rustic interpretive facilities) to provide interpretive information about the river's values would be developed in the corridor. Interpretive efforts would be expanded to provide additional information on enjoyment of river attributes by visitors in the river corridor.	Same as alternative C	Similar to alternatives C and D with an even greater emphasis on interpreting the natural features in the river corridor to provide for visitor enjoyment. Interpretive facilities may be fairly complex and of a high development scale. Interpretation may focus on values outside of the river corridor.
WILDERNESS	All management actions in wilderness must meet current and future direction for the wilderness. Permits to restrict users in wilderness will be tied to wilderness management goals and direction. Use levels in wilderness to be controlled through Mt. Hood Wilderness management direction in order to provide continuity of actions throughout the wilderness area.	Same as alternative A	Same as alternative A	Same as alternative A	Same as alternative A

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
ACCESS AND TRAVEL MANAGEMENT	Main system roads to remain open with no changes in maintenance levels. Some system and non-system roads to be closed if activities on roads are resulting in resource damage. Road 1825 to be reconstructed to Lost Creek Campground. Allow reconstruction of road 1825 bridge across Sandy River to meet river or resource protection objectives, or public safety and to accommodate higher levels of public use. Retain current winter motorized vehicle restriction closing road 1825 to winter motorized use.	Close road to upper Ramona Falls Trailhead and rehabilitate. No new road access to be developed in river corridor for timber harvest, even for harvest outside of corridor. Allow reconstruction of road 1825 bridge across Sandy River to meet river or resource protection objectives, or public safety. Close all non-system roads and possibly shorter system roads off of Road 1825 if not needed for future management activities. Retain current winter motorized vehicle restriction closing road 1825 to winter motorized use.	Same as alternative B but also: Allow reconstruction of Road 1825 bridge across Sandy River to accommodate higher levels of public use.	Retain road to upper Ramona Falls trailhead and correct resource problems. Maintain road for high clearance vehicles only. Allow limited construction of roads in corridor for timber harvest if necessary for access. Roads must meet VQO standards. Reconstruct Road 1825 bridge across Sandy River to accommodate higher levels of public use, resource protection, and public safety. Evaluate system and non-system roads and close if not needed for management of the river corridor. Retain current winter motorized vehicle restriction closing road 1825 to winter motorized use.	Same as alternative D except: Improve road to upper Ramona Falls trailhead, correcting resource problems and maintain for passenger car use. Road 1825 to be open for winter motorized vehicle use (snowmobile, etc.)
GEOLOGY/ HYDROLOGY	Provide no additional water quality/quantity monitoring beyond occasional testing done by Forest or Oregon Department of Environmental Quality. Projects within the river may be implemented only after Section 7 analysis is completed on all projects within the river itself to insure free-flowing character of the river is protected.	Develop a comprehensive water quality/quantity monitoring program to develop baseline data information. Any fish/wildlife structures placed in river must mimic natural structures, be allowed to move naturally and protect the free-flowing character of the river. Provide a low level of interpretive opportunities to inform the public about geologic/hydrologic values in the river corridor and how to best protect those attributes. Projects within the river may be implemented only after Section 7 analysis is completed on all projects within the river itself to insure free-flowing character of the river is protected.	Same as alternative B except: There would be a higher level of interpretation about geologic/hydrologic values in the corridor. Non-impacting research and educational study would be encouraged in appropriate locations.	Same as alternative C except: Some fish/wildlife structures placed in the river may be anchored as long as they protect the free-flowing character of the river based on Section 7 analysis of impacts on free-flow. Structures must still mimic natural structures in appearance.	Same as alternative D except: There would be an even higher level of interpretation about geologic/hydrologic values in the corridor as well as in other locations around the Forest/Region.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
FISHERIES	Continue improvement of anadromous fish habitat on tributaries and mainstem of river and in wetlands on federal lands, emphasizing wild stock production. Work with Oregon Department of Fish and Wildlife (ODFW) in development of Sandy River Subbasin Fish Management plan. Monitor fish habitat and populations in accordance with existing state and federal management plans.	Same as alternative A but also: Work cooperatively with (ODFW), other agencies, organizations, and landowners to improve anadromous habitat on the river and its tributaries. Habitat restoration/enhancement would emphasize wild stocks and be aimed at restoring the historical component of Large Woody Debris (LWD) and other natural structures (boulders). Structures must not be anchored. Minimize public access to river as opportunities arise to reduce fishing pressures on populations.	Same as alternative B except: Identify key areas for access to the river, improving those access points and minimizing other access points.	Same as alternative C except: Some structures placed in the river and tributaries for habitat restoration/enhancement may be anchored as long as they protect the free flowing character of the river based on Section 7 analysis and minimize impacts to recreationists floating the river through design and adequate signing. Additional river access points may be identified and developed and/or improved as long as they protect river attributes.	Same as alternative D except: Greater emphasis would be placed on enhancing the existing sport fishery in the river and tributaries while also managing for wild stocks as well. Create additional access points to the river to provide additional sport fishery opportunities.
WILDLIFE	Monitor and evaluate public use activities and impacts to wildlife as identified in the Forest Plan, identifying mitigation measures and corrective actions necessary. Consult with U.S. Fish and Wildlife Service before proceeding with any management actions potentially affecting TE&S habitat or populations. Work cooperatively with ODFW to determine habitat enhancement needs in the corridor to meet both Forest Service and ODFW objectives.	Same as alternative A but also: Survey and evaluate cliff sites along the river corridor for potential peregrine falcon hacking sites. Survey for presence of goshawk and undertake habitat enhancement if needed. Survey and evaluate area in corridor for presence of wolverine and habitat effectiveness, particularly in wilderness. Provide interpretation of wildlife in the corridor, particularly focusing on how to protect the wildlife in the corridor. Limit recreational use in areas where human presence due to trail locations, etc. may create negative impacts to TE&S species or species of concern. Habitat enhancement projects permitted for riparian dependent species only in river corridor.	Same as alternative B	Same as alternative B but provide a higher level of interpretation of wildlife in the corridor, their importance and how to protect them. Habitat enhancement projects permitted for other than riparian dependent species such as big game.	Same as alterative D

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
BOTANY	Evaluate proposed projects for impacts to sensitive plants and recommend mitigation measures. Maintain monitoring and inventory as directed by Forest Plan.	Same as alternative A but also: Monitor plant communities in the Alpine/subalpine zone and around high use recreation areas and sites for evidence of undesirable impacts and undertake corrective measures as necessary. Identify locations and sources of noxious weeds and non-native plats and undertake actions to reduce numbers, and minimize spread. Seek partnership opportunities with universities and other organizations to develop a systematic botanical survey of the entire river corridor. Develop interpretive pamphlets with instruction on how to protect botanical values in the corridor. Monitor impacts of activities in corridor on plant communities at a higher level to better identify problems and allow early correction/mitigation of problems.	Same as alternative B but with a higher level of interpretation of botanical values.	Same as alternative C	Same as alternative C but with a higher level of interpretation for visitor enjoyment and information on how to protect botanical values because of higher visitor numbers and higher potential for impacts.
MINERALS, MINING, AND GEOTHERMAL	Mineral development shall not be permitted within 1/4 mile of wild segment river banks. Locatable minerals recommended for mineral withdrawal within corridor. Leasable mineral (e.g. geothermal) exploration allowed. Permits to include a "No surface occupancy stipulation for portions potentially affecting river resource values.	Same as alternative A except: Leasable mineral permits would not be permitted.	Same as alternative B	Same as alternative A	Same as alternative A

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
TIMBER HARVEST AND OTHER FOREST PRODUCTS	Regulated timber harvest with associated timber harvest target allowed on National Forest lands in river corridor outside Old Maid Flats Special Interest area. Harvest activities must protect or enhance river values. Timber harvest activities may occur on remaining National Forest lands only if it protects, enhances, or restore river values and meets current VQO prescribed for the river. On private lands within and adjacent to the corridor, applicable state and county regulations apply. No commercial mushroom permits allowed. Personal use firewood, mushroom, moss collection, and other miscellaneous forest products collection allowed.	Same as alternative A except: No regulated timber harvest permitted in the river corridor. Harvest activities could occur only to protect, enhance, or restore river values and forest health and meet current VQO prescribed for the river. No personal use mushroom permits allowed. No personal use firewood, moss and other miscellaneous forest product collection allowed in corridor.	Same as alternative B except: Limited personal use mushroom harvest permitted. Permits must have instruction on how to properly harvest mushrooms. Monitor impacts to mushrooms from harvest and if community is being adversely impacted, take corrective action, including, if necessary, elimination of personal use mushroom harvest in the corridor.	Same as alternative A but also: Permits for personal use firewood and other miscellaneous forest products allowed if firewood and other products are available and river values are protected or enhanced. Personal use mushroom permits would be allowed. Permits to have instructions on how to properly harvest mushrooms. Monitor impacts to mushrooms from harvest and if community is being adversely impacted, take corrective action, including, if necessary, elimination of personal use mushroom harvest in the corridor.	Same as alternative D
SCENIC QUALITY	No change to Visual Quality Objective (VQO) in river corridor or viewshed. Current corridor VQO's are preservation in wild segment and partial retention for the recreational segment. Viewshed VQO's outside corridor are retention middleground next to the wild segment and partial retention middleground adjacent to the recreational segment. Current Recreation Opportunity Spectrum (ROS) of Roaded Natural in recreational segment and semi-primitive non-motorized in wild segment will continue. Rehabilitate impacted areas not meeting VQO in corridor including shooting site.	No change to VQO in river corridor or viewshed in upper river corridor. VQO in lower river corridor and viewshed retention foreground and middleground. ROS to remain roaded natural in lower corridor but to move towards semi-primitive end of spectrum. Rehabilitate impacted areas not meeting VQO in corridor. This would include rehabilitating shooting site. Acquire scenic easements on private lands from willing sellers within the corridor if considered important for maintaining scenic quality.	Same as alternative A but also: Acquire scenic easements on private lands from willing sellers within the corridor if considered important for maintaining scenic quality. Develop viewpoints in corridor if objective of focusing attention on natural attributes of river corridor is met.	Same as alternative C except: Some additional viewpoints may be developed in the corridor to provide additional views of Mt Hood, the river, and other natural attributes in the area.	Same as alternative D but also: ROS to remain Roaded Natural in lower corridor but will move more towards the Rural end of the spectrum. Riley and McNeil Campgrounds to be upgraded to improve aesthetics of campgrounds and where possible, to improve views of Mt. Hood and other natural attributes in the area. Enhance scenic quality by creating more variety along foregrounds of selected travel routes, (ie. create small scale openings; planting of native shrubs with fall color or spring bloom, etc.).

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
CULTURAL RESOURCES	Complete cultural resource *inventories and assess effects* of any proposed actions or projects that may potentially affect cultural resources and implement,mitigation measures as per Forest Plan and other legal direction. Evaluate cultural resources that may be affected by project activities and determine their eligibility to the National Register. Protect cultural resources considered eligible for the National Register of Historic places or conserve values. *Monitor eligible or unevaluated* properties as per Forest Plan direction. Evaluate cultural significance of Sandy River Guard Station in conjunction with other shelters along Timberline Trail.	Same as alternative A but also: Move Pacific Crest trail away from the Upper Sandy River Guard Station and provide visual screening for the structure to reduce use and associated impacts. Evaluate, and if necessary, implement a permit /reservation system for use of the Sandy River Guard Station to prevent overuse.	Same as alternative B	Same as alternative B	Same as alternative B
PRIVATE LANDS	Continue current state and county land use regulations. *Maintain present levels of* enforcement and development review procedures.	Same as Alternative A but also: *Develop a river landowner's* stewardship handbook outlining conservation and enhancement techniques and guidelines, Wild and Scenic River information, local/county/state ordinances and regulations, and sources for information and technical assistance. Work with Clackamas County during any updates to current zoning regulations.	Same as alternative B	Same as alternative B	Same as alternative B

Table 9. Summary of Outputs, Effects and Costs for the Upper Sandy River Management Plan

Indicator	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Acres within boundary	3968 ac	3474 ac	3474 ac	3114 ac	3114 ac
Average acres/mile	320	280	280	251	251
Acres private land in corridor	186	192	192	192	192
Recreation					
Presence of recreation facilities	Low to moderate	Low	Low to moderate	Moderate	Moderate
Developed sites	No expansion or new developed sites	No expansion or new developed sites	No expansion existing sites	Slight expansion of 2 existing campgrounds	Expand 2 campgrounds
			1 group campground (if needed)	1 new group campground	1 new group campground
					1 new single family campground
Cascade Streamwatch 3 Creeks site	Develop as proposed	Develop on smaller scale	Develop as proposed	Develop as proposed	Develop as proposed
Interpretive facilities public information	Moderate	Moderate	Moderate to high	Moderate to high	High
Public access to river					
• Segment 1	Low	Low	Low	Low	Low
• Segment 2	High	Low to moderate	Moderate	Moderate to high	High
Dispersed camping opportunities on USFS land	Moderate to high	Low	Low	Moderate	Moderate
Trails/Trailheads	1 new snow-park	1 new sno-park	1 new sno-park	1 new sno-park	1 new sno-park
		Close upper Ramona Falls trailhead	Close upper Ramona Falls trailhead	Keep upper Ramona Falls trailhead open - no road improvement	Improve access road and upper Ramona Falls trailhead
		Improve lower Ramona Falls trailhead	Improve lower Ramona Falls trailhead or relocate	Improve lower Ramona Falls trailhead	Improve lower Ramona Falls trailhead
	Replace pedestrian bridge at upper trailhead	No pedestrian bridge across Sandy R.	Replace pedestrian bridge across Sandy R.	Replace pedestrian bridge across Sandy R.	Replace pedestrian bridge across Sandy R.
				2-3 miles new trail	1 new pedestrian bridge
					4-5 miles new trail, 1 new trailhead

Indicator	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Wilderness					
Potential to impact wilderness character [1]	Moderate	Low	Low to moderate	Moderate	Moderate to high
Access and Travel Management					
Road obliteration Cost	3.2 mi $6,000	6.9 mi $20,000	6.9 mi $20,000	5.5 mi $15,000	5.5 mi $15,000
Road and bridge reconstruction Cost	3.2 mi $250,000	3.2 mi $350,000	3.2 mi $400,000	4.2 mi $500,000	4.2 mi $520,000
New road construction Cost	0.5 mi $30,000	0.5 mi $30,000	0.5 mi $30,000	0.6 mi $50,000	0.6 mi $50,000
Mining/Mineral Collection					
Locatable minerals					
• Segment 1	Withdrawn from mineral entry	Withdrawn from mineral entry	Withdrawn from mineral entry	Withdrawn from mineral entry	Withdrawn from mineral entry
• Segment 2	Recommended for withdrawal	Recommended for withdrawal	Recommended for withdrawal	Recommended for withdrawal	Recommended for withdrawal
Leasable minerals (e.g. geothermal)					
• Segment 1	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted
• Segment 2	Permitted	Not permitted	Not permitted	Permitted	Permitted
Old Maid Flat SIA					
Protection of geologic features	High	High	High	High	High
Potential for natural plant succession to occur	Moderate to high	High	High	Moderate to high	Moderate
Potential to retain claracteristics of early plant community successional stages	Moderate	Low	Low	Moderate	Moderate to high
Education/Interpretive Opportunities	Slight increase	Slight increase	Increase	Increase	Increase

[1] *Impacts to Wilderness Character to be mitigated through actions such as use restrictions to be implemented as part of Mt. Hood Wilderness Management.*

Indicator	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Hydrology					
Water quality	Stable or slight decline	Improvement	Stable to improvement	Stable	Slight decline
Protection of free-flow character	High	High	High	High	High
Consumptive water use	Stable	Stable	Stable to slight increase	Slight increase	Slight to moderate increase
Fisheries					
Habitat quality					
• Segment 1	Low	Low	Low	Low	Low
• Segment 2	Low w/moderate increase	Low w/moderate increase	Low w/moderate increase	Low w/moderate increase	Low w/moderate increase
Wild fish populations [2]					
• Segment 1	Low - no change through time	Low - no change through time	Low - no change through time	Low - no change through time	Low - no change through time
• Segment 2	Slight decrease	Moderate to high increase	Low to moderate increase	Slight increase to slight decrease	Slight to moderate decrease
Consumptive fish opportunities [2]					
• Segment 1	Low	Low	Low	Low	Low
• Segment 2	Moderate	Low	Low to moderate	Moderate	Moderate to high
Wildlife					
Big game forage cover ratio	Moderate increase	Low increase	Low increase	Moderate to high increase	Moderate to high increase
TE&S wildlife species habitat	Stable	Slight increase	Slight increase	Stable	Stable
Management indicator species habitat quality	Slight decrease	Stable to slight increase	Stable to slight increase	Slight decrease	Slight decrease
Neotropical birds habitat quality	Slight increase	Moderate decrease	Slight decrease	Slight increase	Moderate increase
Overall habitat diversity	Moderate	Low	Low	Moderate	Moderate to high

[2] *Depends on ODFW population management strategies in addition to improvements to fish habitat through enhancement/restoration projects, conducted by the forest Service.*

Indicator	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Botanical/Ecological Values					
Biodiversity					
• Maintenance	Moderate potential	High potential	High potential	High potential	High potential
• Human influences	Moderate to high	Low to moderate	Moderate to high	High	High
TE&S plant habitat quality	Stable	Increase	Stable	Stable	Stable
General vegetation - quality and cover					
• Segment 1	Stable	Stable	Stable	Stable	Stable
• Segment 2	Slight decline	Improvement	Improvement	Stable to slight decline	Stable to slight decline
Noxious weeds: risk of introduction and spread	Moderate to high	Moderate	Moderate	Moderate to high	Moderate to high
Monitoring levels	Low	Moderate to high	Moderate to high	Moderate to high	Moderate to high
Timber and Other Forest Products					
Change in harvest per decade	0	-990 MBF/decade (minus)	-990 MBF/decade (minus)	+60 MBF/decade (plus)	+60 MBF/decade (plus)
Change in money to Clackamas County	$0	-$124,000/decade (minus)	-$124,000/decade (minus)	+$8,000/decade (plus)	+$8,000/decade (plus)
Availability of other forest products	Low to moderate	None	Very low	Low to moderate	Moderate
Scenic Resources					
Segment 1	Naturally Appearing	Naturally Appearing	Naturally Appearing	Naturally Appearing	Naturally Appearing
Segment 2	Slightly Altered to Moderately Altered	Naturally Appearing to Slightly Altered	Slightly Altered to Moderately Altered	Slightly Altered to Moderately Altered	Slightly Altered to Moderately Altered
Cultural and Heritage Resources					
Protection and/or conservation of heritage resource values	Moderate to high	Very high	High	High	High

Summary of Costs

Indicator	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Annual Administration Costs	$ 5,000/year	$ 10,000	$ 10,000	$ 12,000	$ 15,000
Developed Recreation Facilities	$ 40,000	$247,000	$297,000	$420,000	$670,000
Trails/Trailheads	$ 40,000	$ 75,000	$145,000	$225,000	$315,000
Road Construction/ Reconstruction/ Obliteration	$286,000	$400,000	$450,000	$565,000	$585,000
Dispersed Site Improvement/Closure	$ 5,000	$ 10,000	$ 10,000	$ 12,000	$ 15,000
Fish/Wildlife Habitat Improvement	$ 28,000	$25,000	$ 25,000	$ 30,000	$ 30,000
Resource Monitoring	$ 7,000	$ 15,000	$ 16,000	$ 17,000	$ 18,500

Chapter 4

Effects of Implementation

Introduction

This chapter forms the scientific and analytic basis for comparing alternatives. The effects that each alternative would have, if implemented, are analyzed and displayed. Short term, long term, direct, indirect, and cumulative effects are considered. (Required disclosures on compliance with national laws and executive orders are at the end of the chapter).

Recreation/Public Use

Recreation Experience and Facilities

Alternative A

Overall, recreation use in the river corridor is expected to increase as the population of the Portland metropolitan area increases in the future. There would be little change to current management emphasis or management presence along the river. A wide variety of recreational opportunities would still be available to the public, primarily of a dispersed recreational nature, except at the existing developed campgrounds in the corridor. There would be no change to the current Recreation Opportunity Spectrum (ROS) classes of Roaded Natural in the recreational river segment and semi-primitive non-motorized in the wild river segment.

Some improvements may be made to the existing developed campgrounds such as improving the water system at Mc Neil to meet current drinking water quality standards or to improve sites to meet the needs of recreational vehicles (RV's). It is unlikely that existing campgrounds would be expanded or any additional developed ones would be constructed though they could be under current management direction as long as river values were protected and/or enhanced.

Alternative B

Recreation use in the corridor is expected to increase some in the corridor but less than in Alternative A since a large number of dispersed sites would be eliminated. Developed campgrounds would not be improved significantly above what currently exists, except to correct resource problems. Efforts would be undertaken to minimize emphasizing recreational activities in the area and recreationists would be directed to other areas of the Forest. A variety of recreational opportunities such as hiking and dispersed camping would still be available but they would be more primitive in character than in other alternatives. Overall ROS classes would remain the same but would be at the more primitive end of the spectrum classes.

Mc Neil campground's water system could still be improved to meet current drinking water standards. No campgrounds would be expanded in this alternative. Implementing a reservation system, if possible, to give priority usage to equestrians at Riley Horse Camp will better insure that these individuals will be assured of the availability of camping sites that meet equestrians needs since equestrian campgrounds are quite limited across the Forest.

Alternative C

Similar to Alternative B but with slightly higher use levels and recreation opportunities, such as improvement of some camping sites to accommodate smaller RV's in McNeil and Riley Campgrounds and additional interpretive opportunities in the corridor. A group campground could be developed only if its management would focus on emphasizing the natural attributes of the area. There would be no change to the ROS class for the corridor.

Alternative D

Similar to Alternative C but providing additional recreation opportunities such as mountain bike trails and providing for a group campground in the corridor. Estimated use levels would be similar to Alternative A and with the possibility of being slightly higher with the development of the group campground and additional trails in the area.

Alternative E

Of all the alternatives, this alternative will provide the highest level of recreation opportunities in the river corridor. Use levels are also expected to be highest in this alternative because of the increased opportunities. In addition to the group campground being constructed, if need for an additional single family campground in the corridor is shown in the future, an additional campground may be constructed along the lower portion of the Clear Fork of the Sandy. While ROS classes would not change, the recreation experience at the campgrounds and interpretive facilities would be at the upper, or more urban end, of the Roaded Natural spectrum. As in Alternatives B - D, having a special reservation system for Riley Horse Camp and Lost Creek Campground would better meet the needs of equestrians and persons with disabilities.

Trails and Dispersed

Alternative A

There would be a slight reduction of dispersed camping opportunities as some sites would be closed where impacts to riparian areas are substantial or where littering is a major problem. It is unlikely that more dispersed camping areas would be opened to the public though some additional areas may be developed over time as use in the river corridor increases as the number of recreationists from the Portland metropolitan area increases.

Use along the trails in the corridor would likely continue at or above current levels with the increasing population from the Portland area. The area will continue to be important for both equestrians and hikers alike. Along the Ramona Falls loop trail, use will continue to remain high, especially on summer weekends, though use limitations may be imposed through wilderness management actions and use permits may eventually be required in order to protect wilderness values. Access to the Ramona Falls area will continue to be relatively easy since the road to the upper trailhead will remain open, at least to high clearance vehicles. There are limited opportunities for additional trail development and as long as river values are protected, and they could be developed to meet the needs of hikers and equestrians, and potentially even new mountain biking opportunities, the demand for which is increasing.

Alternative B

There would be a significant reduction in the number of dispersed camping opportunities throughout the corridor since many sites would be closed as well as a number of roads that access many of the sites. Those sites that would remain would be hardened, or designed to better handle impacts from camping use, and would cause less resource impacts than they currently do. The demand for these remaining sites would be great and it is possible that recreationists would develop additional sites in the corridor unless a closure to dispersed camping is implemented in the area.

No new trails would be developed in this alternative and the road to the upper Ramona Falls Trailhead would be closed making the hike to Ramona Falls 2 miles longer for the round trip. Since the hiker bridge across the Sandy River would be removed and not replaced, it would be much more difficult for hikers to hike to Ramona Falls, especially in times of higher water flows when it would not be safe to ford the river. Development of toilet facilities at the lower trailhead should keep sanitation problems from developing in this area from recreationists going to the bathroom in the forest area around the trailhead.

No additional mountain biking opportunities would be developed and mountain bikes would be limited to use only on Forest Service system roads.

Alternative C

Effects as it relates to dispersed camping sites would be similar to Alternative B.

The only new trails that would be developed in the corridor would be those associated with interpretation of river values. The upper Ramona Falls trailhead would be closed as in Alternative B making the trip to Ramona Falls approximately 2 miles longer for the round trip. Use of the trail would be higher than in Alternative B since the pedestrian bridge across the Sandy River would be replaced, allowing hikers who did not want to or were unable to ford the river the opportunity to cross the river and hike to the falls. Development of the bathroom facilities at the lower trailhead would have the same effect as Alternative B. Effects on mountain bikes would be the same as Alternative B.

Alternative D

There would be a smaller reduction of dispersed sites than in Alternatives B and C but greater than in Alternative A since fewer roads accessing sites would be closed in this alternative than in Alternatives B and C but less than in Alternative A.

Access to Ramona Falls area same is the same as Alternative A. Additional trails above current levels would be developed in the corridor to meet the needs of hikers, equestrians, and mountain bikers, as well as providing interpretive opportunities.

Alternative E

Effects very similar to Alternative D but with a slight increase in dispersed camping sites. Additional trails above current levels would be developed as in Alternative D. Access to Ramona Falls area will be improved with the improvement of the road to the upper trailhead to accommodate vehicles and use in the area likely increase also. The upper trailhead may also be used as the trailhead for a rerouted Burnt Lake Trail #772. Toilet facilities at both the upper and lower trailheads should keep sanitation problems from developing in surrounding forest area.

Interpretive Facilities and Public Information

Alternative A

Additional interpretive opportunities will be available to recreationists, specifically at the Three Creeks site of the Cascade Streamwatch facility in the lower river corridor. It is possible that additional interpretive trails would be built if this alternative were implemented as long as river values were protected or enhanced.

Alternative B

Additional interpretive opportunities would be the most limited in this alternative. The Three Creeks site of the Cascade Streamwatch facility would need to be built to a lower development level scale and the parking areas would be smaller so it would accommodate a smaller number of visitors. Only those interpretive activities and signs that speak specifically to the importance of the river values and their protection would be allowed. Development of an informational booth on the 1825 road will allow additional opportunities to pass information on to visitors about the river, its values and its protection.

Alternative C

Additional interpretive opportunities would be permitted in this alternative and the Three Creeks site would be built as currently proposed. Information provided by interpretive facilities and signs will provide additional information about enjoyment of the river area and its values beyond what is provided in Alternative B. The informational booth on road 1825 will allow additional opportunities to pass information on to visitors about the river, its values, its protection, and enjoyment.

Alternative D

Very similar to Alternative C with the potential for some additional opportunities if interpretive signing is placed on any new trails that may not be developed in Alternative C

Alternative E

Effects would be similar to Alternative C and D but providing a broader interpretive focus, including on values that may not be related to the river or in the river corridor.

Other Recreational Opportunities

Alternative A

Use of the river for kayaking is expected to increase in the future but use levels are expected to remain relatively low and no conflicts are expected from this increasing use in the near future. Nordic skiing in the corridor is also expected to increase, and providing a sno-park will help to reduce the problems that private landowners are currently experiencing with skiers parking in their driveways. Motorized over-snow vehicles, such as snowmobiles, will continue to be prohibited on road 1825 beyond the road 1825 bridge across the Sandy River. This type of use will be permitted on road 1828 and the Lolo Pass Road as is currently is.

Off-Highway Vehicle (OHV) use will continue to be limited and may be eliminated in all areas of the corridor if areas suitable for that use can not be found and river values cannot be adequately protected. Special use permits for recreational events would be allowed to continue as long as river values are protected. It is likely that the target shooting area in the lower corridor would be closed and moved to an alternate, safer location.

Alternative B

There should be no change from Alternative A in the amount of kayaking use in this alternative, though there may be an increase in some habitat improvement structures in the river though these structures should be placed to allow safe passage around them. Nordic skiing and motorized over-snow vehicle opportunities would be the same as in Alternative A.

OHV use will not be permitted in the river corridor and those desiring that type of recreational experience will need to find other areas on the Forest for that type of activity. Very few, if any, special use permits for recreation events would be permitted in this alternative. The target shooting area would be closed, and if a safer location can be found, moved to that location.

Alternative C

Same as Alternative B

Alternative D

Similar to Alternative C except that OHV use will be allowed in the area if suitable locations can be found for this type of activity where river values can be protected. Otherwise, OHV use will be directed to other locations on the Forest that are suitable for this type of use. Special use permits for low impact recreation events may be allowed as long as river values are protected. The target shooting area would be closed, and if a safer location be found, moved to that location.

Alternative E

Similar to Alternative D except that motorized over-snow vehicles will be permitted on road 1825 beyond the road 1825 bridge across the Sandy River.

Wilderness

For all alternatives, it is assumed that current and future wilderness management direction for the Mt. Hood Wilderness is at least as restrictive as, if not more restrictive, than the guidelines and under the Wild and Scenic Rivers Act in terms of protection and enhancement of river values. Because of this, effects incorporate and reflect both river-related and wilderness resource values.

The Forest Plan provides the management direction for the Mt. Hood Wilderness Area. A separate implementation schedule of actions specifically directed to management of the wilderness and protection of wilderness values is being developed and will provide further direction for management of the wilderness, including the potential of implementing a permit system to limit use to protect wilderness values. **Any permits to limit use in the wilderness would be through Mt. Hood Wilderness management direction and not through river management plan direction in order to provide for continuity of management actions throughout the entire wilderness area and not just that area within the river corridor.**

Alternative A

Use along the Ramona Falls Loop Trail #797 will continue to be high, especially during summer weekends. Current wilderness social standards for solitude will continue to be exceeded unless use is limited through a wilderness permit system or restricted by some other method. Increasing use along the trail could result in additional soil erosion and compaction, sanitation problems and damage to riparian vegetation. As these problems are identified, corrective measures would be undertaken to mitigate the impacts and correct resource problems. If necessary, use limits would be implemented through the Mt. Hood Wilderness management direction.

Alternative B

Use along the Ramona Falls Loop trail and the Pacific Crest Trail in the corridor would be lowest of all the alternatives since the road to the upper trailhead would be closed to vehicular traffic creating a long hike to the falls and the the pedestrian bridge across the Sandy River would be removed and not replaced, eliminating access to a large number of hikers who would not feel comfortable fording the river. Because use would be reduced substantially, associated impacts would also be reduced. As these impacts are identified, corrective measures would be undertaken to mitigate the impacts and correct resource problems. If necessary, use limits would be implemented through the Mt. Hood Wilderness management direction.

Alternative C

Use along the Ramona Falls Loop Trail and Pacific Crest Trail would be higher than in Alternative B but lower than in Alternative A since the upper trailhead would be closed to vehicular traffic creating a longer hike into the falls area but the pedestrian bridge would be replaced allowing access to a larger number of hikers. Accordingly, associated impacts from the use would be higher than in Alternative B but lower than in Alternative A. As these impacts are identified, corrective measures would be undertaken to mitigate the impacts and correct resource problems. If necessary, use limits would be implemented through the Mt. Hood Wilderness management direction.

Alternative D

Same as Alternative A

Alternative E

Similar to Alternatives A and D but use levels and associated impacts may be higher because of easier access since the road to the upper Ramona Falls Trailhead is improved to accommodate passenger cars in addition to high clearance vehicles. As these impacts are identified, corrective measures would be undertaken to mitigate the impacts and correct resource problems. If necessary, use limits would be implemented through the Mt. Hood Wilderness management direction.

Access and Travel Management

Alternative A

The major road system of the Sandy Wild and Scenic River would stay very much as it currently exists, meeting current road management objectives.

Road 1825 would likely be reconstructed and this project would bring the road up to a full standard two lane paved road. This road would then provide for safe use of the road by both passenger cars and recreational vehicles (RV's) with few traffic delays such as having to pull off the road and let oncoming traffic pass as is sometimes necessary at this time.

Three parking areas would be developed/or improved from what currently exists. These areas are the sno-park site on Lolo Pass road, improvements to the lower Ramona Falls Trailhead, and construction of a new parking area associated with the Cascade Streamwatch site. There would also be reconstruction of two local roads and construction of a short loop road associated with the Streamwatch site.

Some non-system roads would be obliterated and re-seeded to native vegetation, in areas where substantial resource damage is occurring or trespass problems onto adjoining private lands are present. In addition, 3.24 miles of system roads are being considered for obliteration, as they are no longer needed for management of this area. These roads and mileages are:

Road Number	Mileage
1825053	0.25
1825071	0.22
1825101	0.14
1825111, sec. 03	0.88
1825115	0.30
1825100, sec. 02	0.42
Total Miles	3.24

Cost estimates for all of the above projects is:

Obliteration	$ 6,000
Reconstruction	$250,000
Construction	$ 30,000

Alternative B

Road 1825 proposed reconstruction project would likely proceed as proposed in Alternative A but some improvements in the design of the road strictly for user comfort may not be implemented. Any necessary improvements for safety would be implemented during any reconstruction. Road improvements specifically to meet the needs of RV's would not be implemented in this alternative. Several local roads would be obliterated and rehabilitated and several others would be reduced from a maintenance level 3 (passenger car use) to a maintenance level 2 (high clearance vehicle use). No new construction of timber related roads would occur under this alternative.

The following roads would likely be obliterated in this alternative:

Road Number	Mileage		Road Number	Mileage
1825053	0.25		1825388	0.70
1825071	0.22		1825386	0.40
1825101	0.14		1825380, sec. 02	2.41
1825111, sec. 03	0.88		1825380, sec. 03	0.69
1825115	0.30		1825311, sec. 02	1.35
1825100, sec. 02	0.42		1825055	0.42

Road 1825100 section 02, the road between the lower and upper Ramona Falls trailhead would be obliterated and rehabilitated and the upper trailhead would be removed. The lower trailhead parking area at the end of road 1825024 would be improved to better accommodate the users of Ramona Falls Trail.

A sno-park/parking area located at the junction of the Lolo Pass Road and Road 1825 would be built and may also be used as a parking area for the smaller Cascade Streamwatch Facility that would be built under this alternative. Construction of this facility would reduce traffic in the corridor and be designed to enhance natural values in the area.

The road 1825 bridge crossing the Sandy River would probably be reconstructed to provide safer traffic flow at road 1825 and road 1828 junction next to the bridge and to reduce any potential for resource problems that may result from the current bridge design.

Costs for the above actions are estimated to be:

Obliteration	$ 20,000
Reconstruction	$350,000
Construction	$ 30,000

Alternative C

Same as Alternative B but road 1825 bridge would be reconstructed not only to correct safety and potential resource problems but also to accommodate higher levels of public use and RV traffic. Costs are estimated to be:

Obliteration	$ 20,000
Reconstruction	$400,000
Construction	$ 30,000

Alternative D

Actions would be similar to Alternative C but the road to the upper Ramona Falls trailhead would remain open, and while not improved to meet the standards for passenger car use, some improvements would be necessary to correct resource problems along the road. There would also be limited construction of roads for timber harvest activities within or adjacent to the river corridor. Some local system roads may also be upgraded to provide better access for recreational use in the area.

Estimated total costs for the above actions are:

Obliteration	$ 15,000
Reconstruction	$500,000
Construction	$ 50,000

Alternative E

Similar to Alternative D but in this alternative the road to the upper Ramona Falls trailhead not only remain open, but the road would be improved to accommodate passenger cars as well as high clearance vehicles and the trailhead parking area would also be improved. Even more local roads may be improved to provide better recreational access to the area.

Estimated costs for these actions are:

Obliteration	$ 15,000
Reconstruction	$520,000
Construction	$ 50,000

Geology

No significant changes would occur to the surficial or bedrock geology along the upper Sandy River under any of the five management alternatives. Natural geologic processes would continue to operate. Minor landsliding, debris flows, and surface erosion along the river corridor would continue to introduce small amounts of sediment into the river.

Minor amounts of soil displacement and erosion would continue to occur from road surfaces, cut slopes, fill slopes, trails, and campgrounds, with the amount varying slightly by alternative due to differing levels of closure and rehabilitation of public access and differing levels of development of public access.

Alternative A

New geologic informational materials and signing would be created as opportunity allows. Cascade Stream Watch would have some geologic interpretive information developed for river users at that site.

Alternative B

A low level of geologic interpretive opportunities would be provided after development of a comprehensive public information/interpretation/education plan to inform the public about geologic values in the river corridor and how to best protect those attributes. Opportunities for geologic interpretation would be greater than those under Alternative A.

Alternatives C and D

A moderate level of geologic interpretive opportunities would be provided after development of the comprehensive plan described under Alternative B. In addition, more interpretive trails and rustic facilities would be developed in the corridor, providing additional information about the geology of the corridor. Opportunities for geologic interpretation would be greater than those under Alternatives A and B.

Alternative E

The highest level of geologic interpretive opportunities would be provided under this alternative. More geologic information would be provided in fairly complex and highly developed interpretive facilities.

Mining

There would be no change in environmental effects from mining activities under the 1872 Mining Law and the mineral leasing laws for the wild segment of the river corridor that is within the Mt. Hood Wilderness. This area would remain withdrawn from mineral entry and mineral leasing.

That portion of the wild segment of the river corridor that is outside the wilderness varies slightly in size from alternative to alternative. Otherwise the restrictions governing mineral activities within the wild segment would continue unchanged under all five alternatives. Locatable and leasable minerals would be recommended for withdrawal in the wild segment of the river corridor under all five alternatives.

Locatable minerals would be recommended for withdrawal from development within the recreational segment of the river corridor under all five alternatives.

Common variety mineral (e.g. sand and gravel) development would not be permitted within any part of the river corridor, under all alternatives.

Some of the differences between alternatives in the environmental effects on mining is due to differences in the Wild and Scenic River corridor boundaries. The acreage figures given below are for areas of the river corridor that are outside the wilderness boundary.

Alternative A

Under Alternative A the river corridor boundaries lie 1/4 mile from each side of the river. The area that would be withdrawn from locatable mineral development is approximately 2350 acres. Common variety mineral development would not be permitted within the same 2350 acres.

Leasable mineral (e.g. geothermal) permits could be allowed within the recreational segment of the river corridor. There would be a "No Surface Occupancy" stipulation for that portion of the permit potentially affecting river resource values. Any mineral exploration or development that did occur would be done in a manner that protects river resource values.

Alternatives B and C

Outside the wilderness the river corridor boundary in these two alternatives generally follows the edge of the Old Maid mudflow deposit, except in the lower portion of the recreational segment where the corridor widens to meet the Mt. Hood Wilderness boundary. The total area that would be withdrawn from locatable mineral development is approximately 2650 acres. Common variety mineral development would not be permitted within the same 2650 acres.

Leasable mineral permits would be denied within the river corridor that is outside the wilderness boundary. Leasable mineral development would be considered incompatible with the goals and intents of these two alternatives. Approximately 2650 acres would be unavailable for leasable mineral development.

Alternatives D and E

The river corridor boundary for these alternatives is similar to that for Alternative B except the lower part of the recreational segment is narrower in these alternatives. The area that would be withdrawn from locatable mineral development is approximately 2300 acres. Common variety mineral development would not be permitted within the same 2300 acres.

Leasable mineral (e.g. geothermal) permits could be allowed within the recreational segment of the river corridor. There would be a "No Surface Occupancy" stipulation for that portion of the permit potentially affecting river resource values. Any mineral exploration or development that did occur would be done in a manner that protects river resource values.

Hydrology and Water Resources

Effects on Water Quality and Quantity

Population growth within and adjacent to the Portland metropolitan area and increased recreation demand within the vicinity of the Mt. Hood National Forest, including the upper Sandy River watershed, has the potential to overshadow the effects of different management alternatives within the actual wild and scenic river corridor. Since a majority of the upper Sandy River watershed consists of federal public lands, residential population growth within the watershed will be slight. However, future regional growth and development practices within the watershed, particularly on the private lands adjacent to streams may contribute to an overall decline in water quality. Factors of concern include increases in sediment, runoff, chemicals, and bacteria related to increases in population and recreational use, forestry activities, and residential development (outside of the National Forest). Consumptive demands for water will parallel the regional population growth and development in the lower reaches of the watershed.

Management options discussed in this document are likely to have negligible effects on the magnitude, duration, frequency and timing of streamflows.

State water quality regulations would apply to the upper Sandy River and its tributaries under all alternatives. Water use is controlled by the State of Oregon and existing water rights would be protected under state law. Any additional uses of water associated with development alternatives would have to comply with applicable state water law and regulations. Potable water supply within campgrounds and other facilities would be governed by applicable county and state health standards and regulations. Pursuant to state law, the Oregon Department of Fish and Wildlife (ODFW) would be encouraged to apply to OWRD for any instream flow water rights necessary for the protection of fisheries which may be identified during implementation of the selected management alternative.

Alternative A

Under this alternative, the flow regime would remain essentially the same as previously described. Overall, this alternative may result in a decrease in water quality over time. Unregulated recreation within the watershed will increase over time as population increases in adjacent rural and urban areas outside of the National Forest. A limited management presence, coupled with increased recreation use would likely result in elevated levels of trash, fecal material, and bacteria. Similarly, increased use and limited management presence would likely increase the number and extent of user-created trails, leading to increased streambank and riparian area damage, soil erosion, and sediment contribution to the river, over time.

Additions of large woody debris and construction of other fish habitat improvement projects on the Sandy River and its tributaries may result in short-term increases in sediment and turbidity during placement. Long-term benefits associated with properly designed and implemented activities include increased stream channel stability, decreased sediment input, and increased sediment transport efficiency.

Though current Forest Plan riparian area standards would apply, programmed timber harvest activities within the corridor will increase the risk of erosion and sediment input to the rivers and streams. Most existing roads within the watershed would be remain open to motorized vehicles. Increases in recreation use and likely decreases in the frequency of maintenance will similarly increase the risk of erosion and sediment generation.

Increases in personal use firewood cutting, mushroom and moss collection, and similar miscellaneous forest products activities, combined with a limited management presence will similarly increase the risk of soil disturbance, compaction, and erosion within the river corridor and the watershed, possibly contributing to decreased water quality.

No comprehensive water quality/quantity monitoring plan is associated with this alternative. Occasional monitoring would likely occur as part of individual project implementation monitoring or general Forest Plan monitoring, in addition to infrequent monitoring conducted by other agencies.

Alternative B

The flow regime would remain essentially the same as that described for the effects of Alternative A. Since this alternative emphasizes natural values and conditions and the enhancement of ecological processes, with relatively less emphasis on recreational development and forest product utilization, consumptive water uses would remain near present values.

Water quality would likely improve under this alternative. A focus on improving aquatic and riparian habitat and watershed condition would contribute to improvements in overall water quality. While proposed management direction would have little effect on natural sources of turbidity and sediment (glacial flour, landslides, etc.), accelerated erosional processes and water quality impacts related to human activities would be reduced. Reconstruction of designated system trails, where necessary, closing dispersed camping areas in riparian areas and "hardening" other dispersed sites within the corridor, and closing and rehabilitating unimproved access roads and user-created trails would reduce erosion and sediment source areas. Improvements to existing recreation sites and facilities, coupled with an increased level of environmental education and interpretation would reduce the potential for water quality and riparian area degradation associated with visitor use.

Restoration of damaged riparian areas and wetlands, and promoting retention or addition of large woody debris in the channel would improve water quality in the long-term by improving stream stability and the ability of the channel to accommodate variable flow regimes. Watershed enhancement opportunities would be identified, funding opportunities actively sought, and projects implemented, resulting in decreased sediment and other non-point source pollutants.

Relative to other alternatives there would be a reduced risk of water quality degradation associated with facilities development, road construction, and maintenance. Short duration, relatively minor localized impacts would occur during construction, rehabilitation, and maintenance, but overall long-term water quality impacts would be reduced.

Since "regulated" or scheduled timber harvest activity would not be permitted within the corridor, nor the gathering of firewood, mushrooms, moss or other miscellaneous products, the risk of ground disturbance, compaction, and/or accelerated erosion would be further minimized.

Development of a comprehensive water quality/quantity monitoring program will provide baseline data for identifying trends in water quality and information pertaining to instream flow needs.

Alternative C

The flow regime would remain essentially the same as that described for the effects of Alternatives A and B. Since this alternative emphasizes natural values and conditions and the enhancement of ecological processes, while also providing for current to slightly increased level of recreational development, consumptive water uses would remain near present values.

Water quality would likely improve under this alternative. As in Alternative B, the focus on improving aquatic and riparian habitat and watershed condition would contribute to improvements in overall water quality. While proposed management direction would have little effect on natural sources of turbidity and sediment (glacial flour, landslides, etc.), accelerated erosional processes and water quality impacts related to human activities would be reduced. Reconstruction of designated system trails, where necessary, closing dispersed camping areas in riparian areas and "hardening" other dispersed sites within the corridor, and closing and rehabilitating unimproved access roads and user-created trails would reduce erosion and sediment source areas. Improvements to existing recreation sites and facilities, coupled with an increased level of environmental education and interpretation would reduce the potential for water quality and riparian area degradation associated with visitor use.

Restoration of damaged riparian areas and wetlands, and promoting retention or addition of large woody debris in the channel would improve water quality in the long-term by improving stream stability and the ability of the channel to accommodate variable flow regimes. Watershed enhancement opportunities would be identified, funding opportunities actively sought, and projects implemented, resulting in decreased sediment and other non-point source pollutants.

Relative to Alternatives A, D, and E, there would be a reduced risk of water quality degradation associated with facilities development, road construction, and maintenance. Short duration, relatively minor localized impacts would occur during construction, rehabilitation, and maintenance, but overall long-term water quality impacts would be reduced.

Since "regulated" or scheduled timber harvest activity would not be permitted within the corridor, nor the gathering of firewood, moss or other miscellaneous products (exception of limited personal use mushroom collection), the risk of ground disturbance, compaction, and/or accelerated erosion would be further minimized.

As in Alternative B, the development of a comprehensive water quality/quantity monitoring program will provide baseline data for identifying trends in water quality and information pertaining to instream flow needs.

Alternative D

The flow regime would remain essentially the same as that described for the effects of Alternative A. While similar to Alternatives A and B in providing for the enhancement of ecological processes and natural values, this alternative places somewhat more emphasis on recreational development and forest product utilization. As a result, consumptive water uses are likely to increase slightly.

Water quality would likely remain the same under this alternative. An increased emphasis on providing recreational access and opportunities would include upgraded sanitation facilities at trailheads, likely contributing to improvements in overall water quality. As in the previous alternatives, proposed management direction would have little effect on natural sources of turbidity and sediment (glacial flour, landslides, etc.). Accelerated erosional processes and water quality impacts related to human activities may increase. Additional proposed river access points increase the risk of riparian and wetland impacts. However, reconstruction of designated system trails, where necessary, closing dispersed camping areas in riparian areas and "hardening" other dispersed sites within the corridor, and closing and rehabilitating unimproved access roads and user-created trails would reduce erosion and sediment source areas. Improvements to existing recreation sites and facilities, coupled with an increased level of environmental education and interpretation would reduce the potential for water quality and riparian area degradation associated with visitor use.

Restoration of damaged riparian areas and wetlands, and promoting retention or addition of large woody debris in the channel would improve water quality in the long-term by improving stream stability and the ability of the channel to accommodate variable flow regimes. Watershed enhancement opportunities would be identified, funding opportunities actively sought, and projects implemented, resulting in decreased sediment and other non-point source pollutants.

Similarly to Alternatives B and C, there would be a slight risk of water quality degradation associated with facilities development, road construction, and maintenance. Short duration, relatively minor localized impacts would occur during construction, rehabilitation, and maintenance, but overall long-term water quality impacts would be reduced or eliminated.

"Regulated" or scheduled timber harvest activity would be permitted only within the very limited portion of the corridor that is not also within the Old Maid Flat Special Interest Area. Throughout the entire river corridor, however, the gathering of firewood, mushrooms, moss or other miscellaneous products would be permitted under limited conditions. The risk of ground disturbance, compaction, and/or accelerated erosion would be slightly greater than in Alternatives B and C, but not substantially so.

Development of a comprehensive water quality/quantity monitoring program will provide baseline data for identifying trends in water quality and information pertaining to instream flow needs.

Alternative E

The flow regime would remain essentially the same as that described for Alternative A. Since this alternative focuses on increased recreational development, consumptive uses of water would be expected to increase as campgrounds and other facilities are upgraded to accommodate greater numbers of users and provide higher levels of service. The increased demand for potable water would likely be met through well development, since current and foreseeable standards essentially preclude the development of surface water sources for public use. While the potential increases in water use would likely have little direct effect on streamflows in the upper Sandy River or its tributaries, any such water withdrawals would be critically scrutinized in light of concerns over the cumulative effects of water withdrawals throughout the Sandy River Basin.

Water quality would likely decrease slightly in this alternative, but not as great as in Alternative A. The recreational development emphasis of this alternative would promote increased road, trail, campground, and other public access development. This increased level of development would increase the potential for soil erosion and surface runoff from roads, parking areas, trails, and both dispersed and developed recreation sites. Greatly increased public use envisioned by this alternative could result in degraded wetlands and riparian areas and increases in pollution related to erosion and sediment, trash, feces, and other potential contaminants. The alternative includes provisions for identification and rehabilitation of degraded areas and pollution source areas. An increased management presence associated with an aggressive environmental education and interpretation program would reduce but not eliminate the potential for observable degradation of streamside areas and water quality.

As in Alternative D, "regulated" or scheduled timber harvest activity would be permitted only within the very limited portion of the corridor that is not also within the Old Maid Flat Special Interest Area. Throughout the entire river corridor, however, the gathering of firewood, mushrooms, moss or other miscellaneous products would be permitted under limited conditions. The risk of ground disturbance, compaction, and/or accelerated erosion would be slightly greater than in Alternatives B and C, but not substantially so.

Development of a comprehensive water quality/quantity monitoring program will provide baseline data for identifying trends in water quality and information pertaining to instream flow needs.

Fisheries

Predictions of population trends for fish under different management scenarios are very difficult to produce with any accuracy. Salmonid populations tend to be cyclic, responding to a very complex set of environmental and human-caused factors. Habitat changes which would occur under each of the proposed alternatives are potentially important, but the population changes that would be expected to occur as a result of habitat change may be influenced by other factors, including climatological factors such as "El Nino", large floods, droughts, disease, pollution, and fish harvesting outside the planning area. Within an individual drainage, fish populations may also be significantly affected by unplanned occurrences that are physically far removed from the fish bearing channel (i.e. the effects of fire, landslides, erosion, or pollution). Specific projects being proposed within the river corridor would require additional NEPA analysis prior to implementing a specific project. This analysis would assess the full effects prior to implementing any projects as well as identifying actions to mitigate any adverse impacts that may come from a specific project. In addition, a separate evaluation would be conducted to identify any potential effects to threatened, endangered, or sensitive aquatic organisms.

The evaluation below addresses the expected outcome of proposed management activities in each alternative within the corridor assuming that all other factors such as broad environmental and socio-political conditions remain constant along observed trends and patterns.

Riparian Areas

Specific effects to riparian areas and water quality are identified in the Hydrology and Water Resources section of this document. Damage to riparian areas and degradation of water quality are known to adversely affect fish populations, while improving damaged riparian areas and improving water quality would have a positive effects on fish populations. The impacts to fish populations identified below integrate the effects identified in the Hydrology and Water Resources section.

Alternative A

As identified in the Hydrology section, water quality in this alternative may decrease over time as a result of higher public use of the area and low to moderate level of timber harvest in the corridor, primarily those areas not within the Old Maid Flats Special Interest area. The decrease of water quality will be limited through proper application of Forest Plan Standards and Guidelines, and by implementing projects designed to improve fish habitat and riparian areas along the river's mainstem and tributaries. As a result, there is a potential that fish populations could be reduced slightly over time as a result of the corresponding decrease in water quality. The reduction would be offset to some degree by creation of additional fish spawning/rearing habitat and hiding cover in habitat restoration projects.

Alternative B

Emphasizing restoration of damaged riparian areas and providing additional fish spawning/rearing habitat and hiding cover, while limiting recreational developments and harvest of forest products under this alternative would lead to an improvement of the condition of riparian areas over time. As a result, overall water quality should improve which would have a corresponding beneficial effect on fish production.

Alternative C

Though recreational use is increased under this alternative compared to Alternative B, management of recreational activities and limitations on improvements of recreational sites will still limit the impacts of public use in the corridor. Restoration of damaged riparian areas is also strongly emphasized under Alternative C with the effect of having an overall improvement in water quality in the river with its associated beneficial effect to fish production.

Alternative D

This alternative's intent is to increase public use opportunities within the corridor while still providing a high level of protection to other river values. Recreational facilities will be improved and expanded to some extent and recreational use will be higher than Alternatives B and C. In addition, there will be limited harvest of forest products within the corridor. These activities will have the potential to degrade water quality but that should be offset by proper design of facilities and by a higher level of monitoring and necessary limitations on harvesting forest products to insure river values are being protected. Also, improvements to existing damage riparian areas should offset adverse impacts from higher use levels in the corridor. As identified in the Hydrology section, water quality should not change significantly from what it currently is and impacts on fish population levels should not change much from current levels.

Alternative E

This alternative has the greatest potential for increasing recreation and other uses within the corridor, including harvesting of a variety of forest products. This increased use has the greatest potential of all the alternatives for causing additional impacts to riparian areas with an associated adverse effect to water quality. Activities will take place to reduce these impacts including correcting damage in riparian areas, proper design of facilities to further reduce impacts, and interpretive activities to inform forest users on how to better protect water quality. Overall, though, water quality is expected to decrease slightly in this alternative over time, similar to Alternative A. This decrease in water quality will likely have some adverse effect on fish population levels in the corridor, though to what extent is difficult to predict accurately.

Aquatic Habitat and Fish Stocks

The proximity of the Sandy River to a large metropolitan area lends to a high degree of recreational use along the river. With the continuing population growth of Portland and surrounding areas, an increase to the number of Forest visitors to the Sandy River is expected in the future. For discussion of the aquatic habitat it is assumed that the degree of management within the corridor will determine the level of impacts to aquatic habitat quality. Aquatic habitat is also directly affected by riparian area condition. Activities undertaken in the corridor have the potential for positive or negative effects (see discussions in Fisheries, Riparian and Aquatic Habitats in Chapter 2, Affected Environment.)

Activities which have the potential for negative impacts to riparian conditions affecting aquatic conditions include:

- timber harvest;
- harvest of a variety of other forest products such as mosses and mushrooms;
- increased numbers of recreational facilities and users;
- increase in number of access points to the river and its tributaries;
- increase in number of trails adjacent to and crossing the river;
- number of dispersed campsites within the river corridor, especially those within or immediately adjacent to riparian areas, and;
- mineral exploration and development within the river corridor.

Activities which have the potential for positive impacts to riparian conditions effecting aquatic conditions include:

- rehabilitation of riparian areas where previous timber harvest or other activities have occurred;
- restoration of large woody debris (LWD) component within the stream channel;
- altering corridor boundaries to include a greater percentage of tributaries within the corridor;
- closure of some dispersed campsites in and adjacent to riparian areas;
- decreasing recreation use adjacent to the streambanks;
- decreasing harvest of special products such as mushrooms and moss collection;
- improvements to established recreational facilities and proper design of new recreational facilities and trails to reduce impacts to riparian areas.

Under all alternatives, fish habitat restoration projects would be carried out as outlined under the Forest Plan for the Mt. Hood National Forest. NEPA analysis would be conducted for each project prior to implementation. Though the approach to the project design varies slightly between alternatives, the projects will improve the aquatic habitat for fish under all alternatives equally. During the construction of these projects, short-term increases in sediment and turbidity can be expected. Long-term benefits to the aquatic habitat associated with the work include:

- increase in available pool habitat,

- spawning gravels,
- nutrient input, and
- cover for fish, plus
- streambank stability and increased sediment transport efficiency.

Management of fish stocks is the role of the Oregon Department of Fish and Wildlife (ODFW). Final decision on fish stocking practices in the Sandy River rests ultimately with ODFW. For this reason stocking of game fish and harvest regulation will not be addressed here. Increases in wild fish populations is strongly affected by the availability of spawning gravels in the river and its tributaries. In addition the effects from each alternative on fish stocks from changes in fishing pressures will be addressed.

Regardless of which alternative is selected, impacts from changes in aquatic habitat and water quality may affect some fish species more than others. Detailed monitoring of species distribution, as well as populations, needs to be conducted on a continuous basis in order to determine the actual effects of management practices.

Alternative A

Under current Forest Plan standards, the interim boundary of one-quarter mile on each side of the river would be adopted. Segment 1, within the wilderness boundary, would have a larger area designated under Wild and Scenic than in Alternatives B, C, D, and E. There would be no additional benefits by having this larger area within the wild and scenic river corridor since current wilderness direction adequately protects aquatic habitat at this time. Portions of tributaries to the mainstem that provide important fish habitat would not be included in the river corridor boundary. These tributaries will still receive a high level of protection as a result of other Forest Plan standards and guidelines, but the level of protection would not be as high as if they were included in the river corridor, especially in comparison to Alternative B and C where timber harvest and other activities are more restricted than in Alternatives A, D and E.

Under this alternative, some fish habitat improvement activities would occur, primarily in the river's tributaries. However, a gradual decline in habitat quality would occur from increased use of the area associated with Portland's growing population. Installation of structures such as logs and boulders to improve fish habitat would be undertaken and the structures could be anchored as long as the free-flowing character of the river will be protected. Allowing structures to be anchored allows their placement in areas where management believes the greatest benefits would occur.

Increases in sediment in waters is likely to occur as a result of increasing unregulated recreational use. Sediment can settle on spawning gravels causing embeddedness. Embeddedness results in gravels difficult to spawn in, reduces flow of oxygen rich water in the gravels, and may form a physical barrier for the emergence of newly hatched fry. Such conditions would result in lower survival and decreases in wild fish populations.

An increase in consumptive fishing is likely to occur as the number of people utilize the area indiscriminately harvest wild fish.

Alternative B

In this alternative, additional portions of Lost, Short, and Cast Creeks, and the Clear Fork and Muddy Forks of the Sandy will be included in the river corridor that are not included in Alternative A. Inclusion of these tributaries of the Sandy will provide greater protection for these rivers, especially with restrictions on harvest of forest products in the corridor and limitations on recreation use in the corridor.

Fish habitat would likely be improved through restoration efforts and the potential for adverse impacts from recreation use and harvest of timber and other forest products would be reduced since very limited harvest of forest products would be allowed and recreation use would be limited. Of all the alternatives, the risk for sedimentation or other habitat degradation is lowest because of lower use and project activity levels in the corridor. Higher levels of water quality monitoring than Alternative A should allow quicker identification of problems affecting water quality and allow quicker response to correct those problems.

Placement of fish habitat structures would be done to try to emphasize the historical component of LWD. Any structures would not be anchored or cabled to keep them from moving so they would be allowed to shift naturally with river flows. This may limit the number of locations that structures could be placed since the potential for LWD to break loose and flow down river exists.

Indiscriminate fishing pressures would be reduced from current levels due to greater limitations on public access in this alternative.

Alternative C

Effects related to river corridor boundaries would be the same as Alternative B.

This alternative would have similar effect to Alternative B with some potential for increased impacts in terms of sedimentation and habitat degradation due to greater public use than Alternative B but this potential is still considered relatively low.

Effects from placement of fish habitat structures would be the same as in Alternative B.

Alternative D

Effects related to placement of corridor boundaries would be similar to Alternatives B and C but with a slightly lower level of protection than those alternatives, primarily because of higher public use levels and potential for harvest of forest products in the corridor.

For this alternative, fish habitat will be improved but there will be a higher potential for adverse impacts to habitat from higher use levels in the river corridor than in Alternatives B and C, and the fact that timber and other forest products may be harvested, increasing the potential for siltation. Higher levels of water quality monitoring than Alternative A would allow quicker identification of problems affecting water quality and allow quicker response to correct those problems.

Fish habitat structures under this alternative may be anchored as long as the free-flowing character of the river is protected. Overall, effects related to structure placement would be the same as Alternative A but a greater emphasis would need to given to structure design to insure that the structures minimize impacts to recreationists floating the river. This will likely demand additional effort in structure planning.

The risk of sedimentation and other disturbances to aquatic habitat is increased from Alternative C, but such risk should be controlled by careful design of access points to protect river attributes.

Risk from fishing pressure would be substantially increased from Alternative C due to greater numbers of recreationists expected in the corridor and from the increased number of improved access points along the river. Extensive monitoring of fish populations to insure the volume of fishing effort does not have detrimental effects on fish stocks is essential. Placement of interpretive signing and public education would reduce this impact to some degree and help protect wild fish stocks.

Alternative E

Impacts from Alternative E would be very similar to Alternative D except increased recreational use expected in this alternative would increase the potential for adverse impacts to fish habitat and increased siltation in the river and tributaries. These impacts should be greater than in Alternatives B, C, and D, but less than Alternative A. Proper design of facilities should lessen these impacts but is not expected to offset them completely because of higher use levels.

The nature of fishing pressures would be the same as Alternative D but the magnitude of fishing pressure would be higher. If river access is increased too rapidly, fishing pressure may increase too rapidly for effective monitoring of fish populations to be possible.

Wildlife

Population trends for plants and animals are difficult to adequately assess without time and funding to study various aspects of ecosystems. Habitat within alternative boundaries, proposed projects of each alternative, and the protective measures of each alternative are important considerations in determining effects on population trends; these considerations often do not address biological processes on a community scale.

Wildlife is affected by their environment, including the presence of humans recreating. Undeveloped recreation usually does not have a major effect on wildlife resources except for temporary displacement of animals. (Where undeveloped use is high, wildlife harassment, use of coarse woody debris for campfires, and impacts from trash can occur.) However, developed recreation sites, trail construction, or dispersed activities such as off-highway vehicle (OHV) use or hunting can significantly affect localized wildlife communities. Many such developments can affect wildlife over larger scales.

Timber management activities can have significant impacts on wildlife by directly affecting the habitat of animals which frequent mature or old-growth forest, such as spotted owls, pileated woodpeckers, and pine martens. As stands with these characteristics are harvested and brought under intensive management, habitat for old-growth species diminishes in size and quality because of fragmentation.

Harvest activities can improve the quantity of forage for black-tail deer, Roosevelt elk, and game birds seasonally, while old-growth habitat provides year-round forage and protection for wildlife. The quality of hiding cover for wildlife is affected by the number of roads and the amount of road use. Roads that remain open provide more opportunities for humans and wildlife to interact, which may result in increased wildlife mortality or displacement. Wildlife habitat is affected by new road construction, often with a direct loss of habitat.

Land allocations and human use of land and resources can dramatically affect wildlife populations. The intent of designated wildlife habitats and special wildlife areas is to maintain viable populations of species dependent on scarce or diminishing habitats, as more areas of the Forest are brought into managed timber rotations. Effects to most plants and animals of the Sandy River area are cumulative, originating both within and outside the designated river corridor. Effects of the alternatives as they relate to private and public lands are based on observed trends of private land and agency management.

Alternative A

Alternative A would continue with present management direction focusing on continued implementation of the 1990 Mt. Hood National Forest Land and Resource Management Plan. Trends in wildlife populations would be similar to those discussed in the Forest Plan. The general assessments of habitat decrease and increase made in the Final Environmental Impact Statement for the Forest Plan would be applicable to this alternative.

No changes in goals, desired future conditions (DFC), land allocations, or standard and guidelines would occur.

Alternative B

This alternative would minimize the influence of human activities within the river corridor by directing recreation use to other areas on the forest and not developing or improving other recreation sites. Natural processes would be allowed to operate to the maximum extent possible; management activities would be minimal.

Recreational opportunities would be reduced in the corridor by closing user-made trails and dispersed sites and by reducing facilities development level from current levels. Off-highway vehicles would be prohibited in the corridor, shooting range would be relocated and rehabilitated, and the road to upper Ramona Falls would be closed. This reduction in recreational activities would reduce human activity therefore, reducing displacement and harassment to wildlife, especially deer, elk, wolverine, and bald eagles. Interpretive efforts would focus on importance of river attributes (hydrology, geology, and botany) and how to protect them. This should help to protect wildlife that utilize the corridor. Current winter motorized vehicle restriction would be retained minimizing vehicular harassment to any animals using the area, making the corridor more effective habitat. Habitat quality for species that prefer solitude and seclusion such as harlequin duck and wolverine, would slightly increase from existing conditions.

No timber target would be assigned within the corridor. Harvest would occur only to protect, enhance, or restore river values. This would enhance habitat for species that are particularly tied to the geology, hydrology, or botanical functions of the river. Habitat diversity may decrease by only enhancing habitat for species tied to the river values. Firewood collection would not be allowed. Without firewood collection, the amount of large woody debris would increase benefitting species that rely on it for habitat (small mammals, amphibians and songbirds) and species that prey upon those species (i.e. owls).

Natural successional changes to plant communities would take place. No management activities to set back successional stages would occur in the A4 Old Maids Flats Special Interest Area (SIA). Habitat enhancement projects would be permitted only for riparian dependent species or species related to the hydrology, geology or botanical values of the area. Species that depend on early seral stages such as deer and elk and some migratory bird species (Neotropical Migrants) may not benefit, in the long term, from this alternative. This would not allow for forage development and may result in less effective habitat for deer and elk. Species that depend on mature/old growth habitats such as pileated woodpeckers, pine martens, and spotted owls may benefit, in the long term, by this alternative due to those habitats being allowed to develop naturally.

On a landscape perspective, species present in the corridor due to the hydrology, botanical, and geological functions of the Sandy River such as the harlequin duck, bald eagle, northern goshawks, ospreys, and some amphibian species would benefit more than in any other alternative. Activities that protect or enhance the habitats those species occupy would only be allowed.

The goals and DFCs of the land allocations for this alternative would not change from Alternatives A's. The only standard and guideline change is from regulated to non-regulated timber harvest in recreational segments, which would change the allocation from B1 to A1. Other land allocation changes that would occur would be B2 to A1 (where the boundary expands from current interim 1/4 mile boundary). Where the river boundary would shrink, the lands would become the allocation of the adjoining land, which is B2. A4 would continue to overlay. The effects of this land allocation and standard & guideline change would not have dramatic effects upon spotted owls populations or their habitats. Timber harvest would still be allowed to occur yet a timber target assigned by Congress would not apply to these lands. Timber management activities could directly affect the amount of old growth or mature forest but since a small percentage of the old growth on the forest is within this boundary, minimal effects can be expected.

Bald eagles may benefit under this alternative which would emphasize fish habitat enhancement, whether it be wild stocks or for sportfishery. Therefore, the food supply may be improved by these actions. Also, by minimizing human use within the corridor the potential for disturbance from humans is decreased.

Peregrine falcons are known to occur in the drainage. Due to the location of the potentially suitable cliffs, disturbance from levels of recreational use would be minimal due to existing trail locations departing from the river. Peregrines are adaptable to noise disturbances where the noise is steady, distant, and not sudden or shocking.

Alternative C

This alternative would also allow natural processes to operate in the river corridor. River attributes would be enhanced while providing for public use opportunities relating to these natural river attributes.

New trails and facilities may be developed only if they focus on protection or enhancement of natural attributes. Interpretive efforts would be not only on the importance of river attributes but on how visitors can enjoy the hydrology, botany, or geology of the river corridor. This would bring more humans into the corridor than Alt. B. The visitors might be less likely to have impacts on wildlife associated with these attributes (harlequin ducks, peregrine falcons, and goshawks) due to the interpretation. Interpretation can give visitors knowledge and ownership in the resources and therefore, elicit respect and appreciation. This would hopefully reduce negative impacts from human use, yet would not likely eliminate them. Both summer and winter recreational uses would be allowed within the corridor yet no winter vehicular traffic would be allowed beyond Rd. 1825 at the junction of Roads 1825 and 1828. Most human uses would be cross-country skiing within the Old Maid Flats area. Wolverine would likely use this corridor in all seasons; potential disturbances and displacement of animals in the summer would be greater than in the winter due to accessibility. More visitors would use the corridor than in Alternative B, so an increase in human uses can be expected from Alt. B but would be less than in Alternatives A, D, and E. Dispersed camping sites and access points would be hardened at acceptable locations along the river, but those where resource damage is causing substantial impacts within the riparian zone would be closed or rehabilitated. To some extent, this may mitigate the negative effects associated with increase human presence on the river by allowing the species such as harlequin ducks to find adequate cover until the "disturbance" passes.

Impacts of timber harvest, vegetation manipulation, and wildlife habitat enhancement projects, habitat diversity, and habitat quality would be the same as discussed in Alt. B.

The discussion on goals, DFCs, land allocations, spotted owls, and peregrine falcons would be the same as in Alt. B.

Bald eagles may benefit under this alternative in terms of an increase in food supply as discussed in Alt. B. Levels of human use may increase from Alt. B resulting in an increased potential for disturbance near nests and foraging sites.

Alternative D

This alternative would provide for numerous public use opportunities in the river corridor in addition to allowing natural processes to operate. All activities may not focus on the natural attributes of the river but would still provide a high level of protection to the river values.

Vegetation manipulation would be allowed within the Old Maid Flats SIA to retain early successional plant communities. Timber harvest could occur in areas within the corridor outside of Old Maid Flats SIA only if it protects, enhances, or restores river values. Habitat enhancement projects would be permitted for other than riparian dependent species, such as big game. Species dependent on early successional plant communities such as black-tailed deer and elk would benefit from this alternative. The opportunity to enhance the creation of forage and browse species would be greater in this alternative than in Alternatives B or C. Habitat quality for species dependent on mature and old growth habitat would likely decrease. The opportunity to increase habitat diversity for early seral-stage species would be greater here than in Alternatives B and C. Much of this is dependent on the scale of vegetation manipulation. If large patches are created this may decrease habitat effectiveness for species, such as goshawks, woodpeckers, pine martens, and pileated woodpeckers, that prefer unfragmented areas. If small patches (2 - 10 acres) are created habitat effectiveness for those species may not be affected. Deer and elk may benefit more by the larger openings (not greater than 40 acres) as long as the adjacent vegetation provides adequate cover.

Recreational activities would be greatly increased from Alternatives B and C with recreation activities being encouraged in the corridor. More facilities would be developed even if they don't focus on the natural attributes of the river. Trails would be realigned and reconstructed to reduce impacts from soil compaction, trampled vegetation, etc. Interpretive signing would inform visitors of the river values and its proper use and protection. More roads would remain open in this alternative compared to Alternatives B and C. A sno-park would be developed in the corridor incorporating year-round uses. These activities could potentially remove habitat that would not be regenerated. Human access into the corridor would be easier than in Alternatives B and C resulting in increased harassment to species using the area. For example, additional river access points may be developed and/or improved as long as they protect river attributes, yet this still allows for more human access to the riparian areas; riparian dependent species, such as the harlequin duck, may be harassed and disturbed. To some extent, the habitat improvements proposed (rehabilitation of compacted and non-vegetated dispersed sites and placement of logs into streams and the river) would mitigate negative effects associated with increased human presence on the river, by allowing harlequin ducks or riparian dependent species areas of cover until the "disturbance" passes. The placement of logs would create more loafing sites for harlequin ducks. An increase in interpretive signing helps to inform individuals of their surroundings. This is especially important with an increase in recreation use. Interpretation can mitigate for some of the impacts expected from high recreation use but would not eliminate all impacts, such as vegetation and soil compaction along the river's edge, trash accumulation, and noise disturbance. All could have negative impacts on species requiring shade and cover along the river and seclusion. Habitat quality for species requiring solitude and seclusion would likely decrease in this alternative due to the development and high human presence.

Firewood permits would be allowed in this alternative. The firewood program is managed to minimize negative effects to species that may depend on large woody debris; by allowing for firewood removal, the amount of large woody debris would not be as great as in Alternatives B and C.

The land allocations changes that would occur would be where the boundary shrinks from the current interim 1/4 mile boundary, B1 becomes B2. Where the boundary expands, B2 becomes B1. These changes would have no effects to spotted owl populations or their habitats. No changes to standard and guidelines would occur. Changes in goals and DFCs would have no effects to spotted owls and their habitats. Increase human presence and increased recreation development could potentially remove or degrade owl habitat.

Bald eagles may benefit from fish habitat enhancement as discussed in Alt. B. Expanded recreational use of the corridor may cause adverse effects to bald eagles due to the potential increase in disturbance near nests and foraging sites.

Effects to peregrine falcons are the same as discussed in Alt. B. There is potential for increased development from Alts. B and C yet the cliffs are located within the wilderness; the only development that could occur would be trail construction; the area of the cliffs is rugged and an unlikely site for trail development.

Increased human disturbances within the corridor (mainly from recreational visitors) are expected to wolverine. Development of more facilities and trails (mountainbikes, hikers, OHVs) as proposed would have the potential to displace animals using this habitat and decrease the availability/effectiveness of habitat potentially used by wolverine. Whether the habitat is denning, foraging, or dispersal habitat is still unknown. Surveys and efforts to identify how wolverines are using this area will continue during the winter months. The expected increase of visitors in future years and the proposed development in this alternative are expected to have cumulative effects on wolverines and their habitats.

Human disturbances may cause Townsend's big-earred bats to permanently abandon hibernaculum and nursery sites. Disturbance interrupts their torpid state and burns fat reserves needed during periods of inactivity. Recreation use of caves and vandalism may cause a problem. (Marshall, 1992). Potential nursery and hibernaculum sites would likely occur in the "wild" portion of the corridor where steep cliffs and rock formations may provide suitable habitat. Access to this area is difficult, and potential for disturbance would be minimal.

Alternative E

This alternative would allow for the extremely high level of recreational demand expected in the next decades. River attributes would still be protected yet existing sites, trails, and access into the corridor would be improved or expanded. Facilities would be expanded or improved to meet higher recreation levels. Habitat quality for mature/old growth dependent species would likely decrease in this alternative.

A greater amount of vegetation manipulation would be allowed than in Alt. D in the Old Maid Flats SIA; timber harvest would be similar to what is allowed in Alt. D; wildlife habitat enhancement projects would occur for all species. This would have similar effects as discussed in Alt. D, yet may benefit species dependent on the early successional plant communities and allow for greater habitat diversity for early seral-stage species.

Impacts from recreation use would be similar to Alt. D however a greater number of visitors may use the corridor and increased impacts can be expected from what is discussed in Alt. D.

The land allocations changes that would occur would be where the boundary shrinks form the current interim 1/4 mile boundary, B1 becomes B2. Where the boundary expands, B2 becomes B1. These changes would have no effects to spotted owl populations or their habitats. No changes to standard and guidelines would occur. Changes in goals and DFCs would have no effects to spotted owls or their habitats. Increase human presence and increased recreation development could potentially remove or degrade owl habitat.

Bald eagles may benefit from fish habitat enhancement as discussed in Alt. B. Expanded recreational use of the corridor may cause adverse effects to bald eagles due to the potential increase in disturbance near nests and foraging sites.

Effects to peregrine falcons are the same as discussed in Alt. D.

Effects to Townsend's big-earred bats would the same as discussed in Alt. D.

Botany, Ecology, Biodiversity

Activities proposed in all of the alternatives would meet current Forest Plan Standards and Guidelines for Forest Diversity, Sensitive Plants, and Noxious Weeds and no changes to those standards are proposed as a result of this analysis.

Biodiversity

The presence of unique plant communities currently contribute to a high level of biodiversity in the river corridor, especially when compared to surrounding forest plant community types. These unique plant communities are identified as one of the outstandingly remarkable values of the river. For this analysis, biodiversity is described as the variety of plants, animals, fish and other organisms within an area plus their associated physical habitats and ecological processes.

The effects to biodiversity in the upper Sandy River drainage by each of the proposed alternatives is based on the following assumptions:

- The present level of biodiversity is a product of human actions and natural processes.

- The potential level of biodiversity for each alternative is based on all proposed actions for each alternative being implemented.

- There is value in biodiversity whether achieved by human actions, natural processes or a combination of methods.

- Estimates of biodiversity levels are best guesses; quantitative evaluations are not possible given the unpredictability and complexity of life forms and processes in the Upper Sandy River drainage.

Alternative A

As stated above, the potential level of biodiversity will be in compliance with the Forest Plan Standards and Guidelines for Forest Diversity: "Management activities shall preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species. The diversity of plants and animals shall be at least as great as that which would be expected in a natural forest..." (FW-148, 149, 150). The potential level of biodiversity would likely be higher in this alternative than in Alternatives B or C but lower than Alternatives D and E. Timber harvest is allowed to a limited extent in this alternative and the opportunity exists to manage stands to provide a variety of age classes and species. Fish habitat enhancement structures could be placed in tributaries to increase fish numbers and diversity. Natural plant succession in Old Maid Flats could be retarded in order to retain the diversity of early successional species and habitat. This alternative has the potential for more facility and trail construction than Alternatives B and C, thereby creating more man-made opening and edge habitat, but less than in Alternatives D and E.

Human influences on the level of biodiversity will be moderate to high. For example the presence of more people in the area could potentially decrease the numbers of some fish, plant or wildlife species. Enhancement and protection efforts may be increased to maintain community diversity.

Alternative B

Biodiversity may be at the lower end of the potential natural level as natural plant succession is allowed to change the Old Maid Flats mudflow to a forest type common elsewhere in the Upper Sandy drainage. The manipulation of forest stands and riparian areas would be limited to the restoration of habitat. More newly vegetated areas would be created in this alternative than in A, D or E as roads, trails and campsites are closed.

The influence of man on the natural biodiversity of the Upper Sandy River drainage would be low to moderate in this alternative. As much as possible, the natural processes which contribute to biodiversity would be allowed to occur with a low level of human interference. The creation of habitat diversity would be more dependent on windthrow, mudflows, disease, or floods than in other alternatives.

Alternative C

The potential level of biodiversity would be similar to Alternative B. The plant succession process on Old Maid Flats would occur as in Alternative B.

The influence of man on the natural biodiversity of the Upper Sandy River drainage would be similar but slightly greater than Alternative B since more projects are proposed in this alternative.

Alternative D

The potential level of biodiversity would be similar to, though slightly higher than Alternative A. Activities similar to those in Alternative A that could potentially increase biodiversity would be allowed in the corridor. Additional facilities and trails beyond that developed in Alternative A would create even more man-made opening and edge habitat. Fewer roads, trails and campsites would be converted to natural vegetation than Alternatives B and C. The level of biodiversity may also be higher than B or C as more community enhancement and manipulation could occur.

Human influences on the potential level of biodiversity would be high. The resulting level of biodiversity would be much more a product of human and natural processes than for Alternatives B or C. With the increased human influences, more effort may be needed to assure components of the Upper Sandy River's natural biodiversity are not lost.

Alternative E

The potential level of biodiversity would be similar to D. Human influences on natural biodiversity would be similar to D but possibly even higher because of the potential for greater numbers of visitors to the corridor area.

Plant Diversity

Alternative A

With the Portland area's growing population, more visitors to the Upper Sandy River corridor are expected and the potential for degradation of natural plant communities throughout the recreational segments of the river will increase. Plant communities and corridors between communities are currently dissected by roads, trails and visitor facilities and increased dissection is expected with the construction of new facilities. The plant communities of the upper wild segment are expected to change through natural processes but may receive some additional recreational impacts as people look for new places to visit. Some areas of the corridor may be altered by timber management activities. No special efforts would be made to inventory, protect or enhance plant communities in this alternative.

Alternative B

In this alternative, an effort will be made to minimize human impact on the natural plant communities. Natural processes (succession, wind-throw, nutrient cycling etc.) will be allowed to occur to a greater extent without human-caused alterations than in the other alternatives. Closure of some roads, user trails, and dispersed campsites reduces the current dissection of plant communities. New trail and facility construction will be discouraged thus less vegetation will be impacted. Bicycles will not be allowed off of system roads. Restrictions on timber harvest throughout the corridor will allow more forested acres to remain intact than in Alternatives A, D, or E. Connectivity between plant communities from the headwaters of the Sandy River to the lower boundary will be greatest in this alternative.

The proposed entryway information facility would provide information on the unique plant communities in the area and their protection. Interpretive signing will also help increase visitor awareness.

A systematic botanical survey of the Sandy River corridor and plans to monitor plant community health in the alpine/subalpine and high-use recreational areas are included in this alternative. A focused effort will be made in this alternative to identify and reduce noxious weeds and other undesirable, non-native plant species with in the river corridor boundaries.

Alternative C

In this alternative, the value of natural plant communities will be recognized and promoted for protection purposes and for public enjoyment. More human influences on natural ecosystem processes will occur than in Alternative B as will more active enhancement of plant communities. The dissection of plant communities has the potential to increase in this alternative as new trail and facility construction will be pursued as long as they complement the natural values of the river corridor. Bicycles would not be allowed off system roads thus reducing the threat of disturbance to ground vegetation as in Alternative B. Restrictions to timber harvest throughout the corridor will allow more forested acres to remain intact than in Alternative A, D, or E.

The proposed gateway visitor facility would provide information on the unique plant communities in the area and their protection. Interpretive signing will also help increase visitor awareness.

Survey, monitoring and noxious weed objectives are the same as in Alternative B.

Alternative D

The potential for increased degradation and dissection of plant communities and alteration of forested areas exists for reasons stated in Alternative A. Alternative D would retain the same survey, monitoring and noxious weed objectives as in Alternatives B and C. Bicycles would be allowed on trails as well as system roads causing an increased potential for ground disturbance. As the focus of this alternative is to accommodate increased visitor usage and highlight the recreational aspects of the area, less priority will be given to preserving natural plant communities and processes.

Alternative E

This alternative proposes the highest level of visitor development and the highest level of enhancement and interpretation of plant diversity. Natural processes would be altered more in this alternative than in the others.

Dissection of plant communities would potentially increase over D and the continuity of plant communities from the headwaters to the downstream boundary would be the least of all alternatives.

Sensitive Plant Species

Alternative A

The current corridor boundaries do not contain any known sensitive plant populations. Potential habitat exists for fir clubmoss, Lycopodium selago and loose-flowered bluegrass, Poa laxiflora. All future proposed projects will be surveyed for sensitive plants.

Alternative B

The enlarged boundaries of this alternative include sites for 2 sensitive plant species that were excluded in Alternative A. Poa laxiflora, loose-flowered bluegrass, is known to grow along the gravelly, rocky margins of Lost Ck. and Cast Ck.. Lycopodium selago has been located in the vicinity of Lost Ck. Campground. Potential habitat for these two species occurs in many parts of the river corridor in this alternative. All future proposed projects would require sensitive plant surveys and any known populations would be protected during implementation of proposed projects through project design and specific mitigation measures.

Alternative C

Same as Alternative B.

Alternative D

While the boundaries for D differ from B and C, the same sensitive plants sites are included in within these boundaries. Effects are same as Alternative B.

Alternative E

Same as Alternative D.

Old Maid Flats Geologic Special Interest Area

Alternative A

No change to the management emphasis for the Old Maid Flats Special Interest Area will be made in this alternative. The development of the potential natural plant community in Old Maid Flats will be altered to some extent by human impacts in this alternative. Hiking, horseback riding, bicycling, dispersed camping, and other activities are expected to increase in this unique mudflow area. Established and user-made trails currently crisscross the moss and lichen-covered ground. Additional trail and facility construction could occur in this area under this alternative.

Mushroom harvesting is expected to increase in good mushroom years due to the increasing popularity of this hobby. The majority will pick for personal use but some illegal commercial picking is also expected to occur. Without substantial picker education, the amount of ground disturbance and trash is also expected to increase. The effects of intense harvesting on the mushroom community is not known and could vary depending on the species (Molina et al, 1993).

The harvesting of other Special Forest Products such as moss and prince's pine will continue to occur in Alternative A. Information on the responses of mosses and lichens to disturbance is variable. Observations report fast (2-3 years) to much longer recolonization periods. The effects of harvesting on most forest products is not well documented at this time. Limited monitoring would be conducted to evaluate the overall health of the mushroom and lichen/moss communities to help assess the effects of harvesting of these species in the area.

The Cascade Streamwatch facility would be constructed in this area with some loss of vegetation. However, through this project, trail improvement and interpretive signing about the unique ecology of the area would occur.

Alternative B

In this alternative, the Geologic Special Interest Area would also be proposed as a Botanical Special Interest Area as well. Its outstanding botanical attributes that caused botanical values to be identified as one of the river's outstandingly remarkable values include probably the highest lichen diversity and cover of any area on the Forest with the possibility of some rare species existing (M. Boyll, personal comment.). Over 100 species mushrooms including a large population of the prized Matsutake grow on the well-drained soils. This recent mudflow is one of the best remaining examples of a volcanic primary successional plant community on the Forest.

In this alternative no mushroom or other Special Forest Product harvesting would be allowed. These fungi and their associated communities would be relieved of the current human impacts and would have more potential to grow under natural conditions. The mushroom and lichen/moss plant communities would be monitored at a higher level than in Alternative A.

Less dissection of plant communities in this area would occur as user trails, dispersed campsites and some roads are closed and revegetated. Improvements would be made at Riley and McNeil Campgrounds to help protect plant communities.

The Cascade Streamwatch facility would still be constructed but to a lesser degree which is more compatible with minimized impacts to plant communities.

Alternative C

Old Maid Flats would be proposed as a Botanical Special Interest Area as in Alternative B. Limited harvesting of mushrooms for personal use would be permitted at lower levels of harvest than Alternatives A, D and E. With careful regulation, the effects of harvesting on the mushrooms and the associated plant community should be minimized. Monitoring would occur as in Alternative B.

More emphasis would be placed on recreational use of this area for the purpose of enjoying it natural features. A potential exists for more trail construction which could cause increased dissection of the plant communities. In other areas, road and and user-made trail closures would occur which would increase plant community continuity in those locations.

The Cascade Streamwatch facility would be constructed to its original design specifications and interpretation and improvements would be similar to Alternative A.

Alternative D

In this alternative, the Special Interest Area would be managed only as a Geologic Special Interest area. Unique botanical values would still be protected as outstandingly remarkable values of the river. Attempts to retard natural plant succession would be allowed for the purpose of retaining members of the early successional mudflow community which might be lost through time. The species of interest include lichens, mosses and matsutake mushrooms and lodgepole pine (important to the matsutake).

Personal use permits for harvesting mushrooms and other special forest products would be allowed with the same effects noted in Alternative A. Monitoring of impacts to the mushroom and lichen/moss communities would occur at the higher level as in Alternative B. This higher level of monitoring would provide a higher level of protection to those communities since adverse impacts to the plant communities would be identified earlier, before they were serious.

The development of the potential natural plant community would also be altered by the increased usage of the area over time. New facilities and trails would further dissect the area's plant communities. Cascade Streamwatch would be constructed to current design specifications.

Alternative E

This alternative would have effects similar to D except that all vegetative manipulation of the mud flow plant community, facility and trail construction could happen to a greater extent with magnified effects to the plant communities and natural processes.

Timber and Other Forest Products

Alternative A

Under this alternative, current management direction as identified in the Forest Land and Resource Management Plan (Forest Plan) would continue within the river corridor. Programmed timber management activities and regulated timber harvest would still be permitted in the corridor for those portions of the recreational segment not currently identified as part of the Old Maid Flat Special interest area. Regulated timber harvest is defined as harvest that contributes chargeable timber volume to the Allowable Sale Quantity (ASQ) for the Forest. On lands classified as unregulated, there is no assumption made that timber harvest will take place that would add to the forest-wide ASQ though on some of these lands, some timber harvest may take place if it meets other resource objectives.

Projected timber harvest for the area inside the corridor under current management direction would be 460 thousand board feet (MBF) per decade. At an assumed value of $500 per MBF, timber harvest would generate approximately $230,000 in timber receipts, of which 25%, or $57,000 would go to Clackamas County over the next decade.

On the remaining lands within the river corridor, no regulated, or programmed timber harvest, is practiced. All 1297 acres of the corridor within the Mt. Hood Wilderness is withdrawn from any type of timber management activities. On the remaining lands within the corridor that are either within the wild segment or are in the Old Maid Flats Special Interest Area, timber harvest is permitted, but only to accomplish other resource objectives and that can protect and/or enhance the river's unique values. Specific guidelines are in the Forest Plan's Standards and Guidelines for the A2, Wilderness; A4, Special Interest Area; and B1, Wild and Scenic River land allocations.

The harvest of other forest products (special forest products), such as mushrooms, moss, transplants, Christmas trees etc.., would continue within the corridor area subject to Forest Plan Standards and Guidelines. Harvesting for both personal and commercial use may be permitted although restrictions on the quantities of harvest and types of permits (personal versus commercial) may be implemented to reduce impacts to the resources in the area, reduce conflicts between users, provide for the protection, enhancement, and/or restoration of river values and to address historic, cultural or other needs and objectives.

No change is projected in timber harvest volumes on private lands within or adjacent to the river corridor as a result of this, or any of the other alternatives being considered in the management plan since the management direction resulting from this plan has no jurisdictional authority over private lands. Most private land along the river corridor is being subdivided for housing and current timber harvest activity within the corridor is predominately related to such activity.

Only if the State of Oregon or Clackamas County were to make any changes to state or local regulations would there likely to be any change in harvest volumes within or adjacent to the river corridor. No significant changes are anticipated to the State and county regulations in the near future. If the state of Oregon were to impose additional visual quality standards adjacent to the river corridor because of its wild and scenic river designation, then these new requirements could reduce harvest volumes by varying degrees depending upon the objectives and requirements implemented.

Alternative B and Alternative C

Impacts of these two alternatives on the management of timber and other forest products are similar. Both alternatives propose having no regulated timber harvest within the river corridor. As a result, some lands currently classified as B1 Wild and Scenic River, and B2 Scenic Viewshed would not have regulated timber harvest which would cause a reduction of the ASQ for the Forest of 990 MBF for the next decade. This reduction would be the 460 MBF mentioned above in Alternative A as well as an additional 530 MBF from lands currently available for regulated timber harvest that would be in the corridor in Alternatives A and B, but outside of the Alternative A corridor. Assuming a $500 per thousand value on the timber, this would result in an overall decline of approximately $495,000 in timber receipts, or a reduction of approximately $124,000 in money paid to Clackamas County for the decade for its 25% share of those receipts.

Some timber harvest may take place within the river corridor but this harvest would be restricted and only permitted where it protected, enhanced or restored river values and met the visual quality objectives for the river.

Costs of any harvesting that might take place would be much higher than for Alternatives A, D or E in part due to decreased road access and the need to use more expensive and more sophisticated equipment. Use of such equipment may require the development and application of silvicultural systems with less flexibility and such systems would likely be more more expensive to develop and implement.

The harvest of special forest products would be severely restricted (Alternative C) or prohibited entirely (Alternative B). Only the harvest of mushrooms for personal use would continue to be permitted in Alternative C, however, the number of permits issued and the quantity harvested would be severely limited. Under these alternatives, the opportunities to manage the area to maintain populations of existing early successional plant species and communities common to the area, (such as mosses, lichens, certain types of mushrooms, and beargrass), would be limited. This is because one of the emphasis of these alternatives is to let natural successional processes continue to their maximum extent, especially in Alternative B. Over time, this would result in a decline in not only the quantity and distribution of those species but also in their relative quality. Conversely, the natural succession of species would result in a change of potential products available.

The Old Maid Flats area has a historic pattern of the harvest of the so-called "Matsutake" or pine mushroom. Members of the Portland Japanese community have harvested the area for several generations, often passing favorite harvest areas from generation to generation. Prohibition or severe limitations on the amount of harvesting of this species would disrupt this cultural activity which is not easily replaced as similar areas are not present on the district or generally found on the Forest.

For both Alternatives B and C, effects to timber harvest on private lands within and adjacent to the river corridor would be essentially the same as Alternative A. There is the potential, with reduced harvest levels from the Forest that would result from this alternative, that there may be increased pressures placed on private forest landowners to cut their timber prematurely or inappropriately. Such actions could increase the potential for adverse impacts to other values such as water quality or visual quality. This potential is considered to be small since the reduction of 990 MBF per decade is only 1/2 of 1% of the Forest ASQ of 189,000 MBF.

Alternative D and Alternative E

Both Alternatives D and E have similar impacts to Alternative A although Alternative D is somewhat more restrictive than either Alternative E or Alternative A. Regulated timber harvest would be permitted on lands within the corridor in the Recreational segment not identified as part of the Old Maid Flat Special Interest area. Projected timber harvest from lands within the corridor would be approximately 520 MBF per decade. Assuming a $500 per MBF value on the timber, timber harvest would generate approximately $260,000 in timber receipts, or approximately $65,000 over the next decade for its 25% share of those receipts. This would be an increase of approximately $8,000/decade from current levels. Overall change to the ASQ for the Forest would be an increase of 60 MBF per decade or about 0.03% of the current Forest ASQ of 189,000 MBF per decade.

Both alternatives permit a more active management role than either Alternative B or C on A allocation lands within the river corridor. Timber harvest could be actively utilized as a tool to establish or maintain desired stages of plant community successional development. If utilized, timber harvest activities would still be required to protect, enhance, and/or restore river values and meet visual quality objectives and requirements.

Costs associated with timber harvest would be lower than for Alternatives B and C because of the potential to construct necessary roads to access harvest areas. Such road access permits the use of less expensive and less sophisticated harvesting technology and may provide a greater degree of flexibility in developing and implementing a variety of silvicultural strategies to achieve desired resource objectives.

The harvest of special forest products, both existing and potential, would be permitted subject to meeting the requirements of maintaining, enhancing or restoring river values. Opportunities to actively manage and healthy populations of special products through vegetation management activities such as timber harvest could be prescribed and implemented. Alternatives D and E provide opportunities to varying degrees to retain existing plant communities with the resulting retention of existing special products. These alternatives, however, do not preclude the developing additional products or product opportunities where natural successional processes would continue in the corridor.

For both Alternatives D and E, effects to timber harvest on private lands within and adjacent to the river corridor would be essentially the same as Alternative A.

Scenic Resources

Scenery is an "outstandingly remarkable" value in all of segment 1 and in segment 2 from segment 1 to McNeil Campground. Downstream from McNeil Campground, it is considered a "substantial" value. Scenic values are one of the original outstandingly remarkable values identified by Congress when the river was designated a Wild and Scenic River in 1988

Except for natural catastrophes, human activities have the greatest potential for altering landscape character. These activities are regulated in varying degrees in the alternatives. Certain activities have potential negative effects on scenic quality while others have potential positive effects:

☐ Those with potential negative effects include:

- recreation site development;
- fish and wildlife habitat improvements;
- road construction;
- timber harvest;

- mineral exploration and development; and
- residential construction.

☐ Those with potential positive effects include:

- increasing the width of the river corridor in certain areas;
- raising the visual quality standard to a higher level;
- enhancement of views to landscape features;
- enhancement of foreground views by the addition of small scale variety;
- rehabilitation of existing timber harvest units;
- rehabilitation of road cuts and fills;
- reclamation of impacted riparian zones;
- closure of some dispersed campsites;
- providing timber harvest design assistance to private landowners;
- revision of county zoning ordinances; and
- purchase of scenic easements.

Alternative A

Segment 1 - Wild River

Under current Forest Plan standards, the interim boundary of one-quarter mile on each side of the stream would be adopted. The Visual Quality Objectives (VQO's) would remain as Preservation (except for structural facilities, where Retention would apply). Viewshed (middleground) VQO's outside the corridor (and outside the Wilderness boundary) are Retention (except for structural facilities, where Partial Retention would apply).

Within the corridor, the only uses which might adversely affect the scenic quality are fish and wildlife habitat enhancement projects. These activities normally have minimal effects on the landscape. In addition, nearly all of this segment is bounded on both sides by Wilderness where fish and wildlife habitat enhancement projects would not be implemented. Therefore, the Future Visual Condition is expected to remain Natural Appearing. The ROS class would remain Semi-Primitive Non-Motorized.

Segment 2 - Recreational River

Under current Forest Plan standards, the interim boundary of one-quarter mile on each side of the stream would be adopted. The VQO's would remain as Partial Retention (Modification for structural facilities). Viewshed (middleground) VQOs outside the corridor would be Partial Retention (Modification for structural facilities). The Future Visual Condition is expected to range from Slightly Altered to Moderately Altered as a result of some timber harvest activities and some development of recreation facilities. ROS class would remain Roaded Natural.

Alternative B

Segment 1 - Wild River

Effects would be the same as Alternative A with the exception that the corridor boundary would be expanded in this segment in the area located outside the Wilderness. Effects for this additional area in the corridor would be the same as the rest of the corridor outside wilderness in the segment.

Segment 2 - Recreational River

The corridor boundary would be expanded in this segment. The VQO's would increase to Retention (Partial Retention for facilities) in the corridor and in the viewshed (middleground) for greater protection of scenic values. Negative visual impact areas would be rehabilitated. The Future Visual Condition is expected to range from Natural Appearing to Slightly Altered.

In the corridor, the ROS class would remain Roaded Natural, but would move toward the Semi-Primitive Motorized end of the spectrum due to lower impact activities and facilities with assumed lower numbers of recreationists present. Improving Riley and McNeil Campgrounds to address existing resource impacts, closing the road to the upper Ramona Falls trailhead, removing the existing pedestrian bridge and not replacing it, designing the Cascade Streamwatch facility to a lower development scale, closing and rehabilitating the existing shooting area and some dispersed camping sites, and prohibiting OHV use would all help to reduce use in the area. The reduced use would reduce impacts to visual quality that would come about from that use and help correct areas where visual impacts are currently present. Construction of the proposed entrance facility will also help reduce impacts since it provides the opportunity to inform visitors on how they can better protect the river and its values, including its scenic values.

In addition, not permitting any mineral development, including development of geothermal facilities, and not permitting any regulated timber harvest in the corridor will also reduce the potential for impacts from these activities on visual quality of the corridor and viewshed.

Alternative C

Segment 1 - Wild River

Same as Alternative B.

Segment 2 - Recreational River

The corridor boundary would be expanded in this segment the same as in Alternative B. The VQO's in the corridor and viewshed outside the corridor (middleground) would remain as Partial Retention (Modification for facilities). If necessary, scenic easements on private lands could be acquired from willing sellers and some viewpoints would likely be developed that would focus on the river and its unique attributes. The Future Visual Condition is expected to range from Slightly Altered to Moderately Altered.

Impacts to the ROS class and overall visual quality would be similar to Alternative B, though there would be a slightly higher level of development of recreational facilities within the corridor including development of the Cascade Streamwatch facility to a higher level than in Alternative B. Also a group campground may be developed as long as it focuses on natural attributes in the corridor. Some additional interpretive trails and key areas to access the river may also be developed in the corridor. The pedestrian bridge over the Sandy River would be replaced with a bridge that is more visually acceptable than the current bridge. As a result of these additional developments, the ROS class, while still nearer overall to the Semi-Primitive Motorized end of the Roaded Natural class, would be closer to the middle of the spectrum than Alternative B.

Alternative D

Segment 1 - Wild River

Same as Alternative B.

Segment 2 - Recreational River

The corridor boundary would be expanded in this segment but that expansion would be less than in Alternatives B and C. The VQO's in the corridor and viewshed outside the corridor would be the same as Alternative C. As in Alternative C, scenic easements may be acquired from willing sellers and even more viewpoints would be developed focusing on the river, its unique attributes and Mt. Hood. Overall Future Visual Condition is expected to range from Slightly Altered to Moderately Altered with the alteration being caused by limited timber harvest and development of recreational facilities.

The ROS class for the corridor would remain Roaded Natural as it currently is. Additional facilities beyond that already permitted in Alternatives B and C include some additional trails to meet the needs of hikers, equestrians, and mountain bikers; potential expansion of Riley and McNeil Campgrounds; and some trailhead improvements for sanitation purposes at the upper Ramona Falls trailhead in addition to that already developed at the lower trailhead in Alternatives B and C. It is the presence of these facilities that would have the ROS class that visitors would experience in the center of the Roaded Natural spectrum, as compared to Alternatives B and C where it would be closer to the Semi-Primitive end of the spectrum.

In this alternative, geothermal development could be allowed as long as there would be no surface occupancy allowed within the corridor. Regulated timber harvest and collection of miscellaneous forest products would also be permitted. These activities, if implemented, must meet the VQO's for the corridor and viewshed, limiting their impacts to visual quality. The potential to impact visual quality would be higher in this alternative than in Alternatives B and C, similar to Alternative A, and less than in Alternative E.

Alternative E

Segment 1 - Wild River

Same as Alternative B

Segment 2 - Recreational River

The corridor boundary and VQO's for the corridor and viewshed would be the same as Alternative D. Scenic easements may be acquired from willing sellers and additional viewpoints would be developed in the corridor. Other actions, such as enhancement projects to enhance visual foreground variety along selected travel routes (i.e.., create small scale openings, plant native species with fall color or spring bloom, etc..) may also be done. The Future Visual Condition is expected to range from Slightly Altered to Moderately Altered.

The ROS class for the corridor would remain Roaded Natural, but it would move closer to the Rural end of the spectrum because of expected higher numbers of visitors in the corridor than other alternatives, and higher levels of facility development. Additional facilities developed beyond that permitted in Alternative D include an additional single family campground; additional hiker, bicycle, equestrian trails; possible additional interpretive trails, and improvement of the road and upper trailhead at the upper Ramona Falls trailhead.

Effects to visual quality from other resource activities would be very similar to that in Alternative D though there might be a higher level of timber harvest activity. Of all the alternatives, this alternative has the greatest potential to adversely effect visual quality in and adjacent to the river corridor, though all activities would still need to meet VQO's standards when implemented, providing overall protection to the visual quality of the river.

Cultural and Heritage Resources

Alternative A

Under **all alternatives**, including Alternative A, The Sandy River would be managed under current standards and guidelines of the Mt. Hood National Forest Plan. Cultural resource inventories and reports would be completed for all undertakings proposed within the river corridor and the undertakings assessed for their potential to affect cultural resources. Any identified cultural resource within the river corridor that may be affected by an undertaking would be evaluated to establish its significance and eligibility for inclusion on the National Register of Historic Places. Listed, eligible, or unevaluated cultural resources would be protected from adverse impacts or their values would be conserved through proper scientific study and/or data recovery.

Alternative B

Implementation of Alternative B would minimize the influence of human activities and thus potentially reduce the adverse impacts to cultural resources associated with higher levels of human use. OHV use, which has the potential for severe site degradation, would not be allowed in the corridor. The target shooting area on Lolo Pass Road would be closed which would lessen the impacts to the adjacent Clear Fork Guard Station site.

This alternative could result in the greatest degree of protection for the Upper Sandy Guard Station. Closing the Ramona Falls upper trailhead, the road to the trailhead and removing the existing footbridge would reduce the number of people utilizing the cabin and its immediate surroundings. The Pacific Crest Trail/Timberline Trail would be rerouted away from the cabin and efforts to create a natural vegetation screen would be implemented providing an even greater level of protection for the structure.

Alternative C

Rather than reducing the current development level of recreational services as in Alternative B, this alternative would focus facilities and management towards protection and enhancement of natural attributes. OHV use would be prohibited within the corridor and the target shooting area would be closed and rehabilitated.

As in Alternative B this alternative would close the Ramona Falls Trail upper trailhead and the road to the trailhead thus increasing the hiking distance from the trailhead to the Upper Sandy Guard Station. The pedestrian bridge across the river would be replaced so the number of visitors would be greater than Alternative B but still less than current use levels. This could potentially result in less adverse impacts to the cabin than are presently being experienced. It is possible that visitor levels and any impacts associated with higher use levels may be limited through wilderness management regulations developed in the Mt. Hood Wilderness management planning efforts. The Pacific Crest/Timberline Trail would be relocated away from the cabin and the cabin visually screened thus further protecting it.

Alternative D

Although human activities could generally be expected to increase with implementation of this alternative, it would still provide a high level of protection of river related values. Increased use would correspond with increased exposure to what may be sensitive cultural resources and may lead to adverse impacts. This potential is mitigated to a degree in implementation of interpretive efforts. The target shooting area would be closed, thus reducing the impacts to the adjacent Clear Fork Guard Station site. Alternative D would allow for the potential for OHV use within the corridor if suitable locations could be found. If suitable locations could not be found, then that use would be directed to other more suitable areas on the Forest.

The road to the Ramona Falls upper trailhead would remain open as well as the trailhead itself. However the Pacific Crest/Timberline Trail would be relocated away from the Upper Sandy Guard Station and the cabin visually screened. Current levels of use of the cabin and its surroundings would be expected to remain at or near the levels currently experienced. It is possible that visitor levels and any impacts associated with higher use levels may be limited through wilderness management regulations developed in the Mt. Hood Wilderness management planning efforts.

Alternative E

This alternative was developed to respond to what is believed to be an increased demand for general recreation opportunities on the Forest. It emphasizes human related recreation activities by enhancing, enlarging, and creating new recreation facilities. A significant increase in numbers of visitors and associated adverse impacts to heritage resources could be expected if this alternative is implemented. It is possible that visitor levels and any impacts associated with higher use levels may be limited through wilderness management regulations developed in the Mt. Hood Wilderness management planning efforts. As in Alternative D, the target shooting area would be closed and OHV use would be allowed for if suitable locations could be found.

The road to the Ramona Falls upper trailhead would remain open and would be improved thus encouraging vehicular traffic to access the trail from the upper trailhead. This would result in greater numbers visiting the Upper Sandy Guard Station than is presently experienced. This increased use would be expected to result in further degradation of the cabin and its surroundings. The cabin would be screened visually with natural vegetation and the Pacific Crest/Timberline Trail relocated away from the cabin.

Private Land Use

Alternative A

No change is state county and local regulation of private land is proposed by this, or any of the other alternatives. There should be no direct effect to private lands within or adjacent to the corridor as a result of this alternative. The Forest Service does not have any regulatory authority over private lands. That authority lies with state, county and local governmental authorities. Any future changes to those regulations are unknown and the effect can not be evaluated in this analysis.

Increased use in the river corridor is expected and with the increased use, there is the potential that trespassing on private lands may increase. Current plans call for closure of some roads that provide access to areas adjacent to private lands. This should greatly reduce the potential for trespass by limiting access to those areas. Development of a sno-park would reduce parking problems that some private landowners are experiencing of skiers parking in their driveways, (see Recreation - Other Recreational Opportunities section).

Alternative B

Regulatory effects on private lands is the same as Alternative A.

Future overall use in the corridor is expected to be lowest in this alternative of all the alternatives. Lower use of the Forest by visitors would have lower potential for trespass on private lands from Forest Service lands. Closure of roads providing access to areas adjacent to the private lands greatly reduce the potential for trespass onto private lands. Development of the sno-park would reduce problems landowners are experiencing of skiers parking in their driveways.

Alternative C

All effects would be very similar to Alternative B but use levels in the corridor are expected to be slightly higher so there would be a corresponding increase in the potential of trespass on private lands by Forest visitors. By limiting access through road closures to areas adjacent to private lands, the potential for trespass should be relatively low.

Alternative D

Effects would be very similar to Alternative C but higher use levels may cause a corresponding increase for potential of trespass on private lands. By limiting access through road closures to areas adjacent to private lands, the potential for trespass should remain relatively low.

Alternative E

Effects would be very similar to Alternative D but even higher use levels may cause a corresponding increase for potential of trespass on private lands. By limiting access through road closures to areas adjacent to private lands, the potential for trespass should remain relatively low.

Socioeconomics

The major effects of the alternatives on the socioeconomic environment would be the changes to the economic opportunities associate with river related resources and changes in the quality of resources such as scenery and recreation. Economic opportunities are examined by looking at the amount of money which would be paid from Forest receipts to Clackamas County an changes in employment and incomes resulting from Forest outputs, receipts, and expenditures in the corridor under each alternative. Typically these changes reflect decreases or increases in the amount of timber harvested, and recreation use in the corridor. Non-commodity values such as scenery are also considered.

Alternative A

This alternative would cause no change in timber related employment or in receipts available to Clackamas County. Service related employment would stay the same or increase slightly as a result of some additional recreation use that would take place within the corridor. Non-commodity values would be protected at a slightly higher level, due to correcting some resource damage in dispersed areas and closure of some roads in the lower corridor. Timber harvest in some areas may cause some localized changes which may be less desirable for some of the recreation activities currently taking place.

Alternatives B and C

These alternatives would cause a decrease in timber related employment but the effect small overall since the reduction is only 1/2 of 1% of the Forest's current ASQ. There is a possibility of a small drop in service related employment in both of these alternatives if overall use in the corridor were to drop below current levels. This possibility is greatest in Alternative B. For both alternatives, this potential drop is considered very small since any reductions in visitor numbers is ultimately expected to be offset somewhat by increasing numbers of visitors from the Portland area from the increasing metropolitan population. These alternatives provide the highest levels of protection for non-commodity values, with Alternative B providing a higher level of protection.

Alternatives D and E

These alternatives would allow a very slight increase in timber related employment. With increased numbers of visitors coming to the Forest from the metropolitan area as a result of increasing population, there is a potential for an increase in service related employment. This potential is greatest in Alternative E. Non-commodity values will be protected at a level similar to Alternative A.

	Alternatives				
	A	B	C	D	E
Change in ASQ in thousand board feet/decade	0	-990	-990	+60	+60
Change in dollar returns to Clackamas County/decade*	$0	-$124,000	-$124,000	+$8,000	+$8,000

**Changes in the amount of timber harvest will change the dollars distributed to local counties for schools and roads by $0.25 for each dollar of revenue received for harvest of federally owned timber. Amounts based on $500 per thousand board feet.*

Required Disclosures

The interdisciplinary team determined that all five alternatives met all applicable national laws and executive orders with specific direction regarding wild and scenic river and National Forest land management. These items included cultural resources, water quality, forest regeneration, scenic quality, air quality, soil productivity and threatened, endangered, and sensitive plant and animal species. It was determined that none of these alternatives would have a significant adverse on any of the above.

For all alternatives, irreversible and irretrievable commitments of resources would not exceed those discussed in the Final Environmental Impact Statement for the Mt. Hood National Forest Land and Resource Management Plan.

There are floodplains and wetlands in the planning area. Any effects on these are evaluated in this chapter under appropriate sections. There are not prime farmlands or rangelands within the planning area.

Until research findings can resolve some major scientific uncertainties, evaluation of climate change effects in a document such as this would be speculative. Native American Rights, including those covered by the American Indian Religious Freedom Act, would not be affected. Effects on Native Americans, other minorities, and women would be similar to socioeconomic effects on the general population.

Alternative A, the no-action alternative, is in compliance with the Forest Plan. All other alternatives would require an amendment to the Forest Plan before they could be implemented.

Chapter 5

Consultation With Others

List of Preparers

Interdisciplinary Team

John Davis, silviculturist for the team, has a B.S. in forestry from the University of Minnesota. He also has 2 years of graduate studies in silviculture from the University of Washington. He has 10 years of planning experience and has been on the Mt. Hood National Forest since 1983.

Tom Deroo, geologist for the team, has a B.S. in geology fro the University of Washington. He has 14 years of experience as a geologist, all with the Forest Service. He as worked on the Mt. Hood National Forest since 1986.

Carol Hughes, wildlife biologist for the team has a B.S. in Natural Resources, with a major in Wildlife Biology, from Ohio State University. She has 4 years of experience in planning and wildlfe biology, with the last 3 years on the Mt. Hood National Forest.

Jeff Jaqua, the cultural resource specialist for the team has a B.A. in anthropology from the University of Montana, and a B.S. in zoology from Montana State University. He has also pursued graduate studies in archeology at Portland State University and University of Idaho. He has worked for the Mt. Hood National Forest since 1978.

Gary Loeffler, the landscape architect for the team has a B.S. in biology from Oregon State University; a B.L.A. in Landscape Architecture from University of Oregon; and an M.R.P. in Regional Planning and Landscape Architecture from the University of Pennsylvania. His Forest Service work spans 22 years as a Landscape Architect on 3 Forests as well as providing assistance to several other Forests throughout the Pacific Northwest.

Paul Norman, recreation specialist and team leader for the team, has a B.S. in Outdoor Recreation from Colorado State University. He has 14 years planning experience on the Mt. Hood and Sierra National Forests. Prior to 1978, Paul was in private forestry consulting.

Molly Sullivan, botanist for the team has a B.A. in botany from the University of Hawaii, and a M.S. in botany from the University of Rhode Island. She has 13 years experience in planning and in botany and aquatic ecology.

Sharon Traxler, transportation planner for the team, has 13 years experience in road management/transportation planning all on the Mt. Hood National Forest.

The following people provided valuable technical assistance:

Glen Sachet, Recreation, Forest Planning,
Jaimie Bradbury, GIS/Mapping
Larry Bryant, Hydrology
Bing Beckman, Fire Management
Dave Lewis, Landscape Architecture
Karen Austin, Wildlife
Bruce Haynes, Recreation

Agencies, Organizations, and Individuals Consulted

Government

Bureau of Land Management
City of Sandy
Clackamas County
Confederated Tribe of the Warm Springs
Confederated Tribes of the Grande Rhonde
METRO
Mt. Hood Community College
Multnomah County
National Marine Fisheries Service
Northwest Power Planning Council
State of Oregon
U.S. Fish and Wildlife Service
U.S. Geological Survey

Agencies and Organizations

American Rivers
Angler's Club of Portland
Association of Oregon Archeologists
Automobile Club of Oregon
Cascade Geographic Society
Chemeketans
Columbia River Intertribal Fish Commission
The Flyfishing Shop
Friends of Enola Hill
Friends of the Columbia Gorge
Handisportsters
Hanel Lumber Company
Heritage Research Association
Lower Columbia Canoe Club
Mazamas
Mt. Hood Independent Steelheaders
National Organization for River Sports
National Wildlife Federation
Native Plant Society of Oregon
Nature Conservancy
Northwest Forestry Association
Northwest Steelheaders
Oregon Equestrian Trails
Oregon Historical Society
Oregon Kayak and Canoe Club
Oregon Motorcycle Riders Association
Oregon Mycological Society
Oregon Natural Resources Council
Oregon Trout
Pacific Rivers Council
Pacific Crest Trail Conference
Portland Audubon Society
Portland General Electric
Shared Outdoor Adventure Recreation (SOAR)
Sierra Club
Trout Unlimited
Western Wood Products Association

Wilderness Society
World Forestry Center

Private Landowners and Interested Individuals

Private landowners that were within interim corridor of the upper Sandy River were put on a mailing list to keep them informed as we proceeded through the process. There are 81 individual landowners on this list. In addition to the agencies and organizations listed above, and the private landowners within the river corridor, over 80 additional individuals have expressed interest in the plan and are also on the mailing list.

The following individuals provided additional verbal and written input and/or attended public meetings.

Tom Alway
Patty Barnes
Julie and Joe Barrell
Mary Brownie
Javier and Sharon Chacon
Connie Chamness
Richard Chapman Jr.
Bonnie Clark
Bill and Sue Croteau
Trisha Davidson
Randy Drew
Fritz Dobin
Dwight Engler
Karmy Rogers-Halliday
Nancy Haring
Gene and Nancy Harris
Frances Hart
Mauragrace Healey
Greg Hessler
Doug and Fran Holdorf
Penny Housego
Ron and Diana Hug
Judy Janssen
Marlene Koenig
Ernest and Mathilde Laizure
Valerie Lantz
Marian Lee
James Lind
Phyllis and Greg Litchfield
John Marks
Wally and Dina McDermed
Don Mench
Christy Slovacek-Mench
Don Miller
Dorthy Moore
Tom Murtagh
Kenneth Neal
Tom Niemela
Gregory Odle
Judy Parke
Rick Pauli
Bill and Darlene Pritchard
Avis Rana

Deni Rauw
Wayne Runkle
Vicki Russell
Ivy and Larry Sager
Barbara Schlitt
DeeAnn Schlitt
Dick and Sally Seymore
Gary and Peg Sischo
Marilyn Slade
Terry Sroufe
Cindy and Chuck Steahly
Bonnie Stockman
Richard Teplick
Bud Terry
Chris Thoreen
Dennis Tylka
Wally VonBergen
Mary Warner
Michael and Becky Wirth
Dan Wolf
Rebecca Wolf
Dennis Yamnitsky
Linda Yarno
Tom Zimmerman

Summary of Public Involvement

Resource Assessment

Consultation with specialists
Newsletter
Public Meeting 9/90
Written comments

Issues

Newsletter
Consultation with specialists
Mailing
Written comments
Public meeting 9/90 and 4/93
Meetings with groups

Alternative Development

Public meeting 4/93
Mailing
Written comments
Meetings with groups

Analysis of Effects

Consultation with specialists
Written comments

Recommendations on Preferred Alternative and Boundary

Public meeting 4/93
Mailing
Written comments
Meetings with groups

Enviornmental Assessment/Decision Notice

Comment period on E.A.
Written Comments

Appendix A

Resource Assessment

Resource Assessment

Upper Sandy River

National Wild and Scenic River
Mt. Hood National Forest
USDA Forest Service

October 1990

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Executive Summary

The mainstem of the Sandy River from its headwaters to the Forest boundary and from Dodge Park to Dabney State Park was designated by Congress as a wild and scenic river in 1988. The Mt. Hood National Forest is responsible for development of a management plan and administration of the upper segment of the river from the headwaters to the Forest Boundary. The Bureau of Land Management and the Oregon State Parks and Recreation Department share responsibility for management plan development and administration of the lower segment.

As a first step in preparing a management plan for the upper Sandy, the Forest Service has assessed the resources and values of that river segment. The Forest Service's findings are that scenic, recreation, geologic, fisheries, and ecological/botanical values are all outstandingly remarkable on the upper Sandy River.

Introduction

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 added segments of 40 Oregon rivers to the National Wild and Scenic Rivers System. Five of those rivers occur on the Mt. Hood National Forest and include the Clackamas, Roaring, White, Salmon and Sandy Rivers. Congress found these rivers to be essentially free-flowing and to possess at least one outstandingly remarkable value.

The designated portions of the Sandy River are in two distinctly separate sections which were designated by Congress as Wild and Scenic. The upper Sandy River (headwaters to the Forest boundary) is primarily public land administered by the USDA Forest Service. Consequently, the Forest Service has lead federal agency responsibility for developing the river management plan and administration of the upper Sandy.

The lower section (Dodge Park to Dabney State Park) is primarily State and private land. The lower section is also a component of the State Scenic Waterways System. The USDI Bureau of Land Management (BLM) is the lead federal agency for river management on the lower designated section. The BLM and the Oregon State Parks and Recreation Department will develop a joint federal-state management plan for the lower section.

This resource assessment represents the first step in the development of the management plan for the upper Sandy River. It will serve as the foundation for the management plan which will be developed within the next two years. The purpose of this assessment is to document the findings of which river related values or features are truly outstandingly remarkable or contribute substantially to the river setting or to the function of the river ecosystem.

River Description

Congress designated 12.4 miles of the upper Sandy River in the Omnibus Oregon Wild and Scenic Rivers Act of 1988. Due to the different level of existing development, the river was divided into two segments:

Segment 1- The 4.5-mile segment from the river's headwaters to the section line between sections 15 and 22, township 2 south, range 8 east as a **wild river**; to be administered by the Secretary of Agriculture.

Segment 2- The 7.9-mile segment from the section line between sections 15 and 22, township 2 south, range 8 east to the Mt. Hood National Forest boundary at the west section line of section 26, township 2 south, range 7 east as a **recreational river**; to be administered by the Secretary of Agriculture.

All of Segment 1 (4.5 miles) is on National Forest System lands and is almost entirely within the Mt. Hood Wilderness. Segment 2 includes both National Forest System and 490 acres of private lands (0.2 river miles on north shore only). Within this private land portion of Segment 2, there are several scattered cabins and houses, and a small family-operated sawmill.

There are currently no valid permit applications for hydroelectric projects on the upper Sandy River although there has been some preliminary consideration in the past.

Resource Assessment Process

For additional discussion of the resource assessment process, see Appendix A-1.

The first step in developing a river management plan is evaluating the resources and values associated with the river and river corridor, and determining the level of significance of **river-related values**. This process is called the resource assessment. The findings in this process are based on informed professional judgment and utilizes specific guidelines that provide a degree of standardization and consistency.

The purpose of this resource assessment is to document those river-related values or features that are truly "outstandingly remarkable values" and those, while not outstandingly remarkable, are significant and contribute substantially to the river setting or to the function of the river ecosystem. To qualify as an outstandingly remarkable value, the river-related value must be a unique, rare, or exemplary feature that is significant at a regional or national level. Specific criteria for individual values are described in the discussion of each of the values.

For regional comparison, geographic regions defined in the State of Oregon Comprehensive Outdoor Recreation Plan (SCORP) are used. The Sandy River is within SCORP Region 7 (see Appendix A-2 for a SCORP Regional Map. SCORP Region 7 contains the most heavily populated area of the state. It is located in the northern Willamette Valley and the bordering Cascade Range. Region 7 also contains the Clackamas, Roaring, Salmon, and lower segment of the Sandy Wild and Scenic Rivers. The Columbia River forms its northern boundary.

Discussion of Values

A narrative description of each value considered follows with the rationale for the determination. In the case where a determination could not be made because of insufficient information, an explanation is given including requirements necessary to complete the determination. The description includes the existing condition of the value, the potential of the value, any possible threats to the value, and information needed to complete protective management direction. The Resource Assessment also provides specific identification of the location of resource values if it does not occur throughout the reach.

Scenic

Outstandingly Remarkable Criteria

The landscape elements of landform, vegetation, water, color and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions (such as power lines) are viewed may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment.

Preliminary Finding

For the purposes of scenic analysis, the upper Sandy River was evaluated by segment. Segment 1, the Wild portion, was found to meet the scenic criteria for outstandingly remarkable. A steep river canyon, rock pinnacles, open sandy faces, diverse vegetation patterns and excellent photo opportunities characterize this segment with little or no evidence of human alteration.

Segment 2, the recreational portion, was further divided into an upper and lower segment due to a distinct change in the visual quality of the segment. The upper portion of Segment 2 (from Segment 1 downriver to approximately one-half mile above McNeil Campground) was also found to be outstandingly remarkable because of a variety of vegetative and erosion patterns along the river. The lower portion of Segment 2 (from approximately one-half mile above McNeil Campground downstream to the forest boundary) was not considered an outstandingly remarkable feature as it is more characterized by human alterations such as power lines, roads, rock pits, campgrounds, private housing developments and previous timber harvest areas.

The Bonneville Power Administration maintains a 300 to 600 ft. power withdrawal containing three high voltage (230KV) power lines in the lower three miles of Segment 2.

Discussion of Existing Situation

The Upper Sandy River is glacier-fed, arising from the Sandy and Reid Glaciers near the summit of Mt. Hood. The river flows westerly through steep canyons and over waterfalls and cascades, surrounded by diverse scenery including rock outcrops and pinnacles, open sandy faces, high mountain meadows, and large fir and hemlock stands adjacent to lodgepole pine forests in the Old Maid Flats area. The diversity of land form, rock form, water form, and vegetative patterns the river flows through provides outstanding scenic values along the river in segment 1 and the upper portion of segment 2 upstream from McNeil Campground.

Photographic opportunities abound along the upper sections of the river. There are many open areas that provide excellent opportunities for photographing the west face of Mt. Hood and other features along the river. In the Old Maid Flats section, the combination of vegetation such as mosses and low growing plants combined with rocky, poorly developed soils, provide natural "rock garden" type views in the foreground that are enjoyed by many.

A wide variety of human-induced alterations exist within the lower river corridor from approximately 1/2 mile above McNeil Campground downstream to the Forest boundary. These include private residences, campgrounds, roads, a rock pit, and previous timber harvest units. The Bonneville Power Administration maintains a 300 to 600 ft. wide power withdrawal containing three high voltage (230 KV) powerlines in the lower three miles of segment 2. Those alterations that tend to impact larger areas of land such as the powerline corridor, previous timber harvest units, rock pits, and roads tend to detract more from the visual quality of the river corridor.

Future timber harvest activities have the potential to adversely impact the visual character of the river outside the river corridor dependent upon the harvest methods, harvest prescription, and size of harvest units.

Outstandingly Remarkable Criteria

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 recreate on the Sandy River. River recreation includes such activities as sightseeing, wildlife observation, photography, hiking, fishing, hunting and boating.

Interpretive opportunities may be exceptional and may 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 recreation events.

Preliminary Finding

Recreation values on both segments of the Upper Sandy River were found to qualify as outstandingly remarkable. This finding is supported by a wide variety of recreational opportunities ranging from wilderness hiking experiences to facilities being developed adjacent to the interim corridor to meet the needs of the physically challenged. The area along the river is known regionally for unique mushrooming opportunities and contains excellent potential for development of interpretive opportunities. Trails along the river are important to hikers and equestrians alike. The river itself provides a unique kayaking experience for experienced kayakers that is not provided by other rivers in the region.

The wide diversity of recreational opportunities close to the Portland metropolitan area also supported the determination of an outstanding value.

Discussion of Existing Situation

Ramona Falls is located roughly one mile inside the Mt. Hood Wilderness. This area is accessed by a loop trail and is the highest-used area within the Mt. Hood Wilderness. Although Ramona Falls is just outside of the interim corridor, the southern portion of the loop trail runs parallel to the Sandy River for a distance of 1.6 miles. The Pacific Crest National Scenic Trail crosses the upper Sandy River approximately 0.9 miles upstream of the Wilderness boundary and forms part of the Ramona Falls Loop Trail.

Just to the south edge of the river corridor, a campground and recreation area, including special fishing platforms, is being developed on Lost Creek. This facility is being built by the Forest Service and several clubs and organizations and is designed to provide recreational opportunities for people who are physically challenged. This facility was recently recognized in a national contest for most effective use of "cost share" funds. When completed, the facility will likely attract recreationists from around the U.S.

The geology of the Old Maid Flats provides unique ecological conditions for a variety of mushrooms, including the morel and the matsutaki, both of which are highly prized edible wild mushrooms. Because of this, the area draws mushroom hunters from around the region.

The unique geological and ecological values along the river have the potential for providing unique opportunities for outdoor interpretation, education and photography. These activities were projected by the 1989 Statewide Comprehensive Outdoor Recreation Plan (SCORP) as having a high future growth potential. The Old Maid Flats area provides an outstanding example of true primary succession. While lodgepole pine (Pinus contorta) is not a unique species in and of itself, its presence in a homogeneous stand of this size is rare on the west side of the Cascade Range and provides support for unique ecological characteristics at Old Maid Flats. The area also provides a easily observed textbook example of a volcanic debris flow deposit and associated features. These features include an easily observed cross section due to downcutting of the Sandy River as well as a ghost forest and buried stumps. There are many areas along the river corridor and on roads adjacent to the river that provide opportunities for developing overlooks and other areas to interpret these unique features associated with the river.

There are three campgrounds in or near the interim boundary. One of these is Riley Horse Camp which has been designed to meet the needs of equestrians. There are very few campgrounds on the Forest which are designed to meet these needs. A variety of trails leading into the wilderness directly from this site enhances the recreation experience.

The trails along the upper Sandy are important to hiker and equestrian alike. It is important to stress the importance of these trails to equestrians since a limited number of trails on the Forest are available for equestrian use.

The fact that the upper Sandy River area is within an hour's drive to three-quarters of the state's population makes it particularly significant. Mountain biking, motorcycle riding, target shooting, and deer and bear hunting are other activities that attract people to the area.

In the publication, Recreational Values on Oregon Rivers, developed by the Oregon State Parks and Recreation Division; canoeing, kayaking, drift boating, rafting, salmon and steelhead fishing, and other values such as hiking, camping, and nature viewing all listed as "outstanding recreational resources" for the Sandy River. While this assessment applies to the values present along the entire river, many of those values mentioned are present in the upper Sandy River.

Cross-country skiing is popular during winter months when the snow level drops far enough. Use occurs primarily on Forest Road 1825 with some use on Forest Road 1828. Dependent upon snow conditions, Road 1825 is closed to motorized vehicles from November 15 to April 1 from above where the road crosses the Sandy River. Road 1828 also receives use by snowmobiles and all-terrain vehicles when snow conditions permit.

Some fishing occurs for native cutthroat and planted rainbow trout. The river and its tributaries are open for steelhead angling from the fourth saturday in May to December 31 each year though actual use of the upper section of the river for steelhead angling is considered to be relatively low in comparison to the lower portions of the river. Lost Creek, a tributary to the river is probably the most heavily fished tributary on the river. Fishing use on Lost Creek is considered to be moderate.

The upper Sandy River provides a unique kayaking opportunity for experienced kayakers. The river in this segment is kayaked primarily from McNeil Campground downstream to the Lolo Pass Bridge (5.5 miles) and is described in Soggy Sneakers, Guide to Oregon Rivers, published by the Willamette Kayak and Canoe Club. The stretch is classified as class 4 to 4+, and is described as "among the steepest runable river sections anywhere in the state." Personal correspondence with Thom Powell of Oregon Kayak and Canoe Club confirms that this river section provides a unique experience by offering, "a level of challenge and sustained intensity that is unmatched by any other river in the region". Use is estimated at approximately 100 user days annually along this section of river, primarily during high water flows.

Outstandingly Remarkable Criteria

The river or the area within the river corridor contains an example(s) of a geologic feature, process, or phenomenon 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).

Preliminary Finding

Geologic values along the Sandy River have been found to be outstandingly remarkable. Several examples of geologic features related to volcanism, glaciation, and erosion are found along the length of the river. The river is important for dating the debris flow and flood deposits of all the post-glacial eruptive periods. Materials from the Zigzag eruptive period (400 and 600 years ago) are found deposited only in the Sandy River and Zigzag River basins.

The Old Maid Flats area is an excellent example of a multiple debris flow deposits, all coming from Mt. Hood. A distinctive droughty soil has developed on this deposit, creating a vegetative assemblage unique for the west side of the Cascade Range. Cross sections of these deposits are easily observed and can be readily interpreted due to the erosional downcutting of the Sandy River. There are also buried snags and tree casts or wells (from snags completely rotted away) that are some of the best examples of a buried forest found in the Pacific Northwest.

Discussion of Existing Situation

The headwaters of the Sandy River are located high on Mt. Hood just below Reid Glacier and snowfields situated between Reid and Zigzag Glaciers. The dominant landscape feature in the upper reaches is volcanically formed Mt. Hood. A series of debris flows, all originating from Mt. Hood, form the Old Maid Flats area.

There are many geologically related features associated with the Old Maid Flats debris flows. The best examples are:

- The soils of the debris flow are still relatively young and not well developed, resulting in low moisture holding capacity for the soils. Because of the poorly developed soils, vegetation is currently limited to primarily lodgepole pine (Pinus contorta) tree cover and low growing plants and mosses able to survive in the harsher growing conditions. This forest type is typical of early successional stages of forest development. The change in forest type from the surrounding forests is very apparent to users of the area.

- The debris flow deposits are important for the dating and interpreting of those deposits for all the post-glacial periods. These, as currently understood include (1) the Polallie eruptive period 12,000 to 15,000 (?) years ago, (2) the Timberline eruptive period 1,400 to 18,000 years ago, (3) the Zigzag eruptive period 400 to 600 years ago, and (4) the Old Maid eruptive period 180 to 270 years ago. The deposits of the Old Maid eruptive period are very well preserved at Old Maid Flats.

- There are excellent examples of a buried forests which are significant indicators of the degree of valley inundation by the debris flows. These buried forests contain both buried snags and tree casts or wells (formed when the snags completely rotted away) and are probably one of the best examples of a buried forest in the Pacific Northwest. There are even places in the Sandy River and in its tributaries where some of these buried trees have been uncovered and are standing up in the middle of the river bed itself.

- Debris flows have dammed tributaries of the Sandy River forming lakes, in which silty lake deposits were formed. Large wetlands and meadows have now formed on many of these deposits.

- Several other geologic features such as nested terraces of debris flow deposits, opportunities to view pre-Mt. Hood and Mt. Hood cone building andesitic lavas, and some pyroclastic flow and pyroclastic fall deposits (including charred wood and breadcrust bombs).

Lavas from the Sandy Glacier volcano are visible from the trail to Paradise Park in the upper end of Segment 1.

The presence of Sandy and Reid Glaciers at the headwaters and resulting glacial deposits provide the opportunity to study and interpret the effects of glaciation.

Glacial flour is observed seasonally in the Sandy River. While not a rare feature throughout the region, it is a feature associated only with glacial fed streams. The Sandy River is a good example of this phenomenon and the concentrations of glacial flour are fairly high.

Because of the unique geologic character of the Old Maid Flats area, it has been recommended for designation as a Special Interest Area in the Final Mt. Hood Land Management Plan (Forest Plan).

No mineral claims exist within any of the segments of the interim corridor. Mineral assessments indicate there is a low potential for any valuable deposits. Segment 1 of the river is withdrawn from new mineral claims.

Several geothermal test holes have been drilled within Segment 2. The temperature gradient logged in these holes indicated a low potential for geothermal development.

Fish

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

Outstandingly Remarkable Criteria

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.

Preliminary Finding

The fishery resource in the upper Sandy River qualifies as an outstandingly remarkable value because of the diversity of increasingly rare, genetically important native stocks. The potential for significant fish numbers and the availability of quality habitat are other important factors in the determination. The upper Sandy River and its tributaries provide spawning and rearing habitat for early- and late-run coho, spring chinook, winter steelhead, and summer steelhead. Significant sport fishing occurs further downstream. Native cutthroat trout are found in this portion of the river and provide a limited sport trout fishery.

Discussion of Existing Situation

Water quality in the upper Sandy River is excellent except for the naturally occurring sedimentation (glacial flour) that occurs in the summer months. The glacial flour is the result of glacial melt on Mt. Hood. Most tributaries to the mainstem are spring-fed and run clear and cold year around. It is thought that native salmon and steelhead have adapted to fluctuations in sedimentation. The smolts may actually "retreat" into clear tributaries during periods of heavy glacial flouring.

The upper Sandy and especially its tributaries provide very important spawning and rearing habitat for returning anadromous fish.

Habitat surveys for the river corridor and tributaries are incomplete. Existing surveys rate the streams as providing moderate to good fish habitat. Fish habitat improvement projects have been implemented in Clear Creek and Lost Creek which flow into the upper Sandy River and in several other tributaries downstream.

Only one impoundment, at Marmot Dam, is located between the Sandy River mainstem and the Pacific Ocean. This dam is equipped with a fish ladder for returning adults and with screens to aid the downstream migration of smolts.

Due to the river's proximity to Portland, the entire river receives extremely high fishing use during certain times of the year. Most of this use takes place downstream of the upper Sandy segment. Because of this, fish in some tributaries of the river and some specific stretches of the lower mainstem are supplemented with hatchery-raised fish. The Sandy is one of Oregon's largest producers of steelhead. The value of the upper Sandy is that it provides important spawning and rearing habitat for the anadromous species.

The late run coho is a rare native stock of coho is known to be present in the river. This stock once spawned and reared throughout the upper mainstem and tributaries but current numbers are extremely low. Protection of this stock is a major goal of Oregon Department of Fish and Wildlife (ODFW).

Estimates of annual adult fish returns into the Sandy system are: 9,600 winter steelhead, between 5,000 to 6,000 summer steelhead, 1,700 spring chinook, and 12,840 early- and late-run coho, most of these being the early-run coho. (Personal communication, Jay Massey, ODFW).

ODFW developed, under contract with the Northwest Power Planning Council, a draft "Sandy River Subbasin Salmon and Steelhead Production Plan" in January, 1990. This document provides substantial additional information about the salmon and steelhead resource in the Sandy system and identifies objectives and recommended strategies for future enhancement of the resource. The future objective for total returning adult fish are:

Coho	3,800 fish [1]
Winter Steelhead	11,500 fish
Summer Steelhead [2]	
Fall Chinook	1,800 fish [3]
Spring Chinook	4,500 fish

[1] This number applies to both early and late run coho. This figure is only for escapement and hatchery return needed for production in the Sandy subbasin and does not include additional hatchery adults needed for full production (i.e., eggs needed for transfer to other hatcheries). Increasing production of the late run coho (which is a rare stock of coho) is a major goal of ODFW's plan.

[2] The objective for summer steelhead is to maximize sport harvest and minimize spawning escapement. Summer steelhead is an introduced run and natural reproduction is undesirable in the management plan.

3 The draft plan lists 4,500 Fall Chinook as the objective for total returning of adult fish. Personal communication with Jay Massey, Fisheries Biologist for ODFW corrects this to 1,800 Fall Chinook.

Wildlife

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

Outstandingly Remarkable Criteria

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 or 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.

Preliminary Finding

The wildlife resources within the upper Sandy River were found to be important but not meeting the criteria for an outstandingly remarkable value. The wildlife resource of the area is considered "typical" of much of the western portions of Mt. Hood.

Discussion of Existing Situation

Wildlife species that use the river include beaver, river otter, and mink. The upland areas provide habitat for species such as northern spotted owl and pine marten. Large carnivores such as black bear, cougar, and bobcat are also present. Black-tailed deer and possibly Roosevelt elk use the Sandy River for traditional winter range. This area may be very important in severe winters. Bald eagles are occasional visitors to the upper Sandy River. Eagles, along with osprey, forage along the Sandy River corridor.

The steep cliffs and rocky faces of the upper portion of the river offer the potential for future habitat for the peregrine falcon although no current use is known.

A nesting pair of northern spotted owls were located in 1988, inside the Mt. Hood Wilderness roughly 0.5 miles from the river.

There have been unconfirmed reports of a wolverine sighting on Crutcher Bench, downstream of the designated area. Some potential habitat for wolverine occurs within the corridor.

Pre-historic, Historic and Traditional Cultural Uses

Pre-historic

Outstandingly Remarkable Criteria

The river or area within the river corridor contains a site(s) where there is evidence of occupation or use by native peoples. Sites must 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 in, or are eligible for inclusion in, the National Register of Historic Places.

Historic

Outstandingly Remarkable Criteria

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.

Traditional Use, Cultural

Outstandingly Remarkable Criteria

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.

Preliminary Finding

The preliminary finding of the Forest Service is that the pre-historic, historic, and traditional cultural resources of the upper Sandy River do not meet the criteria of outstandingly remarkable when compared with other areas within the region. There are, however, several important values which will be protected, and where possible, interpreted in the future.

The series of debris flows (see Geology section) limits the potential for historic and prehistoric sites to those 180 to 270 or less years old being discovered on the present ground surface. Rapid burial by the debris flows may make any buried sites very important as a scientific resource because of little chance for disturbance. However, discovery of these types of sites will be fortuitous since it will be unlikely that there will be any significant excavation of the debris flows in the future.

There is a further need to gather additional information on the potential of prehistoric use of the area by Native Americans to determine the areas importance in terms of spirit-power areas for sites used for vision quests and other religious and ritual activities. Additional information will be gathered as part of the planning process.

Discussion of Existing Situation

There is a lithic scatter site located near Last Chance Mountain about one mile from the river. This site was probably used on an occasional seasonal basis by native peoples.

The area along the upper river corridor may have been spirit-power areas that may include locales used for vision quests and other religious and ritual activities, though that is unknown at this time. The Forest will continue to try to determine the location of these areas, if any exist.

The Old Barlow Trail crosses the Sandy River approximately 1.5 miles below Segment 2 near the confluence with the Zigzag River.

The upper Sandy Guard Station is located near the Skyline/Timberline/ Pacific Crest Trail at its junction with the Sandy River Trail. The vintage cabin was built of peeled logs and stone through the joint efforts of the Forest Service and City of Portland to guard the Bull Run Watershed. The cabin is being maintained by trail users without any encouragement by the Forest Service. There is little evidence of vandalism.

The portion of the Pacific Crest National Scenic Trail, in Segment 1, is actually a part of the Skyline Trail which was built in 1916. It connects with the Timberline Trail which was built in the 1930s. These were the first permanent access trails into what is now the Mt. Hood Wilderness.

There are several unverified reports of cabin and guard station ruins located within the river corridor. A Hudson's Bay Company trading post is supposed to have existed somewhere near the lower end of Segment 2.

The Lee Cattle Trail (1838) is reported to have run between Lolo Pass and Zigzag and may have crossed the river corridor in Segment 2. The exact location of this trail is unknown.

Ecological/ Botanical

Outstandingly Remarkable Criteria

The river or area within the river corridor provides prime quality habitat for Federally listed and candidate T&E species, with species present in that habitat. The area may also include nationally or regionally unique combinations of plant communities or a rare or displaced plant community, as in a bog, swamp or meadow. The presence of a nationally or regionally unique natural or undisturbed riparian community may also merit an outstandingly remarkable determination. The importance of these plant communities to existing or past cultures, including Native American cultures, is also an important criterion.

Preliminary Finding

The ecological/botanical resource in the upper Sandy qualifies as an outstandingly remarkable value because of the diversity of vegetation and presence of unique and rare plant communities. The Old Maid Flats area in particular is ecologically significant. A unique early successional plant community consisting primarily of lodgepole pine has developed on the recent debris flow deposit. Many opportunities exist to interpret botanical and ecological resources in the area. The area also supports an abundance of edible mushrooms not commonly found elsewhere in this area.

Discussion of Existing Situation

Steep river canyons, rock pinnacles, open sandy faces, and volcanic mudflows are some of the diverse features creating a variety of ecological conditions along the river. The river flows through a deeply incised channel on the west slope of Mt. Hood. Vegetation is quite limited along the river itself in its upper reaches because of the unstable sandy/rocky soils that form the river channel and the continual erosion of those soils. The river starts above timberline in the alpine zone, flowing into the Mt. Hemlock vegetative zone. Tree species found within this zone consist primarily of mountain hemlock, subalpine fir, noble fir, silver fir and possibly some whitebark pine. Below this zone, the river flows into the silver fir zone which contains western hemlock, pacific yew, Douglas-fir, western white pine, and western redcedar. In wetter areas and riparian zones, black cottonwood and willows can also be found. Below the silver fir zone is the western hemlock zone consisting primarily of western hemlock, Douglas-fir, pacific yew, western redcedar, big leaf maple, and lodgepole pine. Old Maid Flats itself is a unique vegetative assemblage contained within the western hemlock zone.

The debris flow deposit making up Old Maid Flats is geologically very young and the soil structure is poorly developed, resulting in low moisture holding capacity for those soils. Because of this, vegetation is limited primarily to lodgepole pine (Pinus contorta) and low growing lichens, mosses and low shrubs on the debris flow deposit. This vegetative assemblage is an outstanding textbook example of primary successional stages associated with volcanic activities. Such an assemblage, especially of this size, is rare on the west side of the Cascade Range.

A variety of mushrooms, including morels and the matsutaki, flourish in the Old Maid Flats area. The abundance of these highly prized edible mushrooms draws mushroom hunters from around the region.

The Native Plant Society of Portland has identified the locations of some unique plant communities within the river corridor. These include a western hemlock ancient forest area and a western redcedar ancient forest area that includes a 500+-year-old western redcedar.

Appendix A-1

Resource Assessment Process
2/28/90

Resource Assessment Process

Purpose and Need

The importance of a thorough resource assessment cannot be overstated. The resource assessment serves as the foundation of the river management planning process. It determines which river-related features are truly outstandingly remarkable or contribute substantially to the river setting and the functioning of its ecosystem. It is not intended to serve as an eligibility evaluation.

Usually the initial step in the river management planning process, the resource assessment must take into consideration all features which are directly river-related. This early identification and evaluation will help ensure that significant features are not overlooked and that a holistic approach to investigating the inter-relationship among various features is achieved.

The identification and documentation of outstandingly remarkable and other significant values is a first step in developing management prescriptions that protect and enhance river values. A thorough resource assessment provides the basis upon which management decisions affecting resources within the planning area can be made during the interim period pending plan completion and approval. Additionally, the findings and conclusions reached at the end of the assessment effort will be used in management plan scoping, including specific issue identification and establishment of final administrative boundaries.

The process is done using an interdisciplinary team knowledgeable of the Wild and Scenic Rivers program and of the values being considered. Information from other experts is obtained through consultation and/or direct involvement as needed.

It is important to remember that the term "outstandingly remarkable" as used in the Wild and Scenic Rivers Act has never been precisely defined. Consequently, any determination of outstandingly remarkable values is a matter of informed professional judgment and interpretation. The only firm expectation is that the basis for the judgment be adequately documented in the resource assessment.

Value Assessment

All values assessed should be directly river-related, or owe their location or existence to the river ecosystem. The rationale for a direct river relationship is that the program involves the Wild and Scenic Rivers System rather than a generalized land and resource conservation program. It is therefore appropriate to focus attention on the river and resources directly related to it.

The resources to be assessed are specifically identified in the Wild and Scenic Rivers Act (P.L. 90-542) and include scenic, recreation, geologic, fish and wildlife, historic, cultural, and other similar values. Other similar values include, but are not limited to, hydrologic, botanic and ecological resources.

Significance Thresholds

In order to be assessed as "outstandingly remarkable," a river-related value must be a unique, rare or exemplary feature that is significant at a regional or national level. Those river-related values that are not assessed as outstandingly remarkable but contribute substantially to the functioning of the river system and river setting should be described and their level of significance indicated.

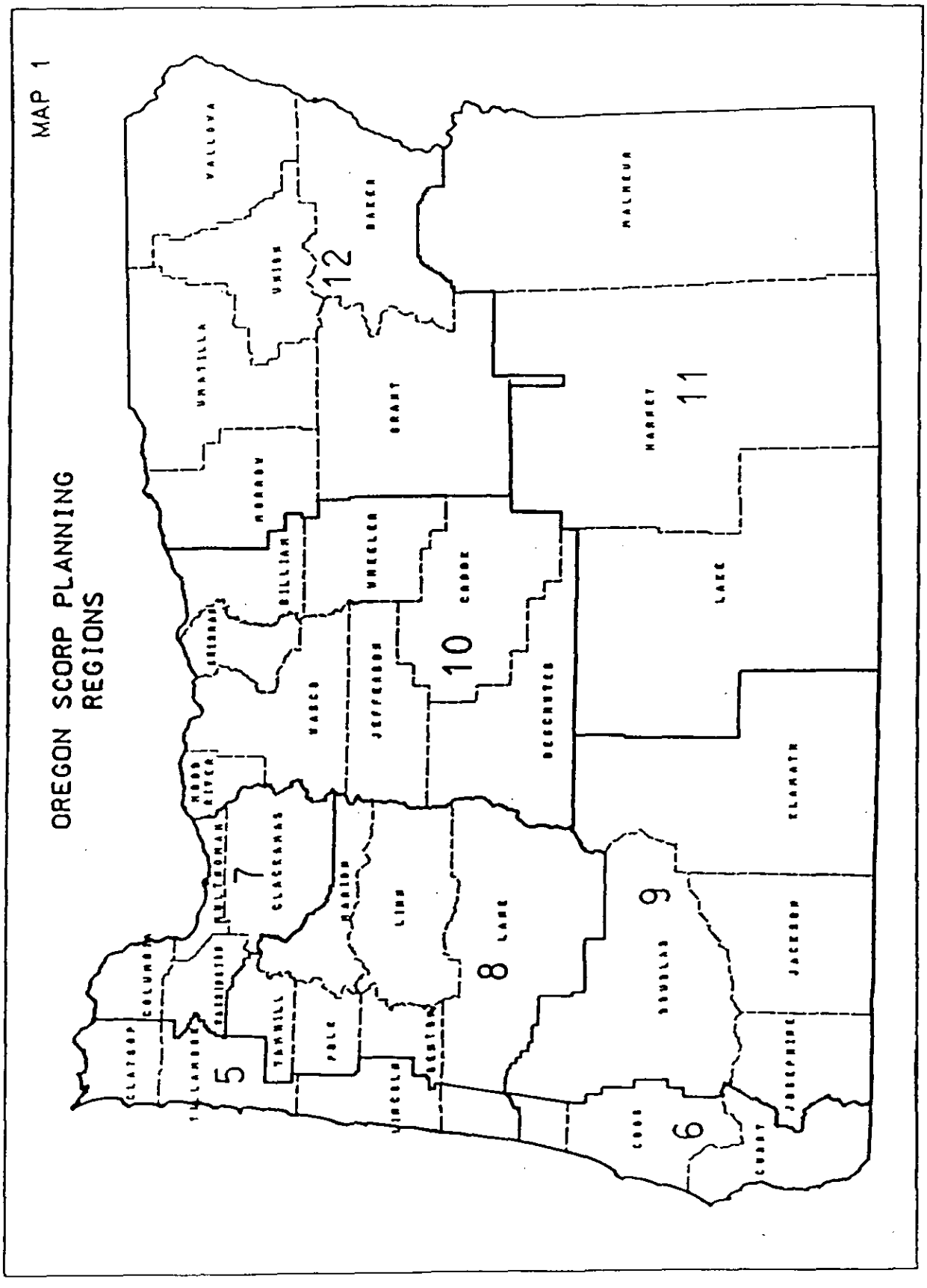
The geographic regions (8) described in the 1989 Statewide Comprehensive Outdoor Recreation Plan (SCORP) for Oregon may be used for comparing certain river-related values among the rivers in a "region."

The guidelines for assessing values are set forth under the discussion of each of the values in the main part of the assessment.

Appendix A-2

OREGON SCORP REGIONS

Map A-2.1 Oregon
SCORP Regions



Appendix A-3

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Appendix B

General Information About the Effects of Designation on Private Lands Within Upper Sandy Wild and Scenic River Corridor Boundaries

Zoning and Land Use

The authority to regulate and control land use and development activities on non-federal lands rests with local, county and state governments and not the federal government. ***The federal government does not have the authority to zone or regulate uses of private lands under the Wild and Scenic Rivers Act.*** However, Oregon state law does require that individual counties adopt comprehensive plans that are compatible with specially designated natural areas including federally designated Wild and Scenic Rivers and state designated scenic waterways. Goal 5 directs counties and cities to resolve conflicting land uses in natural areas such as State and Federal wild and scenic rivers. State land use laws and applicable county zoning regulations are discussed in other sections of this plan. The special river corridor management planning zone, (PRCA for Clackamas county), addresses specific restrictions and regulations for development and land use along the rivers. These regulations establish setbacks, house color, slope, height, screening, septic, access and other restrictions and requirements (see appendix C for a copy of the PRCA regulations). The federal agencies have reviewed these requirements and found them to be compatible with designation and adequate to protect river resources if effectively enforced.

In the case of the Upper Sandy River, the Forest Service will work with local and county planning departments in reviewing proposed land use or development permit applications. This usually occurs when the landowner requests a variance or conditional use for a development proposal or zoning change. After the county planning department receives the permit application, the Forest Service, as well as other interested parties, are contacted for their input on the proposed project. The Forest Service will then provide the county with information about potential conflicts with Wild and Scenic designation or the river management plan and outline concerns about potential river impacts of the proposal. Based on this information and existing regulations, the county then makes a determination as to whether or not to approve the permit application or request. As with all land use requests if the land owner is not satisfied with the decision they have the right to appeal it.

Land Acquisition and Condemnation

In the case of the Upper Sandy River, ***the Wild and Scenic Rivers Act specifically prohibits the use of condemnation of land in fee title*** because more than 50 percent of the river corridor is already in public ownership (county, state or federal). However, the Federal government can assure compliance with the act through a variety of fair market value compensation options including scenic or access easements, land trades or exchanges and willing seller acquisition if funding or exchange lands are available. The primary source of funding for Wild and Scenic River land acquisition comes from the Land and Water Conservation Fund. Either the landowner or the federal government may initiate the acquisition or exchange process.

High priority lands identified for potential acquisition, easement or exchange are listed in the river plan implementation summary. These lands were identified for their high scenic, wildlife, fisheries or recreation access values. Other lands within the corridor could also be acquired or exchanged based on owner interest and relative resource values. If a landowner is interested in selling, exchanging or donating their land they should contact the Forest Service.

What does it mean for private landowners to be within the boundary of the Upper Sandy Wild and Scenic River corridor?

There are a few differences and opportunities for landowners within the Wild and Scenic River's boundaries as opposed to landowners outside of the boundaries. ***However, the designation of a river into the Wild and Scenic Rivers System does not change landowner rights unless all or a portion of these use rights are acquired from the landowner.*** Non-federal landowners with all or part of their lands within the boundaries are:

- Eligible to have their land acquired by the federal government in fee title through sale or exchange on a willing seller basis if land resources warrant public ownership and funding is available.

- Eligible to have interests in lands acquired by the federal government in the form of scenic, conservation or public access easements to insure protection and conservation of outstandingly remarkable river resources.

- Provided incentives for good river stewardship and land management practices such as:

  * offers of technical assistance from USFS resource specialists such as hydrologists, fisheries and wildlife biologists and foresters;

  * opportunities to partner with federal and state agencies to receive financial assistance and grants for resource enhancement projects;

  * options of getting assistance from federal agency recreation personnel to address recreation management problems such as trespass, litter and vandalism;

  * landowners within the boundaries also have available riparian tax incentives, habitat enhancement project opportunities and access to other state and federal voluntary resource enhancement or restoration programs.

Owning land within the boundaries does not mean:

- That the public has the right to trespass on private lands.

- That federal land management agency personnel have the right to enter private lands without permission.

- That there is any change in the State's claim to the bed and banks of navigable waterways.

- That there is any change to existing county zoning or state land use laws.

- That there is any change to valid existing water rights.

- That there is any change to the application of other state or federal water quality laws, wetland protection laws, waterway removal or fill requirements or other existing river related laws, ordinances, regulations or acts.

- That there will be any direct change in property values or taxes.

Owning land within the boundaries does mean:

- That landowners can not develop or construct hydropower project dams or reservoirs requiring Federal Energy Regulatory Commission licensing.

- That landowners can not construct or develop water resource projects such as diversions, dikes, dams, or other instream structures which would have a direct and adverse effect on important river resources. Each proposed water resources project will be evaluated on its potential effects or impacts on attributes for which the river was designated (i.e.. fisheries).

- That landowners are allowed to maintain existing roads, bridges, instream structures (dams, diversion structures etc.), and erosion or flood control structures.

Zoning and Residential Development

Land uses and residential development will continue to be regulated according to existing county zoning and land use planning regulations. The county will be less likely to approve zoning changes and variance or conditional use requests within the Wild and Scenic River corridor if the proposal is not compatible with management guidelines or if the activity would directly and adversely effect river values.

Forest Practices and Timber Harvest

Forest practices and timber harvest on private lands continue to be regulated under conditions and regulations set forth in the Oregon Forest Practices Act. Forest management activities are allowed within the river corridor on Scenic and Recreational classified rivers as long as those activities do not have long term, direct and adverse effects on important river values such as fisheries or water quality. ***The Federal government can not regulate timber harvest on non-federal lands except through acquisition.*** Also, it is important to note that boundaries are not the same as vegetative buffers and should not be construed as such.

Under the river management plan, the Federal agencies will develop agreements with Oregon Department of Forestry (ODF) that would provide the opportunity for the Federal agencies to review harvest plans submitted to ODF and provide input about proposed harvest activities. This will also allow Federal agencies to be aware of proposed activities so the agencies can offer the landowner technical assistance or compensation options such as easement or exchange if the activity is determined to have long term, direct and adverse effects on the river.

Additional information concerning questions and answers about wild and scenic river designation is available from the Forest Service offices whose addresses are in the beginning of this document.

Appendix C

Clackamas County Zoning Regulations

704 Principal River Conservation Area (PRCA)

704.01 Purpose

A. To maintain the integrity of the rivers in Clackamas County by minimizing erosion, promoting bank stability, maintaining and enhancing water quality and fish and wildlife habitats, and preserving scenic quality and recreational potentials;

B. To maintain rivers in their natural state to the maximum extent practicable, thereby recognizing their natural, scenic, historic, economic, cultural and recreational qualities; and

C. To implement the Rivers Area Design Plan stated in the Comprehensive Plan.

704.02 Area of Application

A. The standards of Section 704 apply to land within a quarter mile of the mean low water line of the Clackamas, Sandy/Salmon, Molalla/Pudding, and Tualatin River corridors as identified in Chapter 3 of the Clackamas County Comprehensive Plan.

B. The provisions of Section 704 are in addition to those requirements of the State Scenic Waterways Act, Omnibus Oregon Wild and Scenic Rivers Act of 1988, and the Federal Wild and Scenic Rivers Acto of 1968. In those areas so designated, the requirements of the County shall be administered subject to the application requrements of 704.06 and prevail when they are more restrictive than State and Federal standards.

704.03 Standards for Development

A. All primary structures shall be located at least 100 feet from the mean low water line of the river. This minimum setback may be increased up to 150 feet from the mean low water line, to lessen the impact of development. In determining the minimum setback, the following shall be considered:

1. The size and design of any proposed structures;
2. The width of the river;
3. The topography of the land between the site and the river;
4. The type and stability of the soils;
5. The type and density of existing vegetation between the site and the river;
6. Established recreation areas or areas of public access; and
7. Visual impact of any structures.

B. Residential structures and structures accessory to residential structures which can be seen from the river shall be thirty-five (35) feet or less in height, and shall be muted earth tones.

C. Subsurface sewage disposal drainfields are prohibited within 100 feet of the mean low water line.

D. Commercial or industrial structures, parking and storage areas and signs shall be screened from view of the river by an appropriate vegetation buffer and shall meet the siting requirements of subsection 704.03A.

E. Residential minor land partitions shall be designed, where possible, to allow compliance with the provisions of Section 704.

704.04 Exceptions to the Standards of Subsection 704.03

A. Residential lots of record where lot depth precludes compliance with the setback standards of subsection 704.03A, shall be exempt from these standards. Structures shall be sited the maximum practicable distance from the mean low water line. All other provisions of Section 704 shall apply.

B. Water dependent uses, such as private boat docks, marinas, or boat ramps, shall be exempt from the provisions of subsection 704.03, except that structures shall be muted earth tones. All other provisions of Section 704 shall apply to water-dependent uses, and any structure shall be the minimum size necessary to accommodate the use.

C. Additions to existing structures which are located closer than the setback requirements of subsection 704.03A are permitted, provided that the addition complies with the other provisions of Section 704.

D. Public uses, such as bridges for public roads, shall be allowed within the setbacks stated in subsection 704.03A, provided that adverse impacts are mitigated.

E. Water impoundments, diversions, detention and retention facilities and hydroelectric facilities shall be exempt from the setback provisions under subsection 704.03A. All such facilities shall comply with all other applicable provisions of the Section and Ordinance, and are subject to review and approval pursuant to applicable State and Federal statutes and administrative rules. (7-26-82)

704.04 Vegetation Preservation Requirements

A. A buffer or filter strip of existing vegetation shall be preserved along all river banks. The depth of this buffer strip need not exceed 150 feet, and shall be determined by evaluation of the following:

1. The character and size of the proposed development and its potential for adverse impact on the river;

2. The width of the river;

3. The topography of the area;

4. The type and stability of the soils; and

5. The type and density of the existing vegetation.

B. Tree cutting and grading shall be prohibited within the buffer or filter strip, with the following exceptions:

1. Diseased trees or trees in danger of falling may be removed; and

2. Tree cutting or grading may be permitted in conjunction with those uses listed in subsection 704.04, to the extent necessary to accommodate those uses.

C. Commercial forest activities and harvesting practices outside the urban growth boundary shall be subject to the Oregon Forest Paractices Act. Commercial forest harvesting activities inside the urban growth boundary shall be reviewed pursuant to the Forest Policies of the Comprehensive Plan. (12-13-89)

704.06 Application Requirements

A. All development and tree-cutting activities controlled by the provisions of Section 704 within a principal river conservation area shall be reviewed by the Planning Division staff to insure consistency with Section 704. For the purpose of this section, development shall include buildings or other structures, mining, dredging, filling, grading, paving, excavation or any other activity which results in the removal of substantial amounts of vegetation or in the alteration of natural site characteristics.

B. Development or tree-cutting activity shall be reviewed pursuant to a building or grading permit submitted to the Planning Division. The permit application shall be accompanied by such materials as are reasonably necessary for adequate review. Examples of such materials include: (7-1-83)

1. A site plan showing existing vegetation and development, and locations of proposed development or tree-cutting activity;

2. Elevations of any proposed structures;

3. Exterior materials list for any proposed structures, including type and colors of siding and roofing; and

4. Cross-section of any area within the vegetative fringe where grading, filling or excavating will occur.

D. The applicant may appeal to the Hearings Officer a decision of the Planning Division staff as provided under subsection 1305.01K. (7-1-83)

Goal 5 Open Spaces, Scenic and Historic Areas and Natural Resource

Goal: To conserve open space and protect natural and scenic resources.

Programs shall be provided that will:

- insure open space,
- protect scenic and historic areas and natural resources for future generations, and
- promote healthy and visually attractive environments in harmony with the natural landscape character.

The location, quality and quanitity of the following resources shall be inventoried:

- Land needed or desirable for open space;
- Mineral and aggregate resources;
- Energy sources;
- Fish and wildlife areas and habitats;
- Ecologically and scientifically significant natural areas, including desert areas;
- Outstanding scenic views and sites;
- Water areas, wetlands, watersheds and groundwater resources;
- Wilderness areas;
- Historic areas, sites, structures and objects;
- Cultural areas;
- Potential and approved Oregon recreation trails;
- Potential and approved federal wild and scenic waterways and state scenic waterways.

Where there is no conflicting uses for such resources have been identified, such resources shall be managed so as to preserve their original character. Where conflicting uses have been identified the economic, social, environmental and energy consequences of the conflicting uses shall be determined and programs developed to achieve the goal.

Cultural Area

Refers to an area characterized by evidence of an ethnic, religious or social group with distinctive traits, beliefs and social forms.

Historic Areas

Are lands with sites, structures and objects that have local, regional, statewide or national historical significance.

Natural Area

Includes land and water that has substantially retained its natural character and land and water that, although altered in character, is important as habitats for plant, animal or marine life, for the study of its natural historical, scientific or paleontological features, or for the appreciation of its natural features.

Open Space

Consists of lands used for agricultural or forest uses, and any land areas that would, if preserved and continued in its present use.

Appendix D

Recreation Opportunity Spectrum and Wilderness Resource Spectrum

Recreation Opportunity Spectrum

The Forest Service uses the Recreation Opportunity Spectrum (ROS) framework to characterize outdoor recreation settings (places where people go for recreation) based on such characteristics as access, remoteness, naturalness, likelihood of encounters with other visitors, level and type of facilities and management regulations, visitor impacts, and visitor management. The ROS contains a range of opportunity classes:

- primitive,
- semi-primitive nonmotorized,
- semi-primitive motorized,
- roaded natural,
- roaded modified,
- rural, and
- urban.

Primitive

Primitive opportunities occur in an unmodified natural environment and the opportunity for solitude is high. Self reliance is required by users. Very few on-site controls are used. Only facilities for user safety are provided and these are limited in number and very rustic in appearance. All activities are non-motorized and use levels are relatively low. This class is not found within the Sandy River corridor.

Semi-Primitive Nonmotorized

Some opportunities for isolation from the sights and sounds of people in a predominately unmodified natural environment of moderate size. Concentration of users is low but there is often evidence of use. Spacing of groups may be formalized to disperse use and limit contact. Area management occasionally uses onsite controls (such as signs or self-registration boxes) but this is subtle and limited. Facilities are provided for the safety of users only. Activities are non-motorized and similar to what would be present under the primitive category, but use levels may be higher.

Semi-Primitive Motorized

Opportunities and characteristics of this classification are very similar to semi-primitive nonmotorized (SPNM) except that off-highway vehicles are permitted. Disturbance of the environment is more evident than in the SPNM class. This class is not found within the Sandy River corridor.

Roaded Natural

Opportunities for solitude are more limited with social encounters being moderate to high contact on roads and in developed sites, and moderate to low on trails. Concentration of users is generally low to moderate with facilities sometimes provided for group activities. Rustic facilities may be provided for user convenience, as well as for safety and resource protection. Knowledge and practice of outdoor skills may be important.

Roaded Modified

In these roaded environments, vegetation has been substantially modified. Opportunities for solitude is moderate. Developed campgrounds and other facilities are not usually available. Within roaded modified areas, roads, timber sale landings, logging slash, and debris may be very evident, but these experiences are usually accompanied by feelings of independence and freedom. This class is not found within the Sandy River corridor.

Rural

Sights and sounds of people are readily evident and concentration of users is often moderate to high. Onsite controls and direct management techniques predominate and resource modification and utilization practices are obvious. Access and facilities are designed for high levels of use and are developed for the convenience of users. Facilities for motorized use are available. A wide variety of activities are available, including spectator sports, outdoor concerts, recreational vehicle camps and some modern resorts.

Urban

Chance for social encounters is usually high and generally very important to the visitor. Onsite controls are very evident and sophisticated. Access and facilities are designed for user comfort and convenience and high levels of use. While a natural appearing backdrop may be present, the environment is urbanized, including paved streets and possibly stoplights. Highly developed resorts and shopping complexes can be found in this class.

Wilderness Resource Spectrum

For areas actually within designated wilderness areas, the Forest Service in the Pacific Northwest has established the Wilderness Resource Spectrum (WRS) classifications. These classifications have been adopted to establish a variety of settings to meet wilderness management objectives. The WRS classification system applies specifically to wilderness and should not be confused with the Recreation Opportunity Spectrum classification system described above. WRS classifications are determined by measurable criteria which describe the social, biological, and physical characteristics of the area. There are three primary zones, Primitive Trailless or Pristine, Primitive Trailed or Primitive, and Semi-Primitive Trailed or Semi-Primitive. In addition, on the Mt. Hood National Forest, a Transition Zone has been established. Descriptions of these classifications is below:

Primitive Trailless or Pristine

Within this classification or wilderness zone, the area is characterized by an extensive unmodified natural environment. Natural processes and conditions have not and will not be measurably affected by the actions of users. The area is managed to be as free as possible from the influence of human activities. People are only brief visitors. Essentially no facilities are required to protect the Wilderness resource. Terrain and vegetation allow extensive and challenging cross-country travel.

This zone provides the most outstanding opportunity for isolation and solitude, free from evidence of past human activities and with very infrequent encounters with other users. The user has outstanding opportunities to travel cross-country utilizing a maximum degree of primitive skills, often in an environment that offers a high degree of challenge and risk.

On the Mt. Hood National Forest, this zone must be large enough to allow two days cross-country travel without crossing a constructed trail. The Forest and Sandy River corridor does not contain any of this class of wilderness zone.

Primitive Trailed or Primitive

This classification or wilderness zone is characterized by essentially unmodified natural environment. Concentration of users is low and evidence of human use is minimal.

The area is managed to be essentially free from evidence of human-induced restrictions and controls. Only essential facilities for resource protection and safety are used and are constructed of native or natural appearing materials. No facilities for comfort or convenience of the user are provided. Visitors are encouraged to disperse to desirable existing sites to minimize contacts with other groups.

Within this zone, there is a high opportunity for exploring and experiencing considerable isolation, solitude, and self-reliance through application of primitive recreation skills in an environment that offers a high degree of challenge and risk.

While this wilderness zone can be found on the Forest, none is found within the Sandy River corridor.

Semi-Primitive Trailed or Semi-Primitive

Within this classification or wilderness zone, the area is characterized by predominately unmodified natural environment of moderate size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present but are subtle. Facilities are only provided for the protection of Wilderness resource values rather than visitor comfort or convenience. Materials should be natural or natural appearing.

Within the zone, there are moderate opportunities for exploring and experiencing isolation (from the sights and sounds of people); independence; closeness to nature; tranquillity and self-reliance through the application of no trace and primitive skills in a natural environment that offers a moderate to high degree of challenge and risk.

Transition

In addition to the above zones, the Mt. Hood National Forest has established a transition zone. Within this zone, conditions may be similar to the Semi-Primitive trailed yet the number of social encounters are higher and may exceed current standards. The area is managed to a higher intensity and there may be additional on-site controls and restrictions than in the above zones. Long term management objectives are to have these zones meet the standards for at least the semi-primitive trailed zone.

Appendix E

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Appendix F

Glossary

Glossary

A

Activity

Actions, measures, or treatments that are undertaken that directly or indirectly produce, enhance, or maintain forest outputs and rangeland outputs, or achieve administrative and environmental quality objectives. Forest Service activity definitions, codes, and units of measure are contained in the Management Information Handbook (FSM 1309.11).

Airshed

A geographical area that, because of topography, meteorology, and climate, shares the same air.

Allowable Sale Quantity

Or ASQ. The quantity of timber that may be sold from the area of land covered by the Forest plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the average annual allowable sale quantity. (The allowable sale quantity applies only to the lands determined to be suitable for timber production, and to utilization standards specified in the land and resource management plan.)

Alternative

One of several policies, plans, or projects proposed for decision making.

Amenity

An object, feature, quality, or experience that gives pleasure or is pleasing to the mind or senses. Amenity value is typically used in land use planning to describe those resource properties for which market values cannot be established.

Anadromous Fish

Those species of fish that mature in the ocean and migrate into streams to spawn. Salmon, steelhead, and shad are examples.

Aquatic Ecosystems

Stream channels, lakes, marshes or ponds, etc., and the plant and animal communities they support.

Aquatic Habitat

Habitat directly related to water.

Aquifer

A geologic formation or structure that contains and transmits water in sufficient quantity to supply the needs for water development. Aquifers are usually saturated sands, gravel, or fractured rock.

B

Background

The visible terrain beyond the foreground and middleground where individual trees are not visible but are blended into the total fabric of the forest stand (see Foreground and Middleground).

Benefit

The results of a proposed activity, program or project expressed in monetary or nonmonetary terms.

Best Management Practices (BMP)

A practice or combination of practices that are the most effective and practical (including technological, economic and institutional considerations) means of preventing or reducing the amount of pollution generated by non-point sources to a level compatible with water quality goals.

Big Game

Those species of large mammals normally managed for sport hunting.

Biological Control

Biological control is the use of parasites, predators, or disease pathogens (bacteria, fungi, viruses, and others) to suppress pest populations.

Biomass

The total quantity (at a given time) of living organisms of one or more species per unit of space (species biomass), or the total quantity of all the species in a biotic community (community biomass).

Broadcast Burn

Allowing a prescribed fire to burn over a designated area within well-defined boundaries for a reduction of fuel hazard or as a silvicultural treatment, or both.

C

Capability

The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices at a given level of management intensity. Capability depends upon current conditions and site conditions such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fire, insects, and disease. (36 CFR 219.3)

Class I Wilderness

Those wilderness over 5,000 acres which were in existence as of August 7, 1977. All other National Forest System lands are Class II, including new wildernesses and expansions to Class I wildernesses which occurred after August 7, 1977.

Clearcutting

The harvesting in one cut of all trees in an area for the purpose of creating a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class in planning for sustained yield.

Climax Species

Those species that dominate the forest stand in either numbers per unit area or biomass at climax.

Code of Federal Regulations (CFR)

The listing of various regulations pertaining to management and administration of the National Forest.

Commercial Forest Land (cfl)

Forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn from timber management by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils, productivity, or watershed conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking of young trees can be attained within five years after final harvest.

Commercial Thinning

Cutting by means of sales of products (poles, posts, pulpwood, etc.) in immature forest stands to improve the quality and growth of the remaining stand.

Community Stability

A community's capacity to handle change without major hardships or disruptions to component groups or institutions.

Commodity

A transportable resource product with commercial value, all resource products which are articles of commerce.

Common Varieties

Nonmineralized sand, gravel, stone, etc.

Congressionally Classified and Designated Areas

Areas that require Congressional enactment for their establishment, such as National Wilderness Areas, National Wild and Scenic Rivers, and National Recreation Areas.

Conifer

A group of cone-bearing trees, mostly evergreen, such as pine, spruce, and fir.

Consumptive Use

Those uses of a resource that reduce its supply.

Core Area

(As related to spotted owl.) An area encompassing at least 300 contiguous acres of old-growth forest suitable for nesting and reproduction. The area consists of a portion of the territory required by a pair of owls, the nest site, and principal roost areas.

Created Opening

Created openings are openings in the Forest created by the silvicultural practices of shelterwood regeneration cutting at the final harvest, clearcutting, seed tree cutting, or group selection cutting.

Critical Habitat

For threatened or endangered species, the specific areas within the geographical area occupied by the species (at the time it is listed, in accordance with provisions of Section 4 of the Endangered Species Act) on which are found those physical or biological features essential to the conservation of the species. This habitat may require special management considerations or protection. Protection may also be required for additional habitat areas outside the geographical area based on a determination of the Secretary of the Interior that such areas are essential for the conservation of the species.

Cubic Foot

A unit of measure with the dimensions of one foot by one foot byone foot.

Cultural Resources

Includes the remains or records of districts, sites, areas, structures, buildings, networks, neighborhoods, memorials, objects and events from the past which have scientific, historic or cultural value. They may be historic, prehistoric, archaeological, or architectural in nature. Cultural resources are an irreplaceable and nonrenewable aspect of our national heritage.

Cumulative Effects

The combined effects of two or more management activities. The effects may be related to the number of individual activities, or to the number of repeated activities on the same piece of ground. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

D

Data Recovery

The systematic removal of the scientific, prehistoric, historic, and/or archaeological data that provides a cultural resource property with its research or information value.

Debris Slide

A shallow landslide of soil, rock, and organic material that occurs on steep slopes.

Debris Torrent

A large debris slide that is changed with water and confined to a steep stream channel. Debris torrents may travel several thousand feet.

Decision Criteria

Essentially the rules or standards used to evaluate alternatives. They are measurements or indicators that are designed to assist a decisionmaker in identifying a preferred choice from an array of possible alternatives.

Demand

The amount of output that users are willing to take at specific price, time period, and conditions of sale.

Designated Wild and Scenic River

A river which is part of the National Wild and Scenic River system.

Destination Locations

Those areas people commonly seek for camping or day use.

Developed Recreation Site

Distinctly defined or designated area where facilities are provided for concentrated public use; e.g., campgrounds, picnic areas, boating sites, and ski areas.

Developed Recreation Site Maintenance Levels

Level I - Minimum Level. Operation and Maintenance of developed recreation sites at a level that only meets minimum requirements for public health and safety and does not maintain facilities over time. At this level no funding is provided for upgrading of facilities or completion of any portion of the backlog rehabilitation needs associated with developed sites.

Level II - Low Standard. Operation and Maintenance of developed recreation sites at the level necessary to maintain facilities over time and protect investments in facilities and to complete approximately 50 percent of the backlog rehabilitation needs associated with developed sites.

Level III - Standard Service Level. Operation and Maintenance of developed recreation sites at a level that will ensure normal life expectancy of facilities and at a level that meets Forest Service full service standards of maintenance, service, compliance and ensures the experience level for which the site is designed and meets other aspects of administration as outlined in Forest Service manuals and regulations. At this level one hundred percent of any backlog rehabilitation needs associated with developed sites will be completed.

Dispersed Recreation

Outdoor recreation that takes place outside developed recreation sites or the Wilderness.

Diversity

The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan. (36 CFR 219.3)

Domestic Water Source

A watershed which provides water for human consumption that does not meet the criteria for a municipal watershed.

E

Ecosystem

An interacting system of organisms considered together with their environment; for example, marsh, watershed, and lake ecosystems.

Edge

The boundary between two or more elements of the environment; e.g., field and woodland.

Effects

Environmental consequences as a result of a proposed action. Included are direct effects, which are caused by the action and occur at the same time and place, and indirect effects, which are caused by the action and are later in time or further removed in distance, but which are still reasonably foreseeable. Indirect effects may include population growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects may be ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic quality, historic, cultural, economic, social, or health related, whether direct, indirect, or cumulative. Effects resulting from actions may have both beneficial and detrimental aspects, even if on balance the agency believes that the overall effects will be beneficial (40 CFR 1508.8).

Endangered Species

Any species of animal or plant which is in danger of extinction throughout all or a significant portion of its range. Not included are members of the class Insecta which have been determined by the Secretary to constitute a pest whose protection under the provisions of this Act (Endangered Species Act of 1973) would present an overwhelming and overriding risk to humans. An endangered species must be designated in the Federal Register by the appropriate Federal Agency Secretary.

Endemic Plant

A plant confined to a certain country or region and with a comparatively restricted geographic distribution.

Energy Minerals

Minerals which produce energy, e.g., oil, gas, geothermal, coal.

Enhancement

A short- or long-term management practice which is done with the express purpose of increasing positive aspects of a resource.

Environmental Analysis

An investigation and analysis of alternative actions and their predictable short- and -long-term environmental effects, incorporating the physical, biological, economic, social, and cumulative effects. This process provides the information needed for identifying actions that may be categorically excluded or for preparing environmental documents as required.

Environmental Assessment

A concise public document required by the regulations implementing the National Environmental Policy Act.

Environmental Impact Statement (EIS) and Decision

Erodible

Susceptible to erosion.

Erosion

The wearing away or detachment of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitation creep.

Erosion (accelerated)

Erosion much more rapid than normal, primarily as a result of the influence or the activities of man.

Escape Cover

Usually vegetation dense enough to hide an animal, used by animals to escape from potential enemies.

Essential Habitat

Areas designated by the Regional Forester of the Forest Service that possess the same characteristics of critical habitat as those designated by the Secretary of the Interior or Commerce.

Evapotranspiration

Loss of water from a land area through transpiration of plants and from the soil.

Even-aged Management

The application of a combination of actions that results in the creation of forest stands composed of trees of essentially the same age. Managed even-aged forests are characterized by a distribution of stands of varying ages (and, therefore, tree sizes throughout the forest area). The difference in age between trees forming the main canopy level of a stand usually does not exceed 20 percent of the age of the stand at harvest rotation age. Regeneration in a particular stand is obtained in a short period at or near the time that a stand has reached the desired age or size for regeneration and is harvested. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands. (36 CFR 219.3)

F

Fee Campground

A fee campground must have as a minimum all of the following: tent or trailer spaces, drinking water, access road, refuse containers, toilet facilities, camp fee collection, reasonable visitor protection, and simple devices for containing a campfire where permitted.

Fish Passage

Passage of fish up or downstream especially over stream obstructions.

Floodplain

The lowland and relatively flat areas adjoining inland and coastal water including, at a minimum, that area subject to one percent or greater chance of flooding in any given year.

Forage

All browse and non-woody plants available to livestock or wildlife for grazing or harvestable for feed.

Forbs

Non-woody plants, other than grasses. Term refers to feed used by both wildlife and domesticated animals.

Foreground

A term used in visual (scenery) management to describe the stand of trees immediately adjacent to a high-value scenic area, recreation facility, or forest highway (see "Background", "Middleground").

Forest Land

Land at least 10 percent occupied by forest trees of any size or formerly having had such cover and not currently developed for non-forest use. Lands developed for non-forest use include areas devoted to crops, improved pasture, residential or administrative areas, improved roads of any width and adjoining road clearing and powerline clearing of any width (36 CFR 219.3).

Forest Plan Amendment

Formal alteration of the Forest Plan by modification, deletion or addition based upon nonsignificant or significant changes. Non-significant changes are minor modifications of management direction. Significant changes are major alterations of specific management prescription direction or land use designations. Unlike a complete Plan revision, an amendment addresses only the issues that trigger a need for a change. Amendments must satisfy both NFMA and NEPA procedural requirements, including appropriate public notification.

Forest-wide Standard

A principle requiring a specific level of attainment: a rule to measure against. The Forest-wide Standards apply to all areas of the Forest regardless of the other prescriptions applied.

Fuels

Combustible wildland vegetative materials. While usually applied to the above ground living and dead surface vegetation, this definition also includes roots and organic soils such as peat.

Fuel Treatment

The rearrangement or disposal of natural or activity fuels to reduce the fire hazard.

Game

Wildlife that are hunted for sport and regulated by State Game regulations.

General Distribution

The geographic area presently occupied, often on a seasonal basis, by a species within the planning area. Distribution is not to be confused with present occupancy of specific habitat(s). Resource management activities will create changes in habitat which will force local shifts in occupancy.

Geothermal

Of or pertaining to the inherent heat of the earth. Geothermal steam is a leasable mineral.

Goal

A concise statement that describes a desired condition to be achieved sometime in the future. It is normally expressed in broad general terms and is timeless in that it has no specific date by which it is to be completed. Goal statements form the principle basis from which objectives are developed. (36 CFR 219.3)

Gradient

Change of elevation, velocity, pressure or other characteristics per unit length.

Group Selection Cutting

Removal of tree groups ranging in size from a fraction of an acre up to about 2 acres in area that is smaller than the minimum feasible for even-aged management of a single stand.

Guideline

An indication or outline of policy or conduct that is not a mandatory requirement (as opposed to a standard, which is mandatory.

H

Habitat

The place where a plant or animal naturally or normally lives and grows.

Habitat Component

A simple part, or a relatively complex entity, regarded as a part of an area or environment in which an organism or biological population normally lives.

Habitat Capability

The estimated ability of an area, given existing or predicted habitat conditions, to support a wildlife, fish or plant population. It is measured in terms of potential population numbers.

Hardwood

A broad-leafed flowering tree.

Harvest Cutting Method

A combination of interrelated actions whereby forests are tended, harvested, and replaced. The combination of management practices used to manipulate the vegetation in forests. Harvest cutting methods are classified as even-aged and uneven-aged.

Hiding Cover

Vegetation capable of hiding 90 percent of a standing deer or elk from the view of a human at a distance of 200 feet.

High Quality Habitat

Habitat which completely satisfies a species' existence requirements.

History

People, places, things and events which have occurred or pertain to the time of written record. For the Pacific Northwest, the history of written documentation is approximately 1600 AD.

Hundred-year Flood

Severe flood which, statistically, has a chance of occurring once in a hundred years, or has a 1 percent chance of occurring each year.

Hydrology

The scientific study of the properties, distribution, and effects of water in the atmosphere, on the earth's surface, and in soil and rocks.

Hyphoriac Zone

The subterranean areas below and adjacent to stream channels, which contain a complex community of small animals (i.e., insects and crustaceans) living in the gravels.

I

Impact, Economic

The change, positive or negative, in economic conditions, including distribution and stability of employment and income in affected local, regional, and national economies, which directly or indirectly results from an activity, project, or program.

Indian Tribe

The governing body of any Indian tribe, band, nation, or other group which is recognized as an Indian tribe by the Secretary of the Interior for which the United States holds land in trust or restricted status for the entity of its members. Such term also includes any Native village corporation, regional corporation, and Native group established pursuant to the Alaska Native Claims Settlement Act (36 CFR 800.2(g)).

Indicator Species

A wildlife management scheme in which the welfare of a selected species is presumed to indicate the welfare of other species.

Individual (single) Tree Selection

See Uneven-aged Silvicultural Systems.

Instream Flows

A prescribed level (or levels) of stream flow, usually expressed as a stipulation in a permit authorizing a dam or water diversion, for the purpose of meeting National Forest System management objectives.

Integrated Pest Management

A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed. The information considered in selecting appropriate strategies includes the impact of the unregulated pest population on various resources values, alternative regulatory tactics and strategies, and benefit/cost estimates for these alternative strategies. Regulatory strategies are based on sound silvicultural practices and ecology of the pest-host system and consist of a combination of tactics such as timber stand improvement plus selective use of pesticides. A basic principle in the choice of strategy is that it be ecologically compatible or acceptable. (36 CFR 219.3)

Intensive Forest Management

A high investment level of timber management that envisions initial harvest, regeneration with genetically improved seedling stock, control of competing vegetation, fill-in planting, precommercial thinning as needed for stocking control, one or more commercial thinnings, and final harvest.

Interdisciplinary Team

A team of people that collectively represent several disciplines and whose duty it is to coordinate and integrate planning activities.

Intermittent Stream

A stream that flows above ground at intervals or only flows periodically during the year. Intermittent streams generally have well-defined channels.

Inventory

Strategies designed to collect existing information and locate cultural resources in a specific area, such as through field survey, records search, oral interviews, and archival study.

Irretrievable

Applies to losses of production, harvest, or use of renewable natural resources. For example, some or all of the timber production from an area is irretrievably lost during the time an area is used as a winter sports site. If the use is changed, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

Irreversible

Applies primarily to the use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over long time periods. Irreversible also includes loss of future options.

Issue

A point, matter, or question of public discussion or interest to be addressed or decided through the planning process.

K

Key Interest Areas

Any interesting feature or condition in an area that attracts people. For example, a waterfall along a trail or road, a scenic overlook or a wildlife viewing area.

Key Site Riparian Areas

Large riparian areas exhibiting high habitat diversity and outstanding capabilities for producing high quality water; excellent fish spawning and rearing habitat; high quality waterfowl breeding, nesting and resting habitat; wildlife cover; and diverse plant communities.

Knutson-Vandenberg Act

Or K-V. Legislation authorizing the collection of money from timber sale receipts for reforestation, stand improvements, and other resource improvement or mitigation projects on timber sale areas.

L

Land Allocation

The assignment of a management emphasis to particular land areas with the purpose of achieving the goals and objectives of that alternative.

Landings

Those designated areas within a timber sale where logs are temporarily stored before transport to a mill.

Landslide

The group of slope movements wherein shear failure occurs along a specific surface or combination of surfaces.

Large Woody Debris

Logs, tree boles, and root wads greater than 4 inches in diameter.

Leasable Minerals

All minerals except salable minerals on acquired lands. All minerals on Outer Continental shelf. Coal; phosphate; oil; gas; chlorides, sulphates, carbonates, borates, silicates or nitrates of potassium and sodium; native asphalt, solid and semi-solid bitumen and bitumenous rock including oil-impregnated rock or sands from which oil is recoverable only by special treatment after the deposit is mined.

Legal Trout

A trout six inches or longer is legal by registration in the State of Oregon.

Life Form

How a species makes its living, also called a niche.

Limiting Habitat

Habitat which completely satisfies existence requirements.

Limits of Acceptable Change (LAC)

Maximum limit of human-caused change allowed in wilderness. Each WRS Class has a set of limits which presupposes that certain areas of wilderness (trails) will be allowed to receive higher levels of use than other areas (trail-less), and thus will receive more change or resource impact. LAC's are not a management objective, but a maximum limit.

Litter

The uppermost layer of organic debris on the ground under a vegetation cover. Essentially the freshly fallen or only slightly decomposed vegetable material, mainly from foliage but also bark fragments, twigs, flowers, fruits, etc.

Local Roads

Connect terminal facilities such as log landings and recreation sites, with forest collector roads, forest arterial roads, or public highways. Location and standards are determined by the specific resource needs that the roads serve.

Locatable Minerals

Those hardrock minerals which can be obtained by filing a claim on Public Domain or National Forest System lands reserved from the Public Domain. In general, the locatable minerals are those hardrock minerals which are mined and processed for the recovery of metals, but may also include certain nonmetallic minerals and uncommon varieties of mineral materials.

M

M

Thousand

Maintenance Levels 1-5

Level 1 - This level is assigned to intermittent service roads during the time management direction requires that the road be closed to motorized traffic.

Level 2 - This level is assigned where management direction requires that the road be open for limited passage of traffic. Roads in this maintenance level are intended for use by high clearance vehicles and not maintained passenger car traffic.

Level 3 - This level is assigned where management direction requires that the road be open and maintained for safe travel by a driver in a standard four-wheel passenger car.

Level 4 - This level is assigned where management direction requires the road to provide a moderate degree of user comfort and convenience at moderate travel speeds. Traffic volumes are normally sufficient to require a double land aggregate surfaced road. Paved surfaces are often used.

Level 5 - This level is assigned where management direction requires the road to provide a high degree of user comfort and convenience. These roads are normally double lane, paved facilities.

Management Area

An area with similar management objectives and a common management prescription. In Region 6, a management area is the contiguous area assigned to a specific management strategy (the management strategy then becomes the management prescription).

Management Direction

A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them. (36 CFR 219.3)

Management Practice

A specific activity, measure, course of action, or treatment. (36 CFR 219.3)

Management Prescription

Management practices and intensity of management selected and scheduled for application on a specific area to attain multiple-use and other goals and objectives. (36 CFR 219.3)

Mass Movement

Downslope, unit movement of a portion of the land's surface; i.e., a single landslide or the gradual simultaneous, downhill movement of the whole mass of loose earth material on a slope face.

Mature Timber

Trees that have attained full development, particularly in height, and are in full seed production.

Maximum Modification

A visual quality objective meaning man's activity may dominate the characteristic landscape but should appear as a natural occurrence when viewed as background.

MBF

Thousand board feet. A measure of wood volume.

Middleground

The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the stand.

Mineral Potential

A rating system for mineral resources based on the degree to which certain criteria indicates favorable potential for development of mineral resources.

Mining Claims

That portion of the public estate held by law for mining purposes in which the right of exclusive possession of locatable mineral deposits is vested to the locator of a deposit.

Mitigation

Actions to avoid, minimize, reduce, eliminate, or rectify the impact of a management practice.

MM

Million.

MMBF

Million board feet.

Monitoring

A process to collect significant data from defined sources to identify departures or deviations from expected plan outputs.

Modification

A visual quality objective meaning human activity may dominate the characteristic landscape but must, at the same time, utilize natural established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.

Multilayered Canopy

A stand of trees with two or more distinct tree layers in the canopy.

Multiple Use

The management of all the various renewable surface resources of the National Forests so that they are utilized in the combination that will best meet the needs of the American people. The concept also includes making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in the use to conform to changing needs and conditions. Some lands will be used for less than all of the resources. There will be harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land. Consideration will be given to the relative values of the various resources, and management will not necessarily favor the combination of uses that will give the greatest dollar return or the greatest unit output.

N

National Environmental Policy Act (NEPA) (1969)

An Act, to declare a National policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the nation; and to establish a Council on Environmental Quality.

National Forest Management Act (NFMA)

An Act passed in 1976 amending the Forest and Rangeland Renewable Resources Planning Act. NFMA requires the preparation of Regional and Forest Plans and the preparation of regulations to guide that development.

National Forest Systems

All National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 USC 1010-1012), and other lands, waters or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system. (16 U.S.C. 1608)

National Register - Eligible Property

A property that has been determined eligible for National Register listing by the Secretary of the Interior, or one that has not yet gone through the formal eligibility-determination process but meets the National Register criteria. For management purposes, an "eligible" property is treated as if it were already listed.

National Registry of Natural Landmarks

National inventory and listing of all or part of recreation areas classified under 36 CFR294.1 and research natural areas classified under 36 CFR 251.23 which have values illustrating the ecological or geological character of the nation.

Natural Forest

The condition of a forest environment at any point in time including its associated plant and animal communities, which has been reached essentially through the process of natural succession. This process would include the effects of natural catastrophic occurrences.

NEPA

An abbreviation of National Environmental Policy Act.

NFMA

An abbreviation of the National Forest Management Act of 1976.

Non-game

Any species of wildlife or fish which is not managed or otherwise controlled by hunting, fishing, or trapping regulations.

Non-point

Refers to area sources of water pollution such as a watershed in contrast to a point source such as an outlet from a factory.

Noxious Weeds

A plant considered to be extremely destructive or harmful to agriculture and designated by law. An undesirable species that conflicts with, restricts, or otherwise causes problems with the management objectives.

O

Objective

A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals. (36 CFR 219.3)

Off-highway Vehicle (OHV)

Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, snow, ice, or other natural terrain. Non-motorized Mountain Bicycle use is also considered an Off-Road Vehicle.

Old-growth Stand

An old-growth stand is defined as any stand of trees 10 acres or greater generally containing the following characteristics: 1) stands contain mature and overmature trees in the overstory and are well into the mature growth stage; 2) stands will usually contain a multilayered canopy and trees of several age classes; 3) standing dead trees and down material are present; and 4) evidence of human activity may be present but does not significantly alter the other characteristics and would be a subordinate factor in a description of such a stand.

For additional information on how old growth was defined on the Mt. Hood National Forest, see FEIS-Chapter 3.

Output

A good, service, or on-site use that is produced from forest and rangeland resources. See FSH 1309.11 for forest and rangeland outputs, codes and units of measure. Examples: X06 - Softwood Sawtimber production - MCF; X80 - Increased Water Yield - Acre feet; W01 - Primitive Recreation Use - RVD's.

Outstandingly Remarkable Values

River-related resource values that are rare, unique or exemplary, and are significant at a Regional or National level.

Overstory

That portion of the trees in a forest of more than one story, forming the upper canopy layer.

P

PAOT

Persons-At-One-Time - Public recreational measurement term. The number of people in an area or using a facility at one time.

Partial Retention

A visual quality objective where man's activities may be evident but subordinate to the characteristic landscape.

Particulates

A component of polluted air consisting of any liquid or solid particles suspended or falling through the atmosphere.

Peak Discharge, Peak Flow

The maximum volume of flow attained at a given point in a stream during a runoff event.

Perennial Stream

A stream that flows throughout the year.

Permanent Road Closure

Roads closed with the intent to never use them again, action taken to make them impassable and remove them from the transportation system.

Personal Use Firewood

Firewood gathered for use by the woodcutter. Resale of personal use firewood is not allowed.

Physically Challenged Individuals

Persons with physical conditions who require specialized access or equipment for certain activities.

Planning Area

The area of the National Forest System covered by a regional guide or Forest Plan. (36 CFR 219.3)

Plant Communities

A vegetation complex unique in its combination of plants which occur in particular locations under particular influences. A plant community is a reflection of integrated environmental influences on the site, which includes soils, temperature, elevation, solar radiation, slope, aspect, and rainfall.

Pool Habitat

That portion of the stream with reduced current velocity, often with water deeper than the surrounding areas, and which is frequently usable by fish for resting and cover.

Practices

Those management activities that are proposed or expected to occur.

Precommercial Thinning

The selective felling or removal of trees in a young stand, primarily to accelerate diameter increment on the remaining stems, maintain a specific stocking or stand density range, and improve the vigor and quality of the trees that remain.

Prehistory

People, places, things and events which have occurred or pertain to the time before written record.

Prescribed Fire

A wildland fire burning under preplanned specified conditions which will accomplish certain planned objectives. The fire may result from either planned or unplanned ignitions. Proposals for use of unplanned ignitions for this purpose must be approved by the Regional Forester.

Prescribed Natural Fire

The use of unplanned natural ignitions to meet management prescriptions.

Preservation

A visual quality objective that allows only ecological changes to take place.

Presuppression

Activities required in advance of fire occurrence to ensure an effective suppression action. It includes (1) recruiting and training fire forces, (2) planning and organizing attack methods, (3) procuring and maintaining fire equipment, and (4) maintaining structural improvements necessary for the fire program.

Primitive Recreation

Those recreation activities which occur in areas characterized by an essentially unmodified natural environment of fairly large size (2,500 acres or greater).

Production Potential

The capability of the land or water to produce a given resource.

Programmed Harvest

The part of the potential timber yield that is scheduled for harvesting. Includes salvage and cull timber volumes. It is based on current demand, funding, and multiple use considerations.

Public Access

Usually refers to a road or trail route over which a public agency claims a right-of-way for public use.

R

Radio Telemetry

A radio signal that is used to measure the position and/or movement of a wild animal. The radio transmitter is attached to the animal, and a receiver is used by a researcher to locate the animal in its natural habitat.

Ranger District

An administrative subdivision of the Forest, supervised by a District Ranger who reports to the Forest Supervisor.

Raptors

Any predatory bird such as a falcon, hawk, eagle or owl that has feet with sharp talons or claws adapted for seizing prey and a hooked beak for tearing flesh.

Recreation Opportunity

An opportunity for a user to participate in a preferred activity within a preferred setting, in order to realize those satisfying experiences which are desired.

Recreation Opportunity Spectrum (ROS)

Land delineations that identify a variety of recreation experience opportunities categorized into six classes on a continuum from primitive to urban. Each class is defined in terms of the degree to which it satisfies certain recreation experience needs. This is measured based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area, and the relative density of recreation use. The seven classes are:

Primitive - Area is characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low, and evidence of other users is minimal. The area is managed to be essentially free from evidence of management restrictions and controls. Motorized use within the area is not permitted.

Semiprimitive Nonmotorized - Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but subtle. Motorized recreation use is not permitted, but local roads used for other resource management activities may be present on a limited basis. Use of such roads is restricted to minimize impacts on recreational experience opportunities.

Semiprimitive Motorized - Area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but subtle. Motorized recreation use of local primitive or collector roads with predominantly natural surfaces and trails suitable for motor bikes is permitted.

Roaded Modified - A subclass of the Roaded Natural ROS class. Involves areas that are characterized by predominantly natural-appearing environments with high evidence of the sights and sounds of humans. Such evidence may not harmonize with the natural environment. Interaction between users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident and may not harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.

Roaded Natural - Area is characterized by predominantly natural-appearing environments with moderate evidence of the sights and sounds of man. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high, and evidence of other users prevalent. Resource modification and utilization practices are evident but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.

Rural - Area is characterized by a natural environment that has been substantially modified by development of structures, vegetative manipulation, or pastoral agricultural development. Resource modification and utilization practices may be used to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate user densities are present away from developed sites. Facilities for intensified motorized use and parking are available.

Urban - Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are often used to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans are predominant on site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

Recreational Mining

A leisure-time activity involving the search for and collection of mineral specimens using nonsurface disturbing methods.

Reforestation

The natural or artificial restocking of an area with forest trees; most commonly used in reference to artificial restocking.

Regeneration

The actual seedlings and saplings existing in a stand; or the act of establishing young trees naturally or artificially.

Regeneration Cut

Any removal of trees to make regeneration possible.

Regional Forester

The official responsible for administering a single Forest Service region.

Regulated Harvest

Harvest that contributes chargeable timber volume to the Allowable Sale Quantity.

Rehabilitation

A short-term management alternative used to return existing visual impacts in the natural landscape to a desired visual quality.

Resident Trout

A trout which spends its entire life in fresh water.

Residual Stand

The trees remaining standing after some form of selection cutting is performed on a stand.

Residue

Material which includes both desired and unwanted vegetative residues which result from an activity or natural event.

Responsible Official

For land management planning purposes, the Forest Service employee who has been delegated the authority to carry out a specific planning action. (36 CFR 219.3)

Retention

A visual quality objective where human activities are not evident to the casual forest visitor.

Riffle

A feature of a stream having swift-flowing, turbulent water; can be either deep or shallow; features are generally cobble- or boulder-dominated.

Riparian

Pertaining to areas of land directly influenced by water. Riparian areas usually have visible vegetative or physical characteristics reflecting this water influence. Streamsides, lake borders, or marshes and wetlands are typical riparian areas.

Riparian Areas

Geographically delineated areas, with distinctive resource values and characteristics, that are composed of aquatic and riparian ecosystems. On the Mt. Hood National Forest riparian areas typically include areas adjacent to all streams, lakes, ponds and areas comprising seeps, springs, and wetlands.

Riparian Ecosystems

A transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. Identified by soil characteristics and distinctive vegetation communities that require free or unbound water.

Riparian Vegetation

Vegetation growing on or near the banks of a stream or body of water on soils that exhibit some wetness characteristics during some portion of the growing season.

Risk

The degree and probability of loss based on chance.

Runoff

The flow or discharge of water from an area, including both surface and subsurface flow.

Road

A general term denoting a way for purposes of travel by vehicles greater than 40 inches in width.

Forest Arterial Road. Provides services to large land areas and usually connects with public highways or other Forest arterial roads to form an integrated network of primary travel routes. The location and standard are often determined by a demand for maximum mobility and travel efficiency rather than specific resource management service. It is usually developed and operated for long-term land and resource management purposes and constant service (FSM 7710.51).

Forest Collector Road. Serves smaller land areas than a Forest arterial road and is usually connected to a Forest arterial or public highway. Collects traffic from Forest local roads and/or terminal facilities. The location and standard are influenced by both long-term multi-resource service needs as well as travel efficiency. May be operated for either constant or intermittent service, depending on land use and resource management objectives for the area served by the facility (FSM 7710.51).

Forest Local Road. Connects terminal facilities with Forest collector or Forest arterial roads or public highways. The location and standard are usually controlled by specific resource activity requirements rather than travel efficiency needs (FSM 7710.51).

Roadless Area

See Inventoried Roadless Area.

ROS

An abbreviation of Recreation Opportunity Spectrum.

Rotation Age

The age of a stand when harvested.

S

Salmonid Smolt

Juvenile fish of the salmon/trout family going through biochemical changes during its migration to the ocean.

Sanitation Cutting (Salvage)

The removal of dead, damaged or susceptible trees primarily to prevent the spread of insect pests or diseases and promote forest hygiene.

Scoping Process

Determining the extent of analysis necessary for an informed decision of a proposed action. The process includes: (1) reviewing present Management direction as it relates to the analysis; (2) contacting those publics interested or affected by the proposed action to get their opinions and surface the issues; 3) determining local management concerns. This process continues throughout analysis until a decision is made.

Second Growth

Forest growth that has come up naturally after some drastic interference with the previous forest growth (e.g., cutting, serious fire, or insect attack).

Sediment

Solid material, both mineral and organic, that is in suspension, and is being transported from its site of origin by air, water, gravity, or ice, or has come to rest on the earth's surface either above or below sea level.

Selection Cut

Selection cutting is the periodic removal of mature trees individually or in small groups from an uneven-aged forest. By this method, both regeneration cutting and tending of immature stand components are accomplished at each entry.

Semi-primitive Motorized ROS Class

See Recreation Opportunity Spectrum.

Semi-primitive Non-motorized ROS Class

See Recreation Opportunity Spectrum.

Sensitive Species

Those species of plants or animals that have appeared in the Federal Register as proposed for classification and are under consideration for official listing as endangered or threatened species, that are on an official State list, or that are recognized by the Regional Forester as needing special management to prevent their being placed on Federal or State lists.

Seral

A biotic community which is a developmental, transitory stage in an ecological succession.

Sheet Erosion

The removal of a fairly uniform layer of soil from the land surface by runoff water.

Shelterwood Cutting

Any regeneration cutting in a more or less mature stand designed to establish a new stand under the protection (overhead or side) of the old stand. Usually the shelterwood involves two separate harvest operations. The first harvest (seed cut) is designed to create space and seed production to establish new trees. The second harvest (removal cut) is designed to remove the remainder of the old stand before it begins to compete with the new stand for light and nutrients. This is usually within 10 years.

SHPO

"State Historic Preservation Officer" means the official appointed or designated pursuant to Section 101(b)(1) of the National Historic Preservation Act to administer the State historic preservation program or a representative designated to act for the SHPO. Among other duties, the State Historic Preservation Officer advises and assists Federal agencies and State and local governments and cooperates with these agencies and others to ensure that historic properties are considered at all levels of planning and development.

Silvicultural System

A management process whereby forests are tended, harvested, and replaced resulting in a forest of distinctive form. Systems are classified according to the logging method that removes the mature crop and provides for regeneration and according to the type of forest thereby produced. (36 CFR 219.3)

Silviculture

The art and science of growing and tending forest vegetation for specific management goals.

Site Productivity

Production capability of specific areas of land to produce defined outputs such as AUMs, cubic feet/acre/year, etc.

Snag

A standing dead tree.

Smolt

A young salmon during its migration downstream to the sea after hatching.

Socioeconomic

Pertaining to, or signifying the combination or interaction of, social and economic factors.

Soil Productivity

The capacity of a soil to produce a specified crop such as fiber or forage under defined levels of management. Productivity is generally dependent on available soil moisture and nutrients, and length of growing season.

Special Emphasis Watersheds

This designation is applied to selected watersheds where special management emphasizes unusually high combinations of riparian resource values and high sensitivity due to generally demanding site conditions and where the goal is to maintain or improve habitat conditions for the sustained, long-term production of fisheries and high quality water.

Stand

Timber possessing uniformity as regards to type, age class, risk class, vigor, size class, and stocking class.

Standard

A principle requiring a specific level of attainment, a rule to measure against.

Stream Buffer

See Streamside Management Unit.

Stream Channel Morphology

The structure or form of a stream channel, as influenced by processes of erosion and deposition of channel materials (gravel, cobbles, sand, soil, etc.).

Stream Class

Classification of streams based on the present and foreseeable uses made of the water, and the potential effects of on-site changes on downstream uses. Four classes are defined:

Class I - Perennial or intermittent streams that provide a source of water for domestic use; are used by large numbers of fish for spawning, rearing or mitigation; and/or are major tributaries to other Class I streams.

Class II - Perennial or intermittent streams that are used by moderate though significant numbers of fish for spawning, rearing or migration; and/or may be tributaries to Class I streams or other Class II streams.

Class III - All other perennial streams not meeting higher class criteria.

Class IV - All other intermittent streams not meeting higher class criteria.

Stream Discharge

The volume of water flowing past a point per unit time, commonly expressed as cubic feet per second, million gallons per day, gallons per minute or cubic meters per second.

Stream Scour Or Channel Scour

Erosion of the channel bottom and/or banks caused by high flows or water, loss of channel stability, or debris torrents.

Stream Structure

The arrangement of logs, boulders, and meanders which modify the flow of water, thereby causing the formation of pools and gravel bars in streams. Generally, there is a direct relationship between complexity of structure and fish habitat. Complex structure is also an indication of watershed stability.

Streamflow

The flow of water, generally with its suspended sediment load, down a well-defined watercourse.

Streamside Management Unit (SMU)

An area of varying width adjacent to a stream where practices that might affect water quality, fish, and other aquatic resources are modified to meet water quality goals, for each class of stream. The width of this area will vary with the management goals for each class of stream, the characteristics of the stream and surrounding terrain, and the type and extent of the planned activity.

Successional Stage

A stage or recognizable condition of a plant community that occurs during its development from bare ground to climax. For example, coniferous forests in the Blue Mountains progress through six recognized stages: grass-forb, shrub-seedling, pole-sapling, young, mature, and old growth.

Suppression

The action of extinguishing or confining a fire.

Surface Resources

Renewable resources located on the earth's surface in contrast to ground water and mineral resources located below the earth's surface.

Surface Runoff

Water that flows over the ground surface and into streams and rivers.

T

Targets

Output accomplishments assigned to the Forest by the Forest Service Regional Forester. A statement used to express planned results to be achieved within a stated period of time.

Temporary Roads

Localized roads of limited duration, typically available for generic forest activities during the life of the project for which the road was constructed.

Terrestrial Habitat

Land area; wildlife species that dwell primarily on land, not aquatic, arboreal or aerial.

Thermal Cover

Cover used by animals to lessen the effects of weather; for elk, a stand of coniferous trees 12 meters (40 feet) or more tall with an average crown closure of 70 percent or more; for deer, cover may include saplings, shrubs, or trees at least 1.5 meters (5 feet tall) with 75 percent crown closure.

Threatened Species

Any species of animal or plant which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of Interior as a threatened species.

Tiering

The coverage of general matters in broader environmental impact statements with subsequent, narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. Tiering is appropriate when the sequence of statements or analyses is:

(1) from a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope to a site-specific statement or analysis.

(2) from an environmental impact statement on a specific action at an early stage to a supplement or a subsequent statement or analysis at a later stage. Tiering is such cases is appropriate when it helps the lead agency to focus on the issues which are already ripe for decision and exclude from consideration issues already decided or not yet ripe.

Tolerant Species

Plants that grow well in shade.

Turbidity

The degree of opaqueness, or cloudiness, produced in water by suspended particulate matter, either organic or inorganic. Measured by light filtration or transmission and expressed in Jackson Turbidity Units (JTU).

U

Understory

Vegetation growing under a higher canopy.

Uneven-aged Management

The application of a combination of actions needed to simultaneously maintain continuous high forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. This management must provide a sustained yield of forest products. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes. Cutting methods that develop and maintain uneven-aged stands are single-tree selection and group selection. (36 CFR 219.3)

Uniform Flow

A state of steady water flow where the mean velocity and cross sectional area are equal at all sections.

Unroaded Acres

Those areas of undeveloped Federal land within which there are no improved roads maintained for travel by means of vehicles intended for highway use.

Unregulated Timber Management

Timber cut from those lands that are not organized to provide sustained yields of timber.

Utility and Transportation Corridors

A strip of land designated for the transportation of energy, commodities, and communications by railroad, state highway, electrical power transmission (69 KV and above), oil and gas and coal slurry pipelines 10 inches in diameter and larger, and tele-communication cable and electronic sites for interstate use. Transportation of minor amounts of power for short distances- such as short feeder lines from small power projects including geothermal or wind, or to serve customer subservice substations along the line- are not to be treated within the Forest Plan effort.

V

Viewshed

The total landscape seen or potentially seen from all or a logical part of a travel route, use area, or water body.

Primary Viewshed - The landscape seen from a designated travel route, or designated use area, which has high volume of use, long duration of use, or is a major access to the Forest.

Secondary Viewshed - The landscape seen from a designated travel route, or designated use area, with low use volume, short use duration, or is a minor access route to the Forest.

Visitor Information Service (VIS)

Activities which interpret for visitors, in layperson's language, Forest management, protection, utilization, and research. It also includes interpretation of local botany, geology, ecology, zoology, history, and archaeology.

Visual Condition

The visual appearance of a landscape described in terms of the degree of alteration of the natural appearing landscape. These terms are normally used as a summary rating for a large land area, such as a viewshed corridor. Descriptive degrees of alteration are:

Natural Appearing - Area appears untouched by humans; changes are not visually evident. Generally similar to the Retention VQO.

Slightly Altered - Changes may be noticed by the average visitor but do not attract attention. Natural appearance dominates minor disturbances. Generally similar to the Partial Retention VQO.

Moderately Altered - Changes are easily noticed by the average visitor and may attract attention. Disturbances are apparent. Generally similar to the modification VQO.

Heavily Altered - Changes are strong and obvious to the average visitor. Changes dominate the landscape but may resemble natural patterns when viewed from a distance of 3 to 5 miles. Disturbances are major. Generally similar to the maximum modification VQO.

Visual Quality Objectives (VQO)

Categories of acceptable landscape alteration measured in degrees of deviation from the natural-appearing landscape.

Preservation (P) - Ecological changes only.

Retention (R) - Management activities should not be evident to the casual Forest visitor.

Partial Retention (PR) - Management activities remain visually subordinate to the characteristic landscape.

Modification (M) - Management activities may dominate the characteristic landscape but must, at the same time, follow naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.

Maximum Modification (MM) - Human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

Enhancement - A short-term management alternative which is done with the express purpose of increasing positive visual variety where little variety now exists.

Visual Resource (Scenery)

The composite of basic terrain, geologic features, water features, vegetative patterns, and land-use effects that typify a land unit and influence the visual appeal the unit may have for visitors. Visual resource categories include Retention (R), Partial Retention (PR), and Modification (M).

W

Water Quality

The biological, physical, and chemical properties of water that make it suitable for given specified uses. Definition of water quality for forest areas is difficult because of the wide range of downstream uses.

Water Yield

The measured output of the Forest's streams.

Watershed

The line separating head-streams which flow to different river systems; it may be sharply defined (crest of a ridge), or indeterminate (in a low undulating area).

Wetlands

Areas that are inundated by surface or ground water with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction (Executive Order 11990). Under normal circumstances the area does or would support a prevalence of vegetative or aquatic life.

Wild and Scenic Rivers

Those rivers or sections of rivers designated as such by congressional action under the 1968 Wild and Scenic Rivers Act, as supplemented and amended, or those sections of rivers designated as wild, scenic, or recreational by an act of the Legislature of the State or States through which they flow. Wild and scenic rivers may be classified and administered under one or more of the following categories:

Wild River Areas - Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic River Areas - Those rivers or sections of rivers that are free of impoundments, with watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational River Areas - Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Wilderness

Areas designated by congressional action under the 1964 Wilderness Act. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and unconfined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest.

Wilderness Resource Spectrum (WRS)

Standard and guidelines for managing Wilderness within the nondegradation policy have been developed under the Wilderness Resource Spectrum (WRS) concept. In the Pacific Northwest Region, the WRS classification system has been adopted to establish a variety of settings to meet Wilderness management and should not be confused with the Recreation Opportunity Spectrum; classification system. WRS classifications are determined by measured criteria which describe the social, biological, and physical characteristics of the area. Three primary zones are:

Primitive Trail-less - This zone offers the maximum possible solitary Wilderness experience. To qualify for this designation, the zone must be large enough to allow at least two days of cross-country travel without crossing a constructed trail. No more than one encountered with another user may be expected. The Forest does not contain this class of Wilderness zone.

Primitive Trailed - This zone offers the most solitary experience to be found on the Forest. The only facilities permitted are those needed to protect the environment. In practice, this means the presence of trails and a limited number of signs only. A user may expect to encounter no more than six other parties per day during 80 percent of the use season.

Semi-Primitive Trailed - This zone offers somewhat less solitary Wilderness experience than the Primitive Trailed. Activities to control degradation of the ecological and social values of the Wilderness are evident. Limited development, including toilets, are permitted. The number of encounters with other users is not expected to exceed 12 parties per day during 80 percent of the season.

Transition - In this zone encounters with other users in some areas exceed those specified for the Semi-Primitive Trailed zone making it desirable to identify areas where the heaviest use of the Wilderness takes place. Higher intensities of management activity in a Transition Zone are evident. More signs are in the zone, and trails may be constructed to higher standards. Encounters with other users is expected to be 18 or less per day during 80 percent of the season.

Wildfire

Any wildland fire not designated and managed as a prescribed fire within an approved prescription.

Winter Range

The area available to and used by big game through the winter season.

Withdrawal

An order removing specific land areas from availability for certain uses.

United States
Department of
Agriculture

Forest Service

Pacific
Northwest
Region

1994

Upper Sandy National Wild and Scenic River

Management Plan

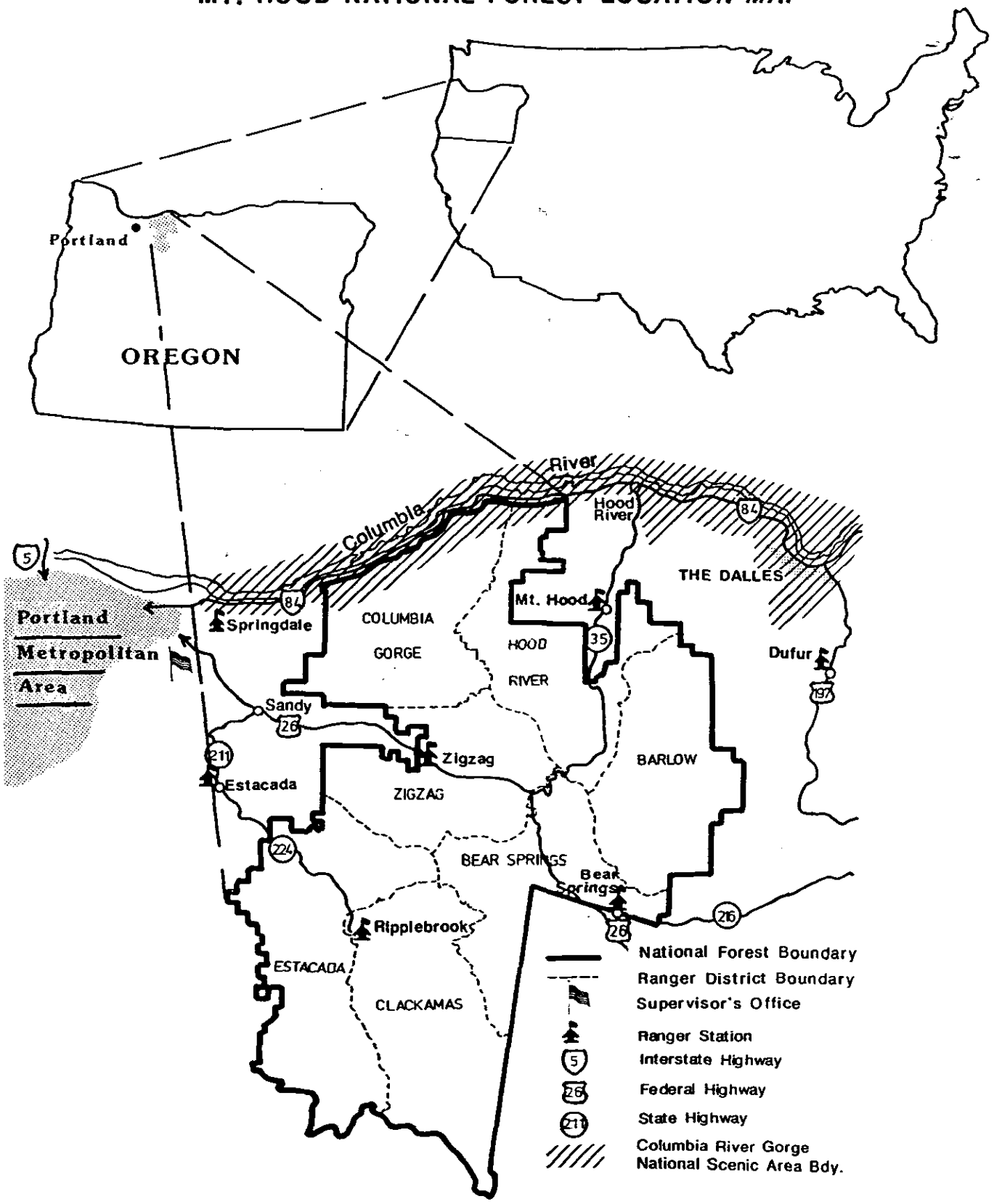
Mt. Hood National Forest
Zigzag Ranger District

Upper Sandy National Wild and Scenic River Management Plan

USDA-FS, Mt. Hood National Forest

Zigzag Ranger District

MT. HOOD NATIONAL FOREST LOCATION MAP



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Decision Notice
and
Finding of No Significant Impact

Upper Sandy National Wild and Scenic River

Environmental Assessment
and
Management Plan

Forest Plan Amendment No. 6

Clackamas County, Oregon

USDA - Forest Service
Mt. Hood National Forest
Zigzag Ranger District

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The upper portion of the Sandy River was designated a Wild and Scenic River in the Omnibus Oregon Wild and Scenic Rivers Act of 1988 (PL 100-557). Three segments of the Sandy river were designated through this act. The upper two segments, covering a length of 12.4 miles, go from the river's headwaters on the west slope of Mt. Hood to the boundary of the Mt. Hood National Forest and is to be administered by the U.S. Forest Service (see attached map). The third designated segment is downstream between Dodge Park and Dabney Park and is administered by the Bureau of Land Management, Oregon State Parks and Recreation Department, and Multnomah and Clackamas Counties. A separate River Management Plan was completed for this lower segment in 1993 and can be obtained from the BLM office in Salem.

This decision notice designates the management direction for the upper two designated segments on the Mt. Hood National Forest. The following segments are affected:

> **Segment 1** - The 4.5 mile segment from its headwaters to the section line between sections 15 and 22, township 2 south, range 8 east as a **wild river.**
>
> **Segment 2** - The 7.9 mile segment from the section line between sections 15 and 22, township 2 south, range 8 east to the Mt. Hood National Forest Boundary at the west section line of section 26, township 2 south, range 7 east as a **recreational river.**

The Wild and Scenic Rivers Act directs managing agencies to develop a management plan for the protection and/or enhancement of the outstandingly remarkable values for the designated river and associated corridor. The outstandingly remarkable values for the upper Sandy River include Scenery, Recreation, Fisheries, Geology, and Botany.

The Environmental Assessment (EA) for the upper Sandy River Management Plan documents the results of analyzing alternative strategies for managing the river corridor and the effects of those management strategies. Utilizing the information in the EA, this Decision Notice establishes new corridor boundaries for the upper Sandy National Wild and Scenic River land allocation and adopts new management direction for the area within those boundaries.

The River management plan describes the conditions which need to be achieved and/or maintained in order to protect the river's values, and prescribes standards and guidelines to govern activities with the boundaries that could affect the river's values. A number of activities are proposed for implementation in the corridor to help achieve those conditions. It also establishes a program for monitoring activities within the area to help insure that the desired results are achieved.

Although the River Management Plan establishes standards and guidelines, monitoring elements, and potential projects or activities, actual accomplishment will depend upon final budget allocations.

Decision

This decision affects two areas:

- The Wild and Scenic River Corridor.
- Management Areas directly adjacent to the Wild and Scenic River corridor as identified in the Mt. Hood National Forest Land and Resource Management Plan, (Forest Plan).

Based on the analysis documented in the Environmental Assessment, it is my decision to select alternative D with modifications since I feel it provides the best mix of management options to meet the requirement of protecting and/or enhancing the outstandingly remarkable values of the river corridor and provide continued public use of the river.

It is also my decision to establish a new Management Area, A1 (Wild and Scenic River - Sandy River) based on the boundary described in Appendix B of the River Management Plan. This boundary was changed from the interim boundary to better comply with the Wild and Scenic Rivers Act, to protect outstandingly remarkable values, and to make it more manageable by following identifiable and describable landmarks. This new management area replaces the B1 area allocation boundary for the upper Sandy River in the Forest Plan. The B2 Scenic Viewshed Management Area allocation boundary adjacent to the lower portion of the river corridor will also change to coincide with the new A1 allocation. The A4 Special Interest area allocation, and A2 Wilderness area allocation will not change and will overlay the A1 allocation. Where standards and guidelines for these management areas, as well as the General Forest standards and guidelines differ, the standards and guidelines that are the most restrictive to vegetation and access management will predominate.

It is also my decision to amend specific parts of the Forest plan in order to implement alternative D.

Alternative D, the Management Area adjustments, the Forest Plan amendments and the reasons for the decision are described in other sections of this Decision Notice.

The modifications to alternative D mentioned above are:

- Using the wider corridor boundary that is used in alternatives B and C. This was done to eliminate a narrow strip of land that would have been a B2, Scenic Viewshed land allocation between the wilderness boundary and river corridor boundary. By eliminating this strip, it allows for more consistent management of this area.
- Pursue closing the road to the upper Ramona Falls Trailhead to provide a greater level of protection to wilderness values in the Mt. Hood Wilderness.
- Eliminate programmed (regulated) timber harvest in the recreational segment of the river corridor to better protect scenic values along the river. Timber harvest may still occur if necessary to protect, enhance, or restore river values such as improving wildlife habitat and protection of overall forest health.
- Limit the initial size of the group campground that may be constructed to a maximum of 3 sites capable of handling 20 to 25 individuals each.
- Change the Visual Quality Objective within the corridor in the recreational segment from Partial Retention to Retention. The VQO for structural facilities, both new and existing, and for fisheries enhancement/restoration structures will change from Modification to Partial Retention. The VQO for the wild segment will remain preservation within the corridor. There will be no changes to the VQO for the viewshed outside the corridor.

Description of Alternative D With Modifications

The overall objectives of this alternative are:

- To maintain the river's free-flowing characteristics.
- To manage for the protection and/or enhancement of the outstandingly remarkable scenic, recreational, fishery, geologic, and botanical values, and other resource values in a balanced way.

Recreation

On National Forest lands, some additional recreational opportunities would be allowed within the corridor. These include allowing for the construction of a new small group campground; new hiking, mountain bike, equestrian trails, and interpretive trails and facilities including the Cascade Streamwatch Three Creeks site as proposed in the Cascade Streamwatch Environmental Assessment. A new sno-park would also be developed to meet the needs of winter recreationists and reduce conflicts with private land owners in the corridor. Existing campgrounds may be improved to better serve the recreating public and to reduce resource impacts in the campgrounds.

Some dispersed camping sites would be hardened and others eliminated where substantial resource damage or conflicts with other river values and private lands are taking place. The road to the upper Ramona Falls trailhead would be closed to provide greater protection to wilderness values in the Mt. Hood Wilderness. Improvements would be made to the lower trailhead to better accommodate those users displaced from the upper trailhead. A greater emphasis would be placed on interpreting the river and unique geologic, botanical, and other values in the corridor and would be coordinated through the development of a comprehensive interpretive plan.

There would be no change in the Recreation Opportunity Spectrum classes for the river corridor. Other recreational related projects could be considered only as long as they fulfill the goals and objectives of the river plan.

Access and Travel Management

Within the corridor, some system and non-system roads will be closed if they are not needed for the management of the river corridor and protection of its values and where resource damage or substantial dumping or other illegal activities are taking place. The current motorized winter vehicle restriction on Forest Road 1825 will be retained to protect nordic skiing opportunities in the corridor. Existing roads and bridges may be reconstructed to meet the needs of forest users.

Hydrology

A water quality monitoring program will be developed to determine baseline water quality for the river and its tributaries and once determined, will monitor for the protection of that water quality. State water quality standards will be met or exceeded and future activities in the corridor will be evaluated to identify and implement actions to improve existing water quality. Activities outside the corridor may be affected in order to meet this requirement.

Fisheries

Fisheries habitat restoration and improvement activities will be implemented as long as they preserve the overall free-flowing character of the river. Habitat restoration will be coordinated with Oregon Department of Fish and Wildlife (ODFW) in order to maximize the effectiveness of the work. Most habitat restoration work will take place in the river's tributaries but some may take place in the mainstem of the river. Objectives will be to increase habitat diversity and available spawning and rearing habitat, especially for wild fish populations.

The responsibility for management of fish stocks lie with ODFW. The Forest Service will continue to work closely with ODFW and other agencies in the development of fish stock management for the entire Sandy River subbasin.

Botanical

The river corridor's unique early-successional plant communities will be highlighted and protected throughout the corridor. Efforts will be undertaken to minimize spread and eliminate, if possible, noxious weeds and non-native plants, especially where they threaten unique botanical values.

Timber and Other Forest Products

There will be no programmed, (regulated), timber harvest within the corridor. Harvest activities may occur only if they are to protect, enhance, or restore river values or protect forest health. Permits for harvest of mushrooms, firewood, and other forest products will be allowed as long as other river values are protected. The permits for mushrooms and firewood will be for personal use only. Because of the importance of the area, especially for forest products such as mushrooms, impacts of harvest will be closely monitored, and if substantial adverse effects are taking place, additional curtailment or elimination of the harvest of these products in the corridor may be implemented.

Scenic Resources

Protection and enhancement of scenic resources will be emphasized in the river corridor. Within the recreational segment, the visual quality objective (VQO) will be changed from Partial Retention to Retention within the corridor. For structural facilities and fisheries habitat enhancement/restoration structures, the VQO will change from Modification to Partial Retention. This change provides a higher level of protection for scenic resources within the corridor than has been in place under interim direction since the river was originally designated in 1988. Facilities such as the proposed small group campground and Cascade Stream Watch's Three Creeks Site would still be able to be developed but will be designed to meet the above VQO's. No changes will be made to the VQO for the viewshed outside the corridor.

Heritage Resources

Protection of heritage resources will continue as required by Forest Service Policy and law as well as expanding cultural resource representation in interpretive programs. In addition, the portion of the Pacific Crest Trail that passes near the Sandy River Guard Station is scheduled to be relocated further away from this historic structure to reduce visitation at the building and better protect its historical values.

Coordination with other Management Agencies and Organizations

There will be a high level of coordination with other agencies which also have management responsibilities within and adjacent to the river corridor. These will include a variety of agencies such as ODFW, Clackamas County Planning Department and local planning organizations.

Reasons For The Decision

Throughout the planning process, the public told us they wanted protection of the river and its unique values. They wanted to see the overall character of the river corridor and quality of the recreational experience similar to what they are now. In addition, they realized the importance of protecting the natural resources that make the river corridor special and were the basis for the river being designated. There were differences in opinion expressed on the level of public use that should be allowed in the corridor in the future, and if any new facilities should be allowed, since increased numbers of visitors to the river corridor have the potential to change the quality of recreational experience.

I have selected Alternative D with the modifications listed above since I feel that it provides the protection and enhancement of the rivers unique natural resources, meets the desires of many members of the public, and meets some of the anticipated increase in demand for outdoor recreational opportunities from the growing Portland metropolitan area. The alternative also provides for monitoring that will provide the Forest Service with sound data and help in identifying future problems. In addition, when projects are implemented, public participation in those planning efforts will allow Forest Service managers to continue their awareness of how the public wants their river managed.

Specific reasons for selecting Alternative D, with modifications, are listed below. The reasons are first listed in relation to the planning issues identified in the EA. Following those issues, I have listed other reasons for my selection. My reasons are:

Recreation

Alternative D, with modifications provides for limited additional recreational opportunities within the recreational segment of the river corridor. While some members of the public wanted no new development within the corridor, others requested additional facilities be developed in the corridor, including those that could be developed under this alternative. Since the area is easily accessible to the growing Portland metropolitan area, demand for recreational opportunities will be increasing in the future. By allowing limited growth in the recreational segment of the river corridor, facilities can be built that can meet some of this increased demand while still being designed to protect the river's unique values. In addition, the increased emphasis on interpreting the unique natural values in the area will improve the visitors knowledge of protecting river values while allowing them to enjoy the Sandy River. No new actions are proposed for development in the wild segment of the river corridor, though there are some actions that will mitigate impacts from recreational use in that segment.

There are also projects identified in the implementation schedule, such as closure of some dispersed camping sites and hardening of other sites, as well as improvements to existing facilities, that will reduce adverse impacts taking place at this time.

I feel that the selected alternative balances the need to provide for increasing use in the corridor and enhances the river corridor's outstandingly remarkable recreation value, and at the same time, protects other outstandingly remarkable values while preventing and reducing resource damage.

Old Maid Flats Special Interest Area

In addition to its wild and scenic river designation, the Old Maid Flats area is also designated a Geologic Special Interest area because of the geologically recent mudflow from Mt. Hood. The unique geology is also one of the river's outstandingly remarkable values. As identified in the EA for this management plan, botanical values are also unique and are tied closely to the geology of the area. I felt it was unnecessary to make this area a Botanical Special Interest area as well, since its botanical values are more than adequately protected through management direction and by their being identified as one of the outstandingly remarkable values in the river corridor. The river management plan requires that the unique botanical values found in the corridor be protected and/or enhanced.

Access and Travel Management

Alternative D, with modifications, addressees the concerns raised about unnecessary roads and the problems associated with them such as trespassing on private lands, garbage dumping and other illegal activities being within the corridor. The selected alternative provides the opportunity to close unnecessary roads, while still allowing for new development of roads and trails to a limited degree to meet the needs of forest users.

Probably the most disputed road closure allowed in the management plan is the closure of the road to the upper Ramona Falls trailhead. There were members of the public that told us they felt the road should stay open to allow for continued easy access to Ramona Falls, a popular destination for many recreationists. Others, however, felt that the road should be closed since it is extremely rough, has erosion problems, and provides easy access to an area of the Mt. Hood Wilderness that is heavily impacted from high use. Almost all of those individuals agreed that the lower trailhead should be the primary trailhead, thereby increasing the hiking distance to Ramona Falls approximately one mile each way. This increased distance should reduce numbers of visitors to the falls area as a result of the increased hiking distance. Since the Ramona Falls area is within the Mt. Hood Wilderness and the numbers of visitors to the area currently exceed our Forest Plan standards and guidelines for the wilderness, I feel that closure of the road will be a reasonable way to reduce visitation to the falls, at least to a degree. Use of the lower trailhead and trail to the falls will still allow a reasonable day hike for most individuals wishing to hike to the falls. Additional use limitations within the wilderness will be implemented through the Mt. Hood Wilderness management planning efforts. This will allow for continuity of management direction throughout the entire wilderness, of which the wild segment of the upper Sandy River is a part.

Fisheries

The entire Sandy River has been identified as an extremely important area for anadromous and native fish species, including some that are at extremely low population levels. The selected alternative promotes fisheries habitat restoration and improvement activities in the river corridor that will assist in the recovery of those fish stocks. In addition, the Forest will be working closely with ODFW so habitat management actions will assist in the State's fish population management objectives. Any projects to be implemented within the upper Sandy River itself, before being implemented, will be evaluated and designed to insure that the free-flowing character of the river will be protected.

Ecosystem Function/Biodiversity

The selected alternative provides the opportunity to maintain a high level of biodiversity within the river corridor. There will be human influence which may affect ecosystem function to a slight to moderate degree in localized areas, but overall, natural ecological process will still be allowed to operate to insure biodiversity throughout the corridor. By allowing these natural processes to continue, natural regeneration and other healing processes may take place, providing the greatest opportunity for a healthy forest ecosystem. The selected alternative also allows for some active management of vegetation in the corridor if it is necessary to enhance ecosystem function, enhance forest health, and maintain biodiversity.

Scenic Quality

Several members of the public commenting on the EA felt that a higher level of protection to scenic quality was necessary than was proposed in Alternative D. As a result, the Visual Quality Objective (VQO) within the recreational segment of the corridor will be Retention with a VQO of Partial Retention for structural facilities and fisheries habitat enhancement/restoration structures. This provides a higher level of protection for scenic values than previous management direction and what was originally proposed in the preferred alternative when the EA was released for public review. It still allows for the development of some facilities that have been proposed such as the Cascade Stream Watch's Three Creeks site and small group campground since those facilities can be designed to meet the Partial Retention VQO. I did not feel it was necessary to change the VQO for the viewshed adjacent to the corridor and that scenic values in that area is adequately protected under the current Partial Retention in place for the foreground and middleground of the viewshed.

Protection/Enhancement of Outstandingly Remarkable Values

With any river management plan, we must ensure that we are protecting those values for which the river was originally designated. The selected alternative provides a high level of protection for all the natural values of fisheries, scenery, geology, and botanical values, and balances that protection and enhancement with providing recreational opportunities, which was also identified as one of the outstandingly remarkable values along the river.

Timber Harvest

Overall feeling from the public was that eliminating the programmed (regulated) timber harvest component from the river corridor was more compatible with the objective of protecting scenic values in the river corridor. Programmed harvest was already eliminated within most of the river corridor under interim guidelines and the elimination of it from the remainder of the corridor reduced the allowable sale quantity (ASQ) for the Forest by only .05%. Because this reduction in ASQ is very small and the fact that going from programmed, or regulated, to non-programmed, or unregulated, timber harvest is more compatible with the protection of river values, I have decided to eliminate it from the remainder of the river corridor. Timber harvest may still take place within the corridor using both even and uneven aged management techniques when the management actions are necessary to protect, restore or enhance river related values and to provide for balanced, healthy forest and aquatic ecosystems.

Corridor Boundaries

River corridor boundaries were modified from the interim boundary to better protect identified river values and to make them more easily identifiable on the ground. The boundary was widened in the much of the lower river corridor in order to include the entire Old Maid Flats mudflow since it is that geologic feature that is one of the river's unique values. In the upper, or wild, segment, the corridor was narrowed since the river's values are associated primarily with the river itself. I did decide to use the wider boundary found in alternatives B and C where the river corridor boundary in the lower two miles of the corridor will be the same as the wilderness boundary. By doing this, it eliminates the narrow strip of Forest Service land between the corridor boundary and the wilderness found in alternatives A, D and E, and allows for more consistent management direction for those lands.

The boundary shown on the attached map and as shown and described in the River Management Plan will be presented to Congress for its final approval of the corridor boundaries. It is anticipated that Congress will approve the boundary shown since it is within the 320 acre per river mile limitation stated within the Wild and Scenic Rivers Act and meets the objective of including and protecting the river's unique values.

Consistency With Future Management Direction

As a result of controversy surrounding the management of federal forest lands within the Pacific Northwest, an Environmental Impact Statement is soon to be released that will provide additional management direction for the management of Bureau of Land Management and National Forest Lands, especially as it relates to protection of old-growth dependent species. This additional management direction, often referred to as the President's Forest Plan, will modify and amend current Land Management Plan direction, including some of the direction contained in this plan. As a result, the direction in this plan will ultimately be reconciled to the direction in the President's Forest Plan. Until that is done, the direction contained in the President's Forest Plan will overlay the direction contained in this plan. Where any conflict between direction exists between the River Management Plan and the President's Forest Plan, the direction that is most restrictive to vegetative management and access will predominate.

Amendments Made to the Forest Land and Resource Management Plan (Forest Plan)

In addition to implementing Alternative D, with the modifications mentioned above, this decision also constitutes Amendment No. 6 to the Forest Plan. Those changes are listed below:

- Change the land allocation for the upper Sandy River from a B1 allocation to a new A1 allocation. This change is the result of eliminating regulated timber harvest within the corridor.

- Change the river corridor boundary to better protect river values. This new river corridor will be shown as an A1 allocation. Other overlaying "A" allocations such as A2 Wilderness and A4 Special Interest Area will not change. The B2 allocation adjacent to the river corridor will be modified to coincide with the new A1 allocation boundary. As mentioned above in the "Corridor Boundaries" section, Congress must approve the final river corridor boundary and it is anticipated that Congress will approve the boundary shown on the attached map and as shown and described in the River Management Plan.

- Provide replacement management direction for the new A1 allocation. The replacement direction is contained in Chapter 3 of the upper Sandy National Wild and Scenic River Management Plan and reflects any changes to standards and guidelines necessary to implement the alternative as described above.

I have determined that these amendments are non-significant amendments to the Mt. Hood Forest Plan for the following reasons:

- These changes affect only the designated river corridor, much of which is already within the interim Wild and Scenic River corridor and is already being managed as a Wild and Scenic River.

- Changing from regulated to non-regulated timber harvest within the corridor reduces the Allowable Sale Quantity for the Forest by 99 thousand board feet (MBF) annually, less than .05% of the Forest Plan's timber output level of 189,000 MBF annually. There are no other significant changes to other resource outputs on the Forest.

- The standards and guidelines, management actions, and specific activities identified in the River Management Plan are consistent with the original Forest Plan management goals and desired future condition for the upper Sandy Wild and Scenic River. Changes are overall refinements based on more detailed analysis than was conducted in the Forest Plan.

- The adjustments of management area boundaries and direction included in the River Management Plan do not make significant changes in the multiple use goals and long-term land and resource management direction for the Forest.

Other Alternatives Considered in Detail

Alternative A (No Action)

Alternative A would have continued with the current management direction for National Forest Lands. Current State, county, and applicable local regulations would apply to private lands within the corridor, as they do will all the other alternatives. While called a "no action" alternative, it does not mean that no actions will take place within the corridor. A number of activities would still be able to take place within the corridor.

I did not select this alternative since it did not provide as well defined management direction for the river corridor as did any of the other alternatives. The other alternatives were much more specific as to what types of actions would be implemented and their specific management focus. This alternative boundary also did not provide the level of protection to the unique river values that were found in the other alternatives.

Alternative B

The goal of this alternative was to minimize further human influence in the river corridor, maximizing natural values and attributes and allowing natural process to operate to the maximum extent possible within the corridor.

I did not select this alternative since it primarily emphasized enhancing non-recreational resource values, minimizing recreational opportunities. Recreation was also one of the outstandingly remarkable values on the upper Sandy River. With the Mt. Hood National Forest being one of the eleven urban forests in the nation, and with projected increases in recreational use in the future, I feel that alternative B is too restrictive as it relates to future recreation use on the Forest and in the river corridor.

Alternative C

The goal of this alternative was to enhance the natural values and attributes of the river and to provide for public use opportunities only where they would enhance those values. No new recreational facilities would be provided in this alternative other than interpretive facilities.

While I did not select this alternative in its entirety, I did use certain aspects of the alternative to modify Alternative D, my selected alternative. Those aspects that I used include eliminating programmed, or regulated, timber harvest in the corridor; closing the road to the upper Ramona Falls trailhead, using a more restrictive VQO within the corridor, and using the wider corridor boundary of this alternative and Alternative B.

I did not select the remainder of the alternative since, as I mentioned above, the Mt. Hood National Forest is an urban forest with a growing population, as well as the fact that recreation is also one of the river's outstandingly remarkable values. I feel that the alternative was still too limiting as it related to recreation opportunities. Recreation use on the Mt. Hood National Forest will be increasing in the future and there will be a need to meet that demand. I feel that Alternative C unnecessarily limited the Forest's options to meet that demand, though it had many good characteristics related to protection of river values that I incorporated into the selected alternative. As mentioned in the reasons for the decision, I feel that limited additional recreation opportunities may still be provided beyond current levels, and the river's other outstandingly remarkable values can still be protected and/or enhanced.

Alternative E

The goal of this alternative was to emphasize public use potential and opportunities in the river corridor while still providing protection to the rivers other values. Of all the alternatives, this alternative would have provided the greatest level of recreational opportunities.

I did not select this alternative since it enhances primarily the recreational resource, placing much less emphasis on protecting and/or enhancing other resource values. It also was the most expensive alternative. Since other non-recreational values were also found to be outstandingly remarkable, I feel it did not emphasize those values adequately.

Public Involvement

Extensive efforts were taken to involve the public in the development of the alternatives and River Management Plan to insure a high level of public participation in the planning effort. Numerous steps were taken during all stages of the planning process to ensure viewpoints of interested individuals were considered. A summary of the public involvement effort and listing of individuals with whom information was shared and/or who were consulted with is listed in the EA.

During the planning effort, a mailing list of key interest groups, individuals, elected officials, community organizations, government agencies, and landowners adjacent to the river were compiled. Information about the planning process, public meetings, workshops, newsletter and planning updates were mailed to keep all those interested in the planning efforts informed.

The EA was released for public review in January of 1994. Individual who had provided comments during the planning effort were sent a copy of the EA for their review. Other interested individuals on the mailing list were sent a summary of information from the EA. In all, over 100 EA's and 170 summaries were mailed out. In addition, over 20 additional individuals not listed in the EA were sent copies of the EA for comment after they expressed an interest in the river planning effort. In response, 12 letters commenting on the EA were received from different individuals and organizations. Those letters, along with all the other letters and comments received during the planning effort are contained in the analysis file for the EA.

The River Management Plan, which explains in greater detail the management direction for the river corridor, incorporates many comments received from the public during the planning effort and further clarifies the intent of Alternative D, with the modifications that I selected. Ways the River Management Plan and the Decision Notice address points in the letters include:

- Describing the rationale of why additional recreational facilities are being allowed in the corridor, and under what conditions they may built.

- Highlighting the fact that regulated timber harvest is being eliminated from the river corridor in order to better protect scenic values, while still allowing some harvest to take place in order to better protect and/or enhance river values and protect forest health.

- Describing the rationale for allowing closure of certain roads, especially the road to the upper Ramona Falls trailhead.

- Describing the rationale for the change in Visual Quality Objectives in the recreational river segment corridor.

- Describing the rationale for the location of the river corridor boundary.

- Identifying tentative timelines for implementation of specific projects along with an estimation of cost of implementation.

- Identifying items to be monitored to provide additional feedback on effectiveness of management actions and direction.

The River Management Plan takes into account the desires and concerns of those who expressed their views to us and provides for a balanced way for protecting and enhancing all the outstandingly remarkable values and allowing for continued public use of the special river area.

FInding of No Significant Impact and Compliance With Laws

Following a review of the environmental assessment, I have determined that this is not a major federal action that will significantly affect the quality of the human environment, therefore, an Environmental Impact Statement is not necessary and will not be prepared. This determination is based on the following considerations:

- Irreversible and irretrievable commitments of resources and adverse cumulative or secondary effects will not exceed those discussed and evaluated in the Final Environmental Impacts Statement for the Mt. Hood Forest Land and Resource Management plan.
- Direct, indirect, and cumulative environmental impacts were analyzed and discussed in the upper Sandy River Environmental Assessment and were not found to be significant.
- There will be no significant impacts to wetlands, floodplains, prime farm lands, range lands, minority groups, women, or consumers.
- The River Management Plan protects and/or enhances the identified outstandingly remarkable recreational, scenic, geologic, fishery, and botanical values found in the river corridor.
- Activities planned in the wild and scenic river corridor will not adversely affect the environment beyond or downriver from the designated corridor.
- River Management Plan direction is not expected to cause any significant impacts to any threatened, endangered, or sensitive plant or animal species. Site-specific biological evaluations will be done for specific projects planned in the corridor and necessary mitigation measures to protect those species will be undertaken during implementation of those specific projects.
- The River Management Plan is in compliance with relevant Federal, State, and local laws, regulations, and requirements designed for the protection of the environment. The River Management Plan meets the State of Oregon water and air quality standards.

Biological evaluations for animals and plants have been completed and are included in the analysis file of the Environmental Assessment. These evaluations assess the impacts of the River Management Plan on all threatened, endangered, and sensitive species (TE&S species) that could potentially be found in the Wild and Scenic River corridor. The evaluations include a conclusion that there will be no effect or no impact at this level of decision to TE&S species present. Further site-specific surveys and appropriate interagency consultation, if necessary, will be conducted during project planning.

Implementation

This decision may be implemented 30 calendar days after the Decision Notice is published in the Oregonian.

Each project identified in the River Management Plan will require additional environmental analysis prior to implementation, with the appropriate levels of analysis, in compliance with National Environmental Policy Act requirements.

Right to Appeal

This decision is subject to appeal pursuant to 36 CFR 217. Written Notice of Appeal of this decision must meet the direction contained in 36 CFR 217.9 (Content of a Notice of Appeal) and must include the specific reasons for the appeal. Two copies of the written Notice of Appeal must be filed with the Reviewing Officer, John Lowe, Regional Forester; P.O. Box 3623; Portland, Oregon 97208-3623, within 45 days of the date the legal notice of this decision appears in the Oregonian.

For further information, please refer to the upper Sandy National Wild and Scenic River Environmental Assessment, or the upper Sandy National Wild and Scenic River Management Plan, and/or contact Paul Norman, Planning Team Leader, at the Zigzag Ranger District; 70220 E. Highway 26; Zigzag, OR 97049; (503)622-3191 or (503)666-0704.

Responsible Official:

MICHAEL S. EDRINGTON
Forest Supervisor
Mt. Hood National Forest
2955 NW Division St.
Gresham, OR 97030

2/24/94
Date

Upper Sandy National Wild and Scenic River

Management Plan

Mt. Hood National Forest
Zigzag Ranger District
Clackamas County, Oregon

Deciding Official:

Michael S. Edrington, Forest Supervisor
Mt. Hood National Forest
2955 NW Division
Gresham, OR 97030

Recommending Official:

Jack Cameron, District Ranger
Zigzag Ranger District
70220 E. Hwy 26
Zigzag, Oregon 97049
(503) 666-0704

For Further Information:

Paul Norman
Zigzag Ranger District
(503) 666-0704

Chapter 1

Introduction

Introduction

The upper Sandy River became a Wild and Scenic River through the Omnibus Oregon Wild and Scenic Rivers Act of 1988. This act added segments of 40 Oregon rivers to the National Wild and Scenic Rivers system. The Sandy River was one of these 40 rivers. Three segments of the Sandy River were designated through the Omnibus Oregon Act. The upper two segments, covering a length of 12.4 miles, go from the river's headwaters on the west slope of Mt. Hood to the boundary of the Mt. Hood National Forest. The Mt. Hood National Forest is responsible for the administration of these river segments, and this Management Plan covers that portion of the river. A third segment downstream on the Sandy River from Dodge Park to Dabney Park was also designated in the 1988 Act. A separate river management plan has been developed for that segment of the river by the Bureau of Land Management, Oregon State Parks and Recreation Department and Clackamas and Multnomah Counties and was completed in September of 1993.

Much of the area in the river corridor is also identified as the Old Maid Flats Geologic Special Interest Area (SIA) in the Mt. Hood Forest Land and Resource Management Plan, (also called the Forest Plan). The SIA is identified as an A-4 land allocation in the Forest Plan. Both the management direction for the SIA and the river management direction contained in the Management Plan will apply within those areas where both land allocations overlap. Map 1.2 shows the Wild and Scenic River Corridor boundary.

The purpose of this management plan is to provide for a comprehensive approach for managing, protecting, and enhancing the free-flowing natural character of the river and its associated values and natural attributes. This plan describes a desired future condition of the corridor and provides management direction in the form of Standards and Guidelines, identification of projects to be implemented, and monitoring guidelines within the corridor.

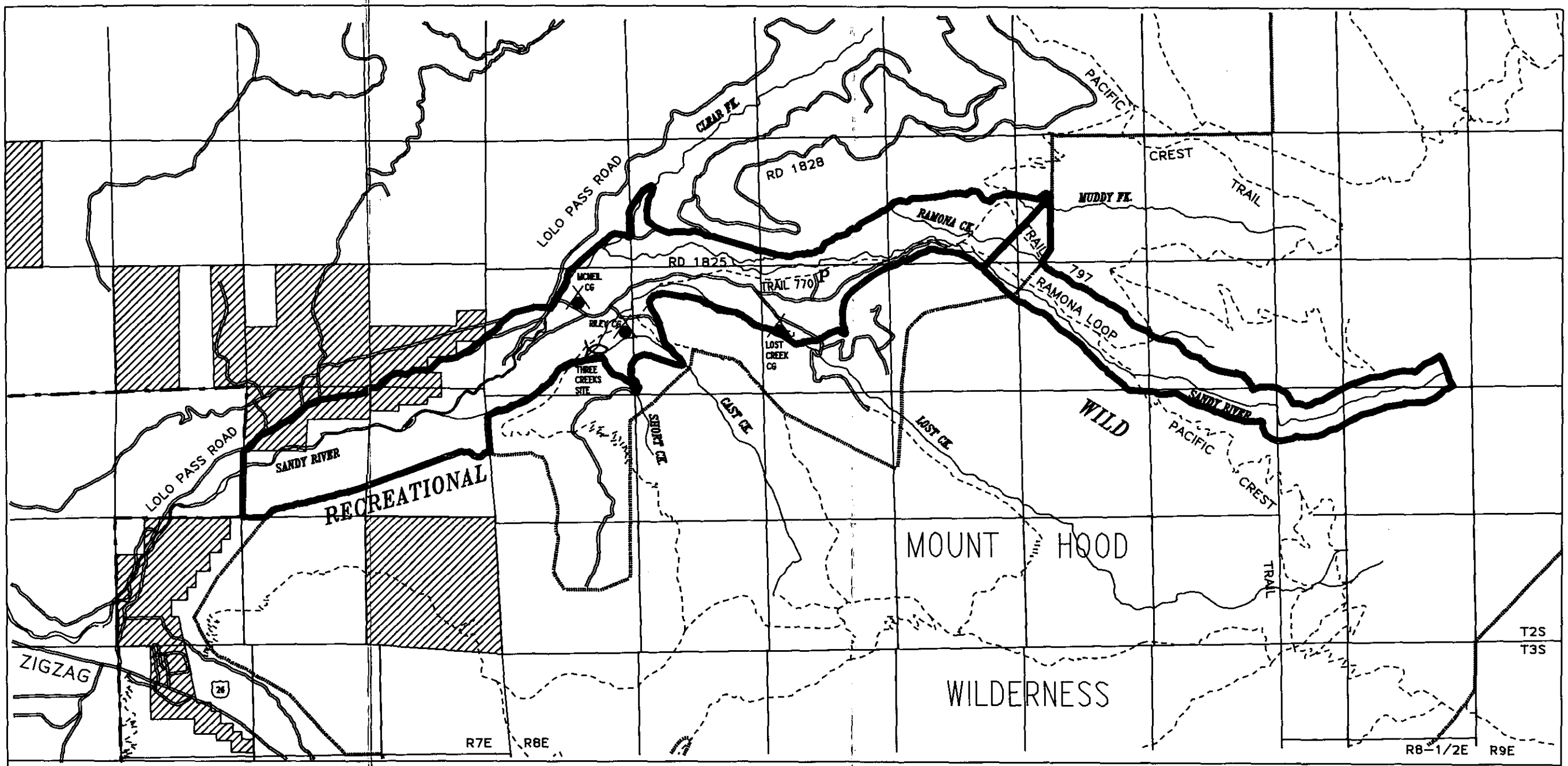
It must be realized that implementation of those activities and monitoring efforts identified in the river management plan are dependent upon available funding. If budget allocations are insufficient, those project and monitoring activities proposed in this management plan may need to be rescheduled. Insufficient budgets over a period of several years could cause an inability to implement proposed activities, to apply standards and guidelines, and to achieve some of the desired conditions.

Wild and Scenic River Legislation

In 1968, Congress passed the National Wild and Scenic Rivers Act, establishing a nationwide system of outstanding free-flowing rivers. The primary purpose of the Act is to balance river development with river protection and conservation. The Act specifically prohibits river from future hydropower development and requires managing agencies to protect and enhance those values for which the river was designated.

As defined by the Act, a National Wild and Scenic River must be undammed and have at least one outstandingly remarkable resource value (ORV) to be include din the system. ORV's are those values which are **river related** (owe their existence or location to the river) and are **rare, unique, or exemplary** in character. Rivers may be added to the system either by an act of Congress or by order of the Secretary of the Interior upon official request by a State.

Map 1.2 Interim Management Boundary



SANDY WILD & SCENIC RIVER
FINAL RIVER CORRIDOR BOUNDARY

1:55000
1" = .87 MILE

- P PARKING
- CAMP GROUND
- CASCADE STREAMWATCH
- HIGHWAY 26
- PRIVATE LAND W/IN NF BOUNDARY
- PROPOSED CORRIDOR BOUNDARY
- NATIONAL FOREST BOUNDARY
- WILDERNESS BOUNDARY
- ROAD
- TRAIL
- RIVER
- SECTION LINE

Some of the underlying principles of the Act are:

- to keep selected rivers or river segments in a free-flowing condition and to recognize their importance to our natural and cultural heritage.
- to include all types of free-flowing rivers in the system, whether in very remote areas or flowing through developed areas.
- to designate rivers because of their existing attributes and uses, including a river's natural, recreational, and cultural values.
- to recognize the need to provide for partnerships among landowners; Federal agencies; and local, State, and tribal governments in determining the future of the river area and managing its resources.

Under the Wild and Scenic Rivers Act, designated rivers were classified as wild, scenic or recreational, depending on the level of development and access present at the time of designation. Wild rivers are the most natural appearing and the least accessible. Little or no development is present, such as roads or campgrounds. Scenic rivers have shorelines that are largely undeveloped with few access points. More types of land uses and developments are compatible with management goals on a scenic river than on a wild river. On river segments with the Recreational designation, the shoreline is more developed and the road parallels the river more closely and may even dominate the landscape. There may be some development along the banks, and some existing impoundments or diversions.

Due to the different level of existing development, the upper two segments of the Sandy River as described in the Omnibus Oregon Wild and Scenic Rivers Act as:

> ***Segment 1*** - The 4.5 mile segment from its headwaters to the section line between sections 15 and 22, township 2 shout, range 8 east as a **wild river**; to be administered by the U.S. Forest Service.
>
> ***Segment 2*** - The 7.9 mile segment from the section line between sections 15 and 22, township 2 south, range 8 east to the Mt. Hood National Forest boundary at the west section line of section 26, township 2 sough, range 7 east as **recreational river**; to be administered by the U.S. Forest Service.

Method of Plan Preparation

The upper Sandy River Management Plan was developed from the upper Sandy National Wild and Scenic River Environmental Assessment (EA). The EA was released in January 1994 and evaluated a range of five alternative management scenarios for managing the upper Sandy River. Additionally, the EA weighed environmental consequences of each management scenario. Based on input from the public and a variety of agencies, the management direction contained in this plan was identified as the preferred management strategy. This plan provides a more comprehensive list of actions, with specific target dates and estimated implementation costs, along with the final management direction and guidelines for the river.

How this Document is Organized

Chapter 1 provides an introduction to the River Management Plan.

Chapter 2 summarizes the outstandingly remarkable values found along the river, describes the Desired Future Condition of the river corridor, and identifies the general resource management objectives for the river corridor.

Chapter 3 contains specific management direction for the river corridor in the form of Standards and Guidelines.

Chapter 4 lists specific management actions to be implemented under the direction of the River Management Plan. Most of these actions will require additional site-specific analysis and as a result of that analysis, costs and scheduling of the actions may change. Implementation of those actions is also dependent upon available funding.

Chapter 5 identifies a monitoring program to evaluate the effectiveness of management actions taken along the river and to insure that river values are being protected and/or enhanced.

The Appendices provide support and additional information to the main document and includes a procedure to follow when evaluating water resource and other projects that could affect the river's values, a description of the river corridor boundary, and a list of preparers.

Chapter 2

Outstandingly Remarkable Values/ Desired Future Condition

General Management Objectives

The Sandy River Management Plan provides the direction for management of the upper Sandy River and lands within the river corridor. This chapter describes those values which were found to be outstandingly remarkable for the upper Sandy River, followed by the Desired Future Condition for all the resources along the river. These sections are then followed by the overall resource management objectives for the upper Sandy River.

Outstandingly Remarkable Values

The intent of the Wild and Scenic Rivers Act is to maintain the free-flowing character of the designated river and to protect its values. Those values were termed by Congress as "outstandingly remarkable values." Outstandingly remarkable values are values or opportunities in a river corridor which are directly related to the river and which are rare, unique, or exemplary from a regional or national perspective. The Management Plan for the upper Sandy River provides for balanced protection and enhancement of all values found to be outstandingly remarkable:

- scenery,
- recreation,
- fisheries,
- geology, and
- botanical.

A summary of these values is below. A more detailed description of these values can be found in Appendix A of the upper Sandy Wild and Scenic River Environmental Assessment, which is the Resource Assessment for the upper Sandy River.

Scenery

The river corridor, from the Sandy's headwaters on the west slopes of Mt. Hood downstream to McNeil campground, provides much scenic diversity as it flows through a steep river canyon, over water falls, past rock pinnacles and large open sandy faces, and across a broader mudflow plain. The wide variety of vegetation and features with little or no evidence of human alteration, as well as impressive views of Mt. Hood throughout the river corridor and especially in the middle and upper portions of the corridor, make scenic quality along the upper Sandy River an outstandingly remarkable value.

Recreation

The upper Sandy River provides a wide variety of recreational opportunities along its length ranging from hiking, equestrian, and interpretive trails, sport fishing, developed and dispersed camping opportunities, mushrooming, and even limited kayaking opportunities for experienced kayakers. It is this wide variety of high quality recreational opportunities and the fact that they are so close to a major metropolitan area that makes recreation an outstandingly remarkable value for this section of the river.

Fisheries

The upper Sandy River and its tributaries contains a diversity of increasingly rare, genetically important native fish stocks. The river and its tributaries provide spawning and rearing habitat for early- and late-run coho, spring chinook, and winter and summer steelhead, as well as containing native cutthroat trout populations. It is the presence of these increasingly important fish stocks and the availability and quality of suitable important habitat for those stocks that make fisheries an outstandingly remarkable value.

Geology

There are several geologic features related to vulcanism, glaciation, and erosion found along the upper Sandy River. The Old Maid Flats area is an excellent example of a multiple debris flow deposit that provides unique interpretive opportunities with easily observable erosional processes as well as showing the free-flowing characteristics of the river. In this area, there are also buried snags and tree casts or wells (from snags completely rotted away) that are some of the best examples of a buried forest found in the Pacific Northwest. The Old Maid Flats area has also been recognized by a Geologic Special Interest Area designation in the Mt. Hood Land and Resource Management plan, further recognizing the unique geologic characteristics of the area.

Botanical

Largely tied to mudflow features mentioned above and the unique soil conditions of the mudflow, the upper Sandy River basin, especially the Old Maid Flats area, contains unique and relatively rare plant communities, especially for the west side of the Cascades. These include a unique early successional plant community consisting primarily of lodgepole pine on the recent debris flow deposit, as well as associated plants and edible mushrooms not commonly found elsewhere in the area. It is the rarity of these plant communities that make botanical values outstandingly remarkable.

Recreation

A wide variety of high quality recreation experiences will continue to attract a growing number of users to the upper Sandy River. Use levels will rise as the population of the Portland metropolitan area grows and those living in the metropolitan area continue to look for more recreation experiences in a natural forested setting. Actions will be taken to reduce resource problems at parking and access points along the river and provide facilities to reduce sanitation problems. Areas within the river corridor will be managed for a variety of non-motorized recreational opportunities. Motorized use will take place only on designated roads and trails marked open for this use. Overall, the types of use along the river will be very similar to what is currently taking place, though limitations will be placed on locations of where certain activities will take place. Motorized use will be allowed only if appropriate locations for that use can be identified.

Facilities

In order to accommodate increasing use, existing uses, improvements, and high visitor use areas will have been upgraded and improved to provide better sanitation facilities, improved interpretive opportunities, reduced resource problems, and improved access to the river in selected locations. All new and upgraded facilities will be designed to blend in with the natural setting and will meet visual quality standards. Restroom facilities will be provided in higher use locations so proper sanitation is maintained. A smaller group campground will provide visitors the opportunities for multiple families camp together and enjoy the area. Facilities in the corridor will provide a less developed recreation experience while privately owned facilities and resorts outside the corridor will provide a much wider range of amenities and a more developed recreation experience to recreationists. The proposed entrance facility near the junction of roads 1825 and 1828 will provide information to visitors on the river's unique values and the enjoyment, protection, and enhancement of those values.

Trails

Existing trails in the corridor will receive greater use than at present. Trails will be maintained to a high standard to safely accommodate the greater use and to control impacts to other resources. A limited number of new trails will be developed in the recreational segment to provide additional opportunities, and a portion of these will be designed to accommodate equestrian and mountain bicycle use, as well as hiker use. These trails will also be designed to allow recreationists to experience the river corridor's unique values, while insuring those values are protected. Educational and interpretive media will be used at most trailheads to educate trail users about proper etiquette when hiking, horse riding, mountain bike riding, and dispersed camping along the trails. The road to the upper Ramona Falls Trailhead will be closed and rehabilitated and the lower trailhead will be improved, including having restroom facilities so proper sanitation is maintained. This improved trailhead will likely serve as a trailhead for other trails in the corridor that do not go into the wilderness. The existing trail bridge across the river by the upper trailhead will be removed and replaced with a more visually pleasing bridge in a location that does not have the hazard of having the bridge footings washed out as is happening to the existing bridge.

There will be more opportunities for persons with disabilities to explore the outdoors as existing trails are improved and new trails are constructed to barrier-free standards, especially interpretive trails at Lost Creek Campground and Cascade Streamwatch's Three Creeks Site. Trail use will be non-motorized unless suitable locations for a motorized trail can be found within or passing through the corridor. Any river or access trails will not cross private lands unless landowners have granted permission, agreements reached or willing seller easements have been acquired.

Overnight Camping

There will be a slight increase in developed camping opportunities with the development of a smaller scale group campground in the corridor. The three existing campgrounds (Riley, Mc Neil, and Lost Creek) will be upgraded to better define camping sites, have some sites designed to meet the space needs of smaller recreational vehicles, reduce resource problems such as erosion and provide potable water.

There will be a reduced number of dispersed campsites from current levels and the sites that remain will be designed and located to protect riparian values. Dispersed sites and access roads near or immediately adjacent to private land in the lower river corridor will also be closed to reduce trespass problems and illegal dumping.

Privately owned campgrounds outside the corridor will offer a full range of amenities including facilities to support recreational vehicle camping for all sizes of recreational vehicles. There will also be increased emphasis on informing visitors of other recreation opportunities outside the corridor and at private recreational facilities to disperse use to areas not as heavily impacted as the river corridor.

Interpretation/Public Information

Development of Cascade Streamwatch's Three Creeks Site will provide a unique opportunity to highlight the Sandy River and its tributaries' importance to the anadromous fish stocks in the river, as well as provide the opportunity to highlight other unique river values found in the corridor. In addition, interpretive trails at Lost Creek Campground and new trails in the corridor will provide additional opportunities to share with recreationists, including those with disabilities, the uniqueness of the upper Sandy River corridor, and how they can protect the area.

Wilderness

Wilderness values will be protected through a coordinated Mt. Hood Wilderness management planning effort identifying carrying capacities within the wilderness and the wild segment of the corridor. All use restrictions within the wilderness will be coordinated and implemented through wilderness management direction.

Recreational Fishing Opportunities

Fishing opportunities in the upper Sandy River will be managed in coordination with Oregon Department of Fish and Wildlife (ODFW) and the Sandy Subbasin Fish Management Plan. Overall direction for the management of fish stocks will be the responsibility of ODFW. Responsibility of management of the fishery habitat will rest with the Forest Service on Federal lands. The long-term goal for upper Sandy fish populations will be an increase in naturally reproducing wild stocks. Emphasis will be on a catch and release fishery along the river and its tributaries. Educational facilities, signing and programs will help anglers become more aware of fishery stock management and protection of the native anadromous and resident species.

Fisheries and Fish Habitat

Habitat quality for resident and anadromous fish will be maintained or improved with the emphasis on naturally reproducing wild stocks. No further degradation of habitat will occur as a result of human activities. Habitat quality will gradually improve in the Sandy River and its tributaries as previously disturbed riparian areas revegetate and as new land practices afford better protection for these areas in the future. Fish habitat and watershed restoration measures will facilitate this process. Fish species distribution will be understood and documented throughout the river corridor. Sensitive aquatic invertebrate habitat will be documented and protected. State and Federal fish management agencies, as well as county personnel, will be working cooperatively with each other and many public individuals and groups. Future habitat management in the Sandy River drainage will be guided by the planned Sandy River Subbasin Fish Management Plan following its completion and adoption.

The future condition of the Sandy River and its tributaries will be one in which abundant high quality habitat will be capable of supporting healthy wild anadromous and resident fish populations. Fisheries management activities, (including habitat restoration, fishing regulations and improved enforcement) will provide for the protection of wild stocks and for continued high quality fishing experiences. Extensive education efforts will increase awareness and promote stewardship of fisheries resources by the public, resulting in improved conservation of fish stocks.

Water Quality and Quantity

As described in the Upper Sandy National Wild and Scenic River Environmental Assessment, water quality and quantity in the river can be variable. Streambank erosion and landsliding along the unstable volcanic mudflow deposits of the Muddy Fork can result in high levels of natural stream turbidity during periods of winter peak flows. Glacial melt during the mid to late summer months gives the Upper Sandy river a pale green opacity or milky gray color. Summer stream temperatures can be high when streamflows are low due to a lack of snowmelt runoff.

The existing quality and quantity of water in the Upper Sandy river will be maintained. The range of baseline water quality conditions for stream temperature, turbidity, pH, and dissolved oxygen in the Upper Sandy river will have been determined. Macro-invertebrate indices in the Clear Fork and Lost Creek tributaries will have been identified. U.S. Forest Service management actions occurring within the Upper Sandy river watershed will be monitored, to insure that Best Management Practices are implemented and effective, and water quality in the river corridor is not degraded. The water quality and quantity of the Upper Sandy river will continue to provide a foundation for the outstandingly remarkable values of the river, including its scenery, fishery, and recreational activities.

Areas where non-point source pollutants have been entering the river in the past will have been corrected, assuming the problems are controllable by available technologies. In addition, emphasis will have been placed on restoring dispersed recreation campsites in riparian areas along the river, where soil has been compacted and riparian vegetation lost.

Botany/Ecology

The array of ecosystems in the river corridor will fall within the historic range of ecosystems appropriate for northwestern Oregon and will not completely resemble those that are present today. These ecosystems will be a result of mainly natural processes and, to a limited extent, human manipulations. Native plant communities and their habitats will be conserved and protection will be provided for federal, state, and Oregon Natural Heritage Program rare, sensitive, threatened and endangered species. Noxious weed species will be eliminated throughout the corridor. Management activities and facility development will be done to limit any adverse impacts to vegetation, and revegetation activities will be done with local native species, where possible.

Parts of the early successional plant community at Old Maid Flats will slowly transform into a more typical Western Hemlock Zone forest-type. Other parts, through limited silvicultural treatments, may still resemble the lodgepole pine community that exists today. The diversity of mushrooms, mosses and lichens will change concurrently with the evolution of plant communities. Not enough information is available to predict how the abundance of some prized edible species, such as the matsutake, will change with time.

Wildlife

Habitat quality for wildlife species will be maintained or improved throughout the river corridor and wildlife species populations will increase above current levels or remain stable. There will be a strong management focus on threatened, endangered, and sensitive species such as peregrine falcons, wolverine, harlequin ducks, goshawks, Townsend's big eared bat, and amphibian species. Snags and wildlife trees will be managed in recreation areas to optimize wildlife habitat and safety. Large, woody debris will be left on the ground to continue nutrient cycling and provide shelter for animal species which utilize such materials. In addition, education efforts will be emphasized to increase awareness of the importance and presence of wildlife species along the river and their specific habitat requirements, reducing adverse impacts from activities in the corridor.

Riparian vegetation and associated habitat will be improved by the closure of roads and specific dispersed sites along the river, also reducing siltation and improving water quality in the river. Disturbance and harassment will be reduced through closures and coordinated planning of future recreational sites and trails.

Heritage Resources

Heritage resources and traditional cultural properties within the river corridor will be documented and evaluated as to their significance and eligibility to the National Register of Historic Places. Resources found to be significant will be protected or their values conserved through proper scientific study and/or data recovery.

Proposed undertakings within the river corridor will be assessed for their potential to affect National Register, eligible, or unevaluated properties. When impacts to an historic property can not be avoided during implementation of an undertaking, appropriate mitigation actions are completed and documented.

When appropriate to facilitate protection and public appreciation, heritage resources within the river corridor will be interpreted.

The Upper Sandy River Guard Station will be evaluated to determine its significance and eligibility for inclusion on the National Register of Historic Places. If determined to be eligible, a nomination to the NRHP will be prepared and submitted. If eligible, the cabin will be managed using a Management Plan that identifies and protects the character defining elements of the structure.

Scenery

The desired future condition of the Wild and Scenic River Corridor will be one in which the existing natural appearing landscape conditions are maintained. The overall existing character and appearance of the corridor will remain basically unchanged from the present condition except on some private lands where there will be some limited development. On these lands, older disturbances will be come less apparent as these areas revegetate and regrowth occurs. Newer disturbances will be less obtrusive as natural screening is left as required by county zoning requirements.

Impacts to the visual character on Forest Service lands as a result of various project facility development in and adjacent to the corridor will be minimized by landscape architect assistance and will meet VQO guidelines.

With no scheduled harvest from federal lands within the corridor, the current forest types will, barring an unforeseen natural event, remain essentially unchanged except for the slow process of natural succession or minor harvest activities to enhance other outstandingly remarkable resources such as fisheries habitat improvements or recreation facilities.

Monitoring

Monitoring of the resources in the corridor will be ongoing and will be identifying any potential problems before they become serious so corrective action can be taken. A special program to monitor recreation use, impacts, and conflicts will be occurring on an ongoing basis. The number of visitors using the river corridor will not be limited unless monitoring suggests that unacceptable impacts to social or physical resources are occurring or are likely to occur soon. Limits or restrictions on use would only be implemented after less restrictive measures, including visitor education, have failed to address the problem.

Monitoring will also be used to identify the impacts of special product harvests within the corridor. Efforts will focus on the effects of harvesting mushrooms, particularly the "Matsutake", and ground mosses. If monitoring determines unacceptable impacts are occurring, measures will be developed to address the impacts up to and including restrictions and prohibitions with the most severe measures implemented only if less restrictive ones fail to address the problems.

Private Property

Private property rights will be recognized and protected. A proactive user education program will create a greater awareness by recreation users of landowner concerns and rights, and should result in a reduction in the number of conflicts between user groups and private landowners. Information will be provided to landowners to assist them in the management of their lands to better protect the river's values.

Relationships

Cooperation between the Forest Service, The Bureau of Land Management, state agencies and Clackamas County will continue to be good, resulting in efficient, consistent management of the Sandy River basin, the upper Sandy River corridor, and the other wild and scenic river areas within the basin, specifically the lower Sandy River managed by BLM, the State of Oregon, and Clackamas and Multnomah Counties, and the Salmon River managed by the Forest Service and BLM. Publics will be given a meaningful opportunity to participate in decision making that affects the management of the river. Partnership opportunities will be expanded between governmental agencies and different groups that may be using the river and the adjacent and related lands.

General Resource Management Objectives For Upper Sandy River

The following management objectives are intended to guide and help focus the management plan to ensure that any recommended actions or set of actions result in the intended outcome of those actions:

- ☐ Protect the river's free-flowing character, and protect and enhance its outstandingly remarkable values.
- ☐ Provide opportunities for a wide range of recreation opportunities along the river corridor managed to prevent degradation of the outstandingly remarkable values.
- ☐ Protect and enhance the quality and quantity of river water. Maintain acceptable levels of water temperature, suspended sediment and chemicals
- ☐ Identify, provide, and protect instream flows which are necessary to maintain and/or enhance the outstandingly remarkable values of the upper Sandy River.
- ☐ Protect and enhance habitat for fish and wildlife species. Protect and enhance the stream channel conditions that provide high quality fish habitat.
- ☐ Protect threatened, endangered, and sensitive species of plants, fish and wildlife found in the corridor.
- ☐ Maintain and/or enhance the integrated ecological functions of rivers, stream, floodplains, wetlands, and associated riparian areas.

- ☐ Protect, and where necessary, seek to restore natural ecological and hydrologic functioning along the river.
- ☐ Provide for plant and animal community diversity and maintain and/or enhance healthy functioning ecosystems to sustain long-term productivity.
- ☐ Protect integrity of wilderness areas and associated wilderness values.
- ☐ Help to reduce conflicts between recreationists and private property owners and reduce trespass on private property.
- ☐ Strive for a balance of resource use and permit other activities to the extent that they protect and enhance the quality of the river's outstandingly remarkable values.
- ☐ Develop a partnership among landowners, county and state governments, and federal agencies in determining the future of the upper Sandy River and share in management responsibilities for the river.
- ☐ Strive to develop effective, compatible, and consistent land use management through coordination with local land use planing authorities.
- ☐ Emphasize user education and information. Establish as few regulations as possible and ensure that any regulations established are enforceable and enforced.
- ☐ Foster cooperative interpretation and environmental education efforts.
- ☐ Consider the needs of local communities regarding economic development. Recognize the public with its varied needs as partners and participants in managing the river corridor through awareness, interaction, and communication.
- ☐ Require all developments to harmonize with the natural environment.
- ☐ Have a management plan that is reasonable, cost-effective, viable and achieves protection of the river's outstandingly remarkable values.

Chapter 3

Management Direction for the Upper Sandy River Corridor

This chapter contains the specific management direction for the Forest Service lands within the upper Sandy River corridor. This direction describes the bounds and/or constraints which all activities on Forest Service lands that are necessary to implement the River Management Plan must operate. This direction is to be used in place of the B1 Wild and Scenic River Standards and Guidelines in the Mt. Hood National Forest Land and Resource Management Plan (Forest Plan) Standards and Guidelines. See below for relationship to other Forest Plan Standards.

Goal

The ultimate goal of the following Standards and Guidelines is to protect and enhance the resource values for which the upper Sandy River was designated into the Wild and Scenic River system.

Location

This Management Area applies to the designated corridor for that portion of the upper Sandy River within the Mt. Hood National Forest boundary. (Public Law 90-542, Wild and Scenic Rivers Act 1988)

The A1 Management Area for the upper Sandy River is the area contained within the final river corridor boundary on the Forest. (See Map 1.2, page 2.) The Forest Plan also identifies other Management Areas that are within this river corridor. The other Management Areas with prescriptions more restrictive to vegetation and access management (ie. A2, and A4) are designated within the wild and scenic river corridor on the Alternative Q map of the Forest Plan or on the Wildlife Resources Map, a supplement to Alternative Q. Prescriptions for A2 and A4 apply as shown on Alternative Q map and the A1 prescription also applies. Where the final river corridor boundary has expanded into the B2 Management Areas, the A1 Management Area direction applies. In areas where the A1 Management Area narrows from the interim corridor identified in the Alternative Q map, the adjoining B2 Management Area direction would apply, except in A4 Management Area boundaries, wherein the A4 Management Area direction would apply. In addition, all applicable Forest Wide Standards and Guidelines apply within the river corridor. If inconsistencies occur between prescriptions, the Standards and Guidelines most restrictive to vegetation and access management predominate.

Another Management Area representing Management Requirements, the B7 General Riparian Area (unmapped) is an inclusion within and overlaps some of the A1 Management Area boundaries. The B7 Management Area prescriptions, as well as the A1 prescription applies to this corresponding inclusion.

A1 Designated Wild, Scenic and Recreational Rivers - Upper Sandy River

The following Standards and Guidelines apply to National Forest lands within the Wild and Scenic River corridor for the upper Sandy River. The intent of the following Standards and Guidelines is to protect and enhance the outstandingly remarkable values for the upper Sandy River and to protect its free-flowing characteristics.

The following are taken from the B1 designated Wild and Scenic Rivers Standards and Guidelines in the Mt. Hood National Forest Land and Resource Management Plan, 1990, but have been modified to apply to the specific characteristics of the upper Sandy River and to clarify direction that may be confusing. An example of this would be that all Standards and Guidelines relating to scenic segments have been deleted since there are no scenic segments for area of river covered by this management plan. Standards and Guidelines that are new or are modifying the intent of the original Standards and Guidelines are highlighted with an asteric (*) before the specific Standard and Guideline.

A. General

1. All management activities in the river corridors shall protect and/or enhance the identified outstandingly remarkable values. (FSH 1909.12, Chapter 8, 7/87). The outstandingly remarkable values shall be identified via environmental analysis for river-specific implementation management plans. River-specific plans shall be consistent with Management Area management direction. A1-SAN-001 A1-SAN-002 A1-SAN-003

2. The free-flowing characteristics of the river shall be protected (PL 90-542, Wild and Scenic Rivers Act, 1989.) A1-SAN-004

3. River characteristics necessary to support the existing classification of Wild or Recreational shall be protected during all management activities (47 CFR 173, 9/82). A1-SAN-005

4. Management activities shall be consistent with prescribed Recreation Opportunity Spectrum (ROS) classes (FSM 2311.1). A1-SAN-006

   a. Wild segments shall provide primitive non-motorized and/or semi-primitive non-motorized ROS settings. A1-SAN-007

   b. Recreational segments shall provide roaded natural ROS settings. A1-SAN-008

B. Specific Resource Values

1. Dispersed Recreation Facility and Site Construction, Administration and Management

   a. Dispersed recreation improvements (e.g. trails) shall be provided to:

      (1) Minimize site degradation in wild segments. A1-SAN-009

      (2) Provide for comfort and convenience of users in recreational segments. A1-SAN-010

b. River recreational use levels should be managed to maintain the prescribed ROS classes. A1-SAN-011

c. Recreational livestock use should be allowed in all segments, provided river banks, riparian vegetation, and scenic quality are protected from adverse impacts. A1-SAN-012

d. Recreational livestock may be tied, grazed or held overnight or for extended periods of time within the near-foreground areas (i.e. 100 feet) of campsites, trails, and key interest areas. A1-SAN-013

(1) Utilization of current year's vegetation growth should not exceed 30 percent (see Forestwide Range Management Standards and Guidelines). A1-SAN-014

(2) No more than 5 percent of an activity area should be in a detrimental soil condition from the combined impact of compaction, puddling and displacement (see Forestwide Soil Productivity Standards and Guidelines). A1-SAN-015

(3) Exposed mineral soil around campsites, trails and key interest areas should not exceed 25 percent of the activity area. A1-SAN-016

2. Developed Recreation Facility and Site Construction, Administration and Management

a. Developed recreation improvements shall be provided to:

(1) Minimize site degradation in wild segments. A1-SAN-017

(2) Provide for comfort and convenience of users in recreational segments. A1-SAN-018

b. No new developed recreational sites shall be planned for wild segments. Existing developed recreation sites may be converted to dispersed sites. New developed sites may be allowed in recreational segments. A1-SAN-019 A1-SAN-020 A1-SAN-021

3. Wilderness

Where B1 river corridors extend into A2 Wilderness Management Areas, A2 prescriptions predominate.

4. Visual Resource Management

All management activities shall achieve the following visual quality objectives (VQO): A1-SAN-022

a. The VQO for wild segments shall be Preservation as seen from the river, river banks, and trails within the B1 river corridor. A VQO of Retention may be allowed for recreation facilities. A1-SAN-023 A1-SAN-024

*b. *The VQO for recreational segments within the corridor shall be Retention as seen from the river, river banks, Forest highways and roads, trails, and recreation facilities within the A1 river corridor. A VQO of Partial Retention may be allowed for structural facilities and fisheries habitat and restoration structures.* A1-SAN-025 A1-SAN-026

c. Exceptions to the above VQOs may occur within "designated viewsheds" (see Forestwide Visual Resource Management Standards and Guidelines regarding designated viewshed VQOs). A1-SAN-027

d. See Forestwide Visual Resource Management Standards and Guidelines for VQOs prescribed for trails.

5. Cultural Resources Management

See Forestwide Cultural Resources Standards and Guidelines.

6. Wildlife and Fisheries

a. Habitat improvement practices should be limited to those which are necessary for the protection, conservation, rehabilitation, or enhancement of river area resources. A1-SAN-028

b. Habitat improvement projects should not introduce non-native species that could significantly change the natural ecosystem. A1-SAN-029

c. Habitat improvement structures should mimic regular occurring natural events (as opposed to catastrophic); e.g. trees falling in and across the river, boulders falling in or moving down the river course, minor bank sloughing, erosion or undercutting, island building and opening or closing of existing secondary channels. A1-SAN-030

d. Habitat improvement structures shall not create unusually hazardous conditions or substantially interfere with existing, or reasonably anticipated, recreational use of the river such as fishing, kayaking, canoeing, rafting, tubing, or swimming. A1-SAN-031

7. Range Management

a. Existing commercial livestock grazing may be permitted, provided river banks and riparian vegetation are protected from adverse impacts (see Forestwide Range Standards and Guidelines regarding forage utilization). A1-SAN-032

b. Permits may be re-issued on vacant allotments if river related resource values are not compromised. Allotment Management Plans shall be consistent with Management Area management direction. A1-SAN-033 A1-SAN-034

c. Range improvements may occur in any river classification to protect or enhance river-related values. A1-SAN-035

d. Corrals and loading chutes should not be permitted. A1-SAN-036

8. Timber Management

a. Within wild river segments, regulated timber harvest shall be prohibited. Unregulated timber harvest and salvage activities may occur only for insect or disease control, fire, natural catastrophy, disasters, public safety or under specified conditions on valid mining claims (FSM 2354.42). A1-SAN-037 A1-SAN-038

*b. *Within the recreational segment, regulated timber harvest should not occur. Timber harvest activities may occur but they shall be designed to restore, protect, or enhance identified river values or protect forest health and shall achieve the prescribed VQO throughout the river corridor.* A1-SAN-039 A1-SAN-040

c. Timber salvage activities to harvest windthrown, insect attacked, fire damaged, diseased trees, or other similar natural tree mortality for protection of the Forest, Forest visitors or river-related resource values shall be permitted in the recreational segment. All river banks shall be protected during logging activities. A1-SAN-041 A1-SAN-042

9. Soil, Water and Air Quality

a. Water quality shall be maintained or enhanced (See Forestwide Water Standards and Guidelines). A1-SAN-043

b. Watershed management and improvement projects may be permitted. A1-SAN-044

c. All wild and recreational rivers segments shall be managed to remain in a free-flowing and unpolluted state. A1-SAN-045

10. Minerals & Energy Management

a. Mineral development under the mining (1872 Mining Law) and mineral leasing laws shall not be permitted within 1/4 mile of wild segment river banks. Provisions shall be made for valid existing mining and leasing rights. A1-SAN-046 A1-SAN-047

*b. *Lands within the A1 corridor for the recreational river segment shall be recommended for withdrawl from locatable mineral development under the mining law (1872 Mining Law). Provision shall be made for valid existing mining rights.* A1-SAN-048 A1-SAN-049

c. All new dams, major water diversions, and hydroelectric power facilities shall be prohibited. A1-SAN-050

d. Leaseable mineral (e.g. geothermal) permits shall include a "No Surface Occupancy" stipulation for that portion of the permit potentially affecting river resource values. A1-SAN-051

e. Common variety mineral (e.g. sand and gravel) development shall not be permitted within any river segments. A1-SAN-052

f. Plans of Operation for mineral exploration and development shall include reasonable, operationally feasible requirements to minimize conflicts with recreational activities and to protect the character of the landscape within the river corridor. A1-SAN-053

(1) Site disturbance from mineral activities shall be rehabilitated within 3 years following project completion. A1-SAN-054

(2) During project operation, disturbed soils shall be stabilized prior to the autumn high rainfall season. A1-SAN-055

g. All mineral exploration and development shall be done in a manner to protect river resource values. A1-SAN-056

11. Geology

See Forestwide Geology Standards and Guidelines.

12. Lands and Special Uses

a. National Forest System lands within river corridors shall be retained. See Forestwide Lands Program Standards and Guidelines. A1-SAN-057

b. Existing special uses, including recreation and non-recreation uses, may be allowed to continue where consistent with Management Area management direction. Special uses that do not meet Management Area direction shall be terminated or phased out. A1-SAN-058 A1-SAN-059

c. New special use permits may be issued within all segments when consistent with the Management Area management direction. A1-SAN-060

d. Construction of new utility and/or transmission lines (e.g. gas lines, geothermal and water pipelines, and electrical transmission lines) should not be allowed within any river segment. A1-SAN-061

e. Applications for licenses from the Federal Energy Regulatory Commission to construct any impoundment, water conduit, reservoir, powerhouse, transmission line, or other associated hydroelectric facility within any designated river segment shall be recommended for denial. A1-SAN-062

f. All non-hydroelectric dams not presently authorized by the Forest Service shall be prohibited. A1-SAN-063

13. Transportation Systems/Facilities; Travel and Access Management

a. Within wild river corridors, new roads shall not be constructed and existing roads may be phased out and rehabilitated. A1-SAN-064

b. Within recreational segments, new roads may be constructed. A1-SAN-065

c. Within the wild river corridors, motorized recreational use shall not be allowed. A1-SAN-066

d. Within the recreational river corridor, motorized use shall be limited. A1-SAN-067

(1) Motorized vehicles shall be permitted only on open roads. A1-SAN-068

(2) Off-road vehicles (ORV) may occur only on designated trails. A1-SAN-069

*(3) *Motorized water craft use shall be prohibited in accordance with State of Oregon Marine board regulations for the upper Sandy River.* A1-SAN-070

e. Areas, roads and segments of rivers closed to vehicle use shall be posted. Administrative use of motorized vehicles shall be allowed in all river segments. A1-SAN-071 A1-SAN-072

*f. *Mountain bicycle use should occur only on roads and on trails designated for mountain bike use and off-trail travel should be discouraged.* A1-SAN-073

g. Pedestrian and equestrian use should be encouraged. A1-SAN-074

14. Fire Prevention and Suppression

a. Off-road vehicle travel within the designated river corridors shall not be permitted except for emergency fire suppression purposes. A1-SAN-075

b. Use of tractors to construct firelines may be permitted only in emergency fire suppression situations. Fireline locations shall consider protection of river related resource values. A1-SAN-076 A1-SAN-077

c. Fire retardant "drops" should be directed to minimize entry of chemicals into water courses and to protect river values. A1-SAN-078

d. See Forestwide Forest Protection Standards and Guidelines.

15. Wood Residue Management

a. See Forestwide Soils Productivity, Wildlife, and Forest Diversity Standards and Guidelines regarding coarse woody debris.

b. Prescribed burning may occur to protect or enhance river-related values. A1-SAN-079

16. Integrated Pest Management

See Forestwide Timber Management Standards and Guidelines regarding Integrated Pest Management.

Chapter 4

Implementation Schedule

SANDY RIVER IMPLEMENTATION SCHEDULE
SCHEDULE OF PLANNED ACTIVITIES AND COST ESTIMATES

This chapter outlines specific management actions to be implemented within each resource area. The plan, with its objectives (Chapter 2), management standards and guidelines (Chapter 3), the following actions, and the monitoring program (Chapter 5), make up the River Management Plan and are designed to provide for the balanced protection and enhancement of all the river's outstandingly remarkable values. Additional site specific analysis will still be needed to assess environmental effects prior to implementing any project. Dependent upon the analysis, projects may not be implemented or be modified to mitigate unacceptable impacts that may result from implementation. *Project implementation is dependent upon available funding. Projects may not be implemented if adequate funding is unavailable.*

RESOURCE	DESCRIPTION OF ACTIONS/ACTIVITIES	FISCAL YEAR	ESTIMATED COST
RECREATION Facilities	* Upgrade water system for McNeil and Riley Horse camp campgrounds to meet water quality standards. If feasible, may also run water lines to Lost Creek Campground.	1996-1998	$ 150,000
	* Upgrade/Improve campsites in McNeil and Riley Horsecamp campgrounds to better define sites and design to meet the needs of smaller recreational vehicles (RV's).	1999-2001	$ 110,000
	* Develop a barrier-free fishing platform in river corridor to allow better access to the river and/or tributaries for persons with disabilities. Fisheries and other values must be protected if developed. Project not to be developed if does not meet objectives of fish stock management direction identified in Sandy River subbasin plan or other applicable direction.	1999-2001	$ 35,000
	* Construct entrance facility near junctions of Forest Roads 1825 and 1828 to provide information to forest visitors in the river corridor. Facility to be designed to provide information to the public either through signing or by being staffed dependent upon use levels in the river corridor.	1998-2000	$ 70,000
	* Evaluate feasibility and need for group campground in river corridor and develop if needed and other resources are adequately protected. Group campground to be limited initially to a maximum of 3 sites each capable of accommodating 20-25 persons at one time.	1997-1999	$ 20,000 feasibility, $ 250,000 total if implemented
RECREATION Interpretive Facilities, Services, and Public Information.	* Develop a comprehensive interpretive plan for the river corridor. Plan would outline locations, types and focus of interpretive efforts and facilities in the river corridor, as well as costs and schedule for implementation of specific small scale interpretive items. Interpretation would primarily focus on natural attributes of the river corridor and their protection and enjoyment. These attributes include the unique geologic, botanical, fishery, wildlife, and scenic values, as well as other natural resource values in the area. Development of additional interpretive facilities and trails would require additional environmental analysis prior to development.	1997-1998	$ 25,000
	* Complete Cascade Streamwatch interpretive facilities at the Three Creek sites as proposed in the Cascade Streamwatch Environmental Assessment. Appropriate mitigation measures shown in EA to be implemented to mitigate environmental effects from increased use in area resulting from visitors to facility, including necessary road improvements and coordination with Oregon Department of Transportation and Clackamas County Transportation Division.	1995-1998	$ 350,000

RESOURCE	DESCRIPTION OF ACTIONS/ACTIVITIES	FISCAL YEAR	ESTIMATED COST
RECREATION Trails and Dispersed	* Evaluate and implement best method to close road to upper Ramona Falls trailhead and rehabilitate existing roadbed.	1996-1997	$ 35,000
	* Improve lower trailhead parking and provide sanitation facilities. Replace existing bridge with new bridge that meets visual objectives and protects free-flowing character of the river. Location of bridge and trail to Ramona Falls from the lower trailhead may be relocated to improve the recreation experience and better meet recreation objectives.	1997-1999	$ 220,000
	* Identify/evaluate dispersed camping sites/access points and harden acceptable locations to minimize impacts of heavy use along the river. Close/rehabilitate locations where resource damage is causing substantial impacts within riparian zone.	1995-1997	$ 30,000
	* Develop sno-park to meet the needs of winter recreationists and design to incorporate other year-round uses to the extent possible. Location of sno-park would be near junction of Roads 1825 and Road 1800 (Lolo Pass Road)	2000-2002	$ 120,000
	* Reroute Pacific Crest Trail away from the Sandy River Guard Station and provide natural screening to reduce user impacts to the Guard Station.	1997-1998	$ 25,000
	* Close dispersed shooting site near junction of Roads 1800 and 1825 and direct users to alternate, suitable locations. Rehabilitate site to meet current Visual Quality standards.	1997-1998	$ 15,000
	* Monitor boating use on the river every 5 yrs. Boating use is currently low, well below carrying capacity and not expected to reach capacity during planning horizon. When use appears to be reaching carrying capacity, a comprehensive Limits of Acceptable Change (LAC) process planning process will be implemented to further refine carrying capacity of the river. If use limits are reached or needed, a "freedom of choice" use allocation system will be used.	1995, 2000 2005	$ 3,000 ea yr.
	* Develop and implement a comprehensive recreation monitoring survey and program utilizing LAC process to establish carrying capacity for remainder of corridor. Area within wild segment to be evaluated as part of Mt. Hood Wilderness planning efforts to allow for continuity of management direction throughout the entire wilderness area.	1996-1998	$ 15,000
	* Maintain winter road closure on Road 1825 to protect nordic skiing opportunities.	Ongoing	$ 1,000/yr
ACCESS AND TRAVEL MANAGEMENT	* Evaluate system and non-system roads and close if not needed for management of the river corridor.	1995-1997	$ 20,000
	* Reconstruct Road 1825 bridge across Sandy river to accommodate higher levels of public use, resource protection, and public safety.	1999-2001	$ 75,000
MINERALS	* Recommend withdrawal of lands within Recreational segment from locatable mineral development. Requires completion of EA and approval through BLM.	1995-1998	$ 15,000

RESOURCE	DESCRIPTION OF ACTIONS/ACTIVITIES	FISCAL YEAR	ESTIMATED COST
HYDROLOGY Water Quality/ Quantity	* Develop and implement a program for baseline water quality and quantity , including temperature, turbidity, dissolved oxygen, pH, chemical (oil and gas), and macroinvertibrates in Clear Fork and Lost Creek and at trails crossing on river mainstem and Muddy Fork.	1996-2000	$ 4,000/yr
	* Pursue and conduct watershed enhancement opportunities to reduce non-point source pollution and improve riparian area condition.	1995-1998	$ 20,000
	* All projects with the potential to affect the free-flowing character of the river must have analysis completed to insure the free-flowing character is protected, (Section 7 analysis - see Appendix A)	Ongoing	Included in project costs
	* Develop parameters and Limits of Acceptable Change thresholds for water quality in Clear Fork and Lost Creek	1996-1998	$ 5,000
FISHERIES	* Continue to work with ODFW in development of Sandy River Subbasin Fish Management Plan	1994-1995	$ 5,200/yr.
	* Undertake habitat restoration/enhancement projects within tributaries and mainstem of river that would emphasize meeting the need of wild stocks of fish and be aimed at restoring the historical component of Large Woody Debris and other natural structures. Structures will be designed to protect free-flowing character of the river and to mimic naturally occurring events. Materials used will be of or mimic the appearance of natural materials. Those structures placed in the mainstem of the river below McNeil Campground will be designed to also minimize impacts to recreationists floating the river through design and adequate signing. All structures must be evaluated for impact to free-flowing character of river. See process in appendix A of river management plan.	Ongoing starting 1994.	$ 750/structure
	* Identify, develop and/or improve current and additional river access points which protect river values.	Ongoing starting 1995	Dependent upon project scope
	* Work cooperatively with ODFW, other agencies, and landowners to improve anadromous habitat on the river and its tributaries.	Ongoing starting 1994	$ 8,000/yr.
	* Develop a habitat monitoring program to provide feedback on habitat protection/improvement measures on public and private lands.	Ongoing starting 1995	$ 3,000/yr
	* Evaluate impacts of management activities on TE&S species, limiting use where necessary to minimize impacts	Ongoing for specific projects	$ 900/activity
	* Survey for presence of bull trout and potential habitat.	Ongoing	$ 2,600/yr
	* Survey for presence of redband trout and potential habitat	1995-1998	$ 8,600/yr
	* Survey and evaluate streams, seeps and springs for presence/absence and potential habitat of the listed "sensitive" caddisflies.	1995-2000	$ 2,000/yr

RESOURCE	DESCRIPTION OF ACTIONS/ACTIVITIES	FISCAL YEAR	ESTIMATED COST
WILDLIFE	* Consult with US Fish and wildlife Service before proceeding with any management actions potentially affecting TE&S *habitat or populations*	Ongoing	$ 600/yr
	* Work cooperatively with ODFW to determine habitat enhancement needs in corridor to meet both Forest Service and ODFW objectives. Undertake habitat improvement activities if they protect and/or enhance other river management objectives.	1995-1997	$ 1,200/yr
	* Survey and evaluate cliff sites along river corridor for potential peregrine falcon presence, suitable habitat and hacking sites.	1995-1997	$ 1,800/yr
	* *Survey for presence of Goshawk and undertake habitat enhancement if needed.*	1995	$ 1,600
	* Survey and evaluate area in corridor for presence of wolverine and habitat effectiveness, particularly in wildemess.	1994	$ 1,200
	* Evaluate impacts of recreational use on TE&S species, limiting use where necessary to minimize impacts.	Ongoing as needed	$ 2,000/activity
BOTANY	* Develop a comprehensive monitoring plan for plant communities in the river corridor.	1995	$ 1,200
	* Monitor plant communities in and around high use recreation areas and sites for evidence of undesirable impacts and develop and implement corrective measures as necessary.	1995, 1996, 1999, 2002, 2005	$ 6,000
	* *Collect data from established ecology plots in alpine/subalpine area*	1995, 1998, 2001,	$ 750/yr
	* Identify locations and sources of noxious weeds and non-native plants and undertake actions to reduce numbers and minimize spread.	1995-2000	$ 5,000 +
	* Seek partnership opportunities with universities and other organizations to develop a systematic botanical survey of the entire river corridor.	1995-1997	$ 1,000/yr
	* *Develop interpretive pamphlets with instructions on how to protect botanical values in the corridor.* Development of pamphlets would be tied to interpretive plan mentioned above.	1995	$ 5,000
	* Monitor impacts to mushrooms from harvest and if community is being adversely impacted, take corrective actions, including, if necessary, elimination of personal use mushroom harvest in the corridor.	1994-2004	$ 6,000
	*Monitor impacts to moss from moss harvest and to other harvested plants. Use photo points to monitor regeneration rates, species composition and coverage	Ongoing	$ 200-500/yr

RESOURCE	DESCRIPTION OF ACTIONS/ACTIVITIES	FISCAL YEAR	ESTIMATED COST
SCENIC QUALITY	* Acquire scenic easements on private lands from willing sellers within corridor if considered important for maintaining scenic quality.	As opportunities arise.	Variable
	* Evaluate potential locations for viewpoint development within corridor and develop viewpoints if other river values are protected and/or enhanced. Viewpoints would focus on providing additional views of Mt.Hood and other natural attributes in the area.	1995-1996	$ 4,000
	* Evaluate areas in corridor not meeting current VQO standards. Develop plan for rehabilitation and implement as opportunities become available.	1995	$ 4,000
CULTURAL RESOURCES	* Complete cultural resource inventories and assess effects of any proposed action or project that may potentially affect cultural resources and implement mitigation measures as necessary.	Ongoing	Variable
	* Evaluate found cultural resources and determine their eligibility to the National Register of Historic Places.	Ongoing	Variable
	* Protect cultural resources considered eligible for the National Register of Historic places or conserve values. Monitor eligible or evaluated properties as direct under Forest management plans.	Ongoing	$ 4,000/yr.
	* Evaluate cultural significance of Sandy River Guard Station in conjunction with other shelters along the Timberline Trail.	1996-1997	$ 10,000
	* Develop and implement a Management Plan for the Sandy River Guard Station..	1996-1997	$ 15,000
PRIVATE LAND USE AND ACTIVITIES.	* Work with Clackamas County in review of current zoning regulations for compliance with Wild and Scenic River plan and effectiveness in implementation, including developing proposed changes to zoning ordinances and enforcement.	Variable	$ 2,500
	* Provide feedback to Clackamas County on zoning variance requests and development proposals within the river corridor and how they relate to river management direction.	Ongoing	$ 1,000/yr

Chapter 5

Monitoring Program

MONITORING PROGRAM
UPPER SANDY WILD AND SCENIC RIVER

The monitoring program below is the management control system governing the implementation of the River Management Plan. The specific objectives of the monitoring program are to determine whether: 1. planned Goals and Objectives are achieved; 2. management Standards and Guidelines are being followed; 3. management Standard and Guidelines are effective; 4. research beyond that identified is needed; and 5. if intensity of monitoring is commensurate with the risks, costs, and values involved in meeting plan objectives.

Implementation of the following monitoring elements will be based on the availability of funding. If adequate funding is not available, some monitoring activities may not take place. The Forest Service will make every effort to identify opportunities that would reduce actual cost for the monitoring. The following table outlines the key indicators, management standards and monitoring that will be conduced on the upper Sandy Wild and Scenic River by resource area.

RESOURCE VALUE TO BE MAINTAINED AND ENHANCED	KEY INDICATOR	MANAGEMENT STANDARD TO BE USED	MANAGEMENT ACTIONS TRIGGERED IF STANDARD IS NOT MET	MONITORING METHODS, SAMPLING PROCEDURE AND FREQUENCY
WATER QUALITY/ QUANTITY	Temperature	Temperature equal to or cooler than baseline established by 1995-1999 water years.	Identify possible sources of effluent. Increase and intensify sampling. Work with counties and DEQ to prepare corrective actions or plans.	Depending upon safe access grab samples will be taken at least five locations along mainstem river and tributaries on a bi-monthly basis for five years (95-99) to establish baseline, then on a quarterly (seasonally) basis thereafter.
	Turbidity	Turbidity levels equal to or clearer than baseline established by 1995-1999 water years.	Correct management practices or land use activities that may be contributing to temperature rise, turbidity, pH, reduced oxygen levels, or indications of gas/oil or chemicals.	Other samples taken during significant "events" when possible.
	pH	Maintain pH between 6.5 and 8.5		Responsibility: USFS District Fish Biologist.
	Dissolved oxygen	Maintain dissolved oxygen equal to or grater than 90% of saturation at the seasonal low or 95% of saturation in spawning areas during the spawning through fry stages of salmonid fishes.		Cost: Initial $7,000 and then $5,000 annually
	Chemical (oil and gas)	No oil and gas detectable either visually or by sense of smell.		
	Aquatic life	No negative change in macroinvertebrate indices of species and community composition in the Clear Fork, and Lost Creek; and Muddy Fork/mainstem at trail crossings as established in the 1995-1999 baseline.		

FISH HABITAT	Quality and quantity of spawning gavels Rearing habitat and Pool quality Large Woody Material	Locate areas and measure substrate embededness, sediment deposition and frequency distribution during 1995, 2000. Maintain desired quality and quantity of spawning gravel established in baseline inventory. Any decrease in the inventory habitat type and extent on mainstem and major tributaries, maintain habitat quality and quantity at least at inventory levels. Any decrease in the number of large woody debris that meet minimum standard.	Identify cause of degradation to quality and quantity of habitat and mitigate or eliminate impact. Create additional habitat when possible through habitat improvement opportunities.	Conduct habitat inventories every five years, include area of spawning gavels. Select key sites, do substrate analysis annually for three years then every other year thereafter. Responsibility: USFS Fisheries biologists. Cost: $ 7,600 every 5 yrs. for riparian surveys. $ 1,200 for substrate analysis.
FISH POPULATIONS	Fish species composition Smolt production Creel census as indication of quality of sportfishing	Maintain species composition using inventory data and ODFW baseline data. Any decrease in smolt numbers compared to stream specific baseline information in excess of 10% basin wide mean for each year. Any decrease in five year average take of selected species.	Coordinate with ODFW to identify actions that may degrade wild fish species compositions or populations and assist in implementing mitigation or corrective measures.	Annual creel census, Marmot Dam Counts, redd counts on selected reaches, random shocking and inventory, report analysis of data every five years. Responsibility: USFS fisheries biologists in coordination with ODFW regional biologists. Cost: $ 3,000 annually
WILDLIFE HABITAT	Populations of major species Amount and combination of habitat type	Negative change in river corridor use by selected species ie. neotropical birds, waterfowl, beaver, herptofauna, big game and listed species. No significant human-caused change in mix of habitat types within the corridor.	Identify cause of change, if human-caused correct practices or activities.	Conduct wildlife surveys on five year basis to correspond with habitat surveys. Count and record all nests, raptors, and waterfowl sightings on regularly scheduled surveys. GIS mapping of habitat type and extent (acres) using aerial photography interpretation, establish baseline year (1995) and replicate survey every five years. Responsibility: USFS natural resource specialist/wildlife biologists. Cost: $ 2,000 annually; $7,500 every 5 years.

RIPARIAN VEGETATION and WETLANDS	Amount of riparian habitat and wetlands . Proper functioning ecological condition as indicated by vegetative cover and streambank condition.	Riparian vegetation would be managed to maintain or enhance vegetative diversity, biomass, and percent cover at desired level determined during baseline monitoring to comply with Forest Plan direction.	Remove or eliminate source of impact (ie. close campsite roads, trails, etc.) if inventory assess extent of impact as unacceptable.	Conduct baseline riparian/wetland resource inventory and photo inventory. Continue to reassess at 5 year intervals. If funding is limited, just identify areas of resource damage. Visually monitor recreation and other development sites annually for resource damage. Based on level of funding, establish formal monitoring plots in high use areas. Responsibility: USFS botanist, fisheries biologist, and hydrologist. Cost: $5,000 every 5 years.
BOTANICAL DIVERSITY	Ecological condition and trend as indicated by the area, amount and composition of species - focus on recreational sites and Old Maid Flats SIA. Stability of sensitive plant populations. Extent f noxious weeds Diversity and population size of mushrooms	Vegetation within the river corridor would be managed to promote existing natural ecological conditions and trends as determined by baseline inventories and monitoring plots. No reduction or loss of sensitive plant species or habitat. Prevention, reduction and eradication of noxious weeds. Mushroom populations within natural range of fluctuations.	Control, restrict or mitigate human caused activities as necessary. Implement short-term prescriptive activities to restore natural condition or biodiversity.	Conduct baseline vegetation inventory and photo inventory. continue to reassess at 5 year intervals. If funding is limited, concentrate efforts on areas of known resource damage. Visually monitor recreation and development sites annually for resource damage. If funding is available, establish formal monitoring plots in high use areas. Enter into a long-term monitoring study with PNW research station to evaluate matsutake mushroom populations. Responsibility: USFS botanists and ecologists. Cost: $5,000 each effort start-up; $1,000 - 2,500 afterwards.
HERITAGE RESOURCES	Integrity of heritage resource sites.	No irreparable damage of significant heritage resources by either human degradation or by natural processes.	Public information and education to build awareness of heritage resource values. Sites will be stabilized or its values are conserved through mitigation efforts.	Maintain heritage resource data base of river corridor. Monitor known sites annually to determine condition. Responsibility: USFS Archeologist Cost: $2,000 annually

SCENIC RESOURCES	Projects, activities or modifications which alter landform, vegetation, water, or character within the viewshed as seen from the river and high use areas	Activities within river corridor and viewshed would be evaluated on how well they meet VQO's for river corridor and viewshed.	Management actions or developments (or proposed developments) not consistent with Wild and Scenic River classifications or scenic resource management objectives (including ROS standards) will be modified (i.e. screened) or proposals rejected.	Conduct a VRM inventory and study every five years to ensure projects and other human caused modifications are consistent with management standards. Include aerial photograph interpretation, key site inventory (photo points) and field (river view) assessments in analysis. Individual projects will be analyzed on a case-by-case basis to ensure protection of the viewshed and compliance to standards including county zoning/ development reviews for private land development; NEPA analysis of federal projects. Responsibility: USFS river planner and landscape architect. Cost: $ 2,000 - 4,000 every 5 years. Project specific analysis would vary based on the extent of the project.
RECREATION	Key indicators and standards to be established with implementation of Limits of Acceptable Change (LAC) inventory, survey and analysis. (The following represents items most likely to be included). Quality of Experience as indicated by conditions of congestion or crowding, use levels, safety, reported incidents of conflict such as site competition, vandalism and trespass	Established by user/visitor expectation survey and landowner survey to establish "carrying capacity" or acceptable levels of use. (Physical site condition and environmental impacts and monitoring contained in recreation site day/camp use site and road/trail sections as well as under botany, ecology and wildlife sections) Numbers of encounters with other recreationists (groups) per day. Numbers of reported conflicts, trespass/vandalism reports or safety incidents recorded annually. Recreation visitor counts, trail user counts, vehicle counts (parked and road). Number of days campground and parking lot capacity(s) exceeded. Number and type of non-motorized recreation opportunities/activities	A combination of in-direct (information, education, signing, site design, etc.) and direct (enforcement patrols, site closures, seasonal restrictions, permits, etc.) management actions and controls would be utilized emphasizing in-direct methods first. If above methods are not effective, use may need to be limited through use of permits or other more direct methods of visitor control, especially within the wilderness. Specific method to limit use in wilderness would be determined in Mt. Hood Wilderness planning efforts to insure consistency of management direction throughout the wilderness, of which the wild segment of the river corridor is a part.	Conduct LAC survey and develop monitoring program, repeat every ten years. Responsibility: USFS River Planner Cost: $20,000 for survey and monitoring program development

ROADS AND TRAILS	Road erosion and damage related to roadside vegetation and facilities Accidents on roads to indicate safety problems. Trail erosion and damage related to trailside vegetation and bare ground	Confine motorized use to designated roads. Maintain roads to established federal or state standards. Maintain trails to established federal standards. Prevent multiple trail or trail networking using indirect methods. Trail use and design will be in keeping with Recreation Opportunity Spectrum (ROS) experience level and visual management standards. Evaluate user made trails for damage to resources, especially for trails potentially being used by Off Highway Vehicles (OHV).	Increase road maintenance frequency. Reconstruct/relocate roads, improve bridges, parking lots, trails and related facilities (ie. signs, vehicle barriers, etc.) to resolve unlawful access, resource damage, and road safety problems. Closure of unauthorized roads and trails where resource damage is taking place. Develop, maintain and replace signing as needed. Increase trail maintenance frequency. Reconstruct/relocate trails to reduce trail networking and encourage appropriate use. Keep trail maps and information current. Actively close trails where unauthorized OHV use is taking place.	Monitor routine road maintenance needs annually. Utilized feedback from visitor contact. Monitor any accident reports on forest roads to identify safety problems. Monitor routine trail maintenance needs annually. Establish monitoring points along high use trails to measure trail depth, width and drainage. Remeasure points and map/inventory trails every five years. Responsibility: USFS river planner/outdoor recreation planner and transportation planner. Cost: $2,000 annually for survey/monitoring. Cost for correction of problems varies by project.
DISPERSED CAMP AND DAY USE SITES	Soil stability Vegetative loss Tree Damage Fire rings Human Waste Litter Accumulation Facility Damage	Impacts to campgrounds and dispersed use areas will range between light and extreme to be based on subjective judgement and objective measurement regarding erosion, vegetative change, facility damage, and accumulation of litter as follows: **Light:** Previous ground vegetation intact allowing natural erosion to occur. Facility damage and litter is not evident. The site has experienced only minimal physical changes. **Moderate:** Vegetative growth is somewhat retarded allowing minor abnormal erosion to occur. Traces of litter can be found within and adjacent to the site. Minor vandalism, repairable by maintenance, is occurring on facilities such as tables, signs etc. Physical changes to the site could include: minor tree limbing or damage, movement of rocks or semi-stationary objects, establishment of fire rings, etc.	Use basic site protection measures, harden sites to maintain important sites if necessary between moderate and heavy standards. Campsites or day use areas which have received extreme impacts will be rehabilitated and closed until levels of impacts have been mitigated to at least moderate levels. Other actions could include: increased user education efforts, seasonal closures, site or access restrictions, etc. Management actions and controls would be utilized emphasizing in-direct methods first, for example: 1. Increased user education efforts in "minimum impact" camping techniques (signs, brochures, increased management patrol presence etc.). 2. Establishing camping setback from roads, river, trails and other water sources. 3. Campsite rehabilitation. 4. Campfire ban. 5. Designated campsites and registration. 6. Close areas to overnight camping.	Inventory and assess all existing and proposed sites within the river corridor. Remeasure and assess all sites once every three years, or when conditions indicate need. Utilize feedback from routine patrols and biological/wildlife monitoring programs, Responsibility:USFS river planner/outdoor recreation planner Cost: $ 2,000 every 3 years

CAMP AND DAY USE SITES (continued)		**Heavy:** Use area vegetation is gone but adjacent vegetation still intact. Abnormal erosion within the site is correctable through maintenance. Major littering is evident within and adjacent to the site and can be corrected through maintenance. Major vandalism, though repairable, is occurring on facilities and physical features such as tables, rocks, trees, and other site characteristics. Physical changes to the site could include: moderate tree limbing/damage, beginning tree root exposure, trails radiating from the site, human caused changes to the layout of the use area (trenching, movement of earth or facilities), evidence of human waste etc). All impacts to camp and dispersed use areas could be resolved through routine maintenance. **Extreme:** Use area vegetation is gone and *adjacent vegetative growth is retarded* allowing abnormal erosion to occur within and adjacent to the site. Maintenance can no longer correct soil and vegetative impacts without allowing for temporary closure of the site. The site experiences perpetual littering or dumping. Major vandalism can be corrected through maintenance of facilities but not for vandalism to physical features such as rocks, trees, and other features. Physical changes to the site could include: dead or cut trees, extensive tree root exposure, heavy erosion, compacted soil restricting reestablishment of indigenous vegetation within and adjacent to the site, changes in species composition, major trails and satellite areas radiate from site. Maintenance can no longer sustain long term use without temporary closure to allow natural rehabilitation to occur.		

Appendix A

Water Resource Project Evaluation

Procedure To Evaluate Water Resources Projects

Introduction

This paper documents a procedure which can be uniformly and consistently applied by the Forest Service to determine whether proposed water resources projects present a direct and adverse affect to designated wild and scenic river values, and thus would be prohibited under Section 7 of the Wild and Scenic Rivers Act (the "Act"), or whether the projects should be allowed to proceed because they do not meet that threshold.

The procedure also applies to congressionally identified study rivers (Section "5a" rivers), which are afforded interim protection from projects which would affect "free-flow" characteristics in Section 7(b) of the Act. Although not protected from such projects in the Act, rivers identified for study through the land management planning process (Section "5d rivers") are also afforded protection via agency policy (Forest Service Planning Handbook 1909.12, Chapter 8.12).

The procedure may also be applied to evaluate activities proposed outside a designated or study river corridor to determine if they result in indirect effects that "invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of designation," as referenced in Section 7(a).

This procedure paper presumes a strict interpretation of what activities would qualify as water resources projects. Water resources projects have been defined in 36 CFR Part 297 as:

> "... any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, or other construction of developments which would affect the free-flowing characteristic of a Wild and Scenic River or study river."

Section 16(b) of the Act provides a definition of "free-flow" that assists in identification of water resources projects. It states:

> "Free-flowing, as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, riprapping, or other modification of the waterway."

Therefore, if a proposed activity would affect a river's free-flow, or meet other criteria outlined in 36 CFR 297, it qualifies as a water resources project and the Section 7 procedure defined in this paper can be applied.

Issue

The key issue, assuming that the proposed activity is identified as a water resources project, is whether the project presents a direct and adverse affect on the values for which the river was designated or is being studied (or if a proposed activity is above or below the area, does it unreasonably diminish the scenic, recreational, or fish and wildlife values)?

Lack of a standardized procedure to analyze effects has contributed to the difficulty of making an adequate analysis of water resource projects as required by Section 7, manual direction (FSM 2354), and the Forest Service Handbook (FSH 1909.12, chapter 8). The balance of this paper describes a standardized analysis procedure that incorporates the following principles:

- Effects will be judged in the context of the legislation designating the affected wild and scenic river and the management objectives for the river as defined in the comprehensive river management plan. (In the case of study rivers, effects are judged in the context of relevant Forest Plan standards and guidelines and the potential affect of the activity on the river's eligibility.)

- Water resource projects are permissible if the net effect protects or enhances values for which the river was designated or is being studied. Water resource projects are not permitted if they have a direct and adverse effect on such river values. (In the case of study rivers management activities may be carried out provided they would not result in a reduced classification recommendation, and are consistent with other relevant Forest Plan standards and guidelines.)

- Permissible water resources projects will, to the extent practicable, maintain or enhance the free flowing characteristics of the river.

- Water resources projects may be permitted even though they may have an effect on free flowing characteristic if:

  - the specific purpose of the project is to protect or enhance the values for which the river was designated, restore the natural characteristics of the river, and/or improve the water quality of the river;

  - associated impacts on free flowing characteristics of the river are minimized to the extent practicable; and,

  - the proponent and manager of the project is a federal, state, or local governmental entity.

Procedure

Background

In developing this procedure we recognize that:

- It is necessary to provide a temporal and spatial context for evaluating river related proposals. The wild and scenic river management planning process should result in a clear statement of long term management goals and objectives for free-flow, water quality, riparian areas and floodplains, and the outstandingly remarkable and other significant resource values designated by statute.

- Section 7 and promulgating rules (36 CFR 297 Forest Service) require an analysis of effects associated with a proposed water resources project. The analysis of activities deemed acceptable must clearly demonstrate consistency with management goals and objectives.

- Management of river ecosystems should be designed to achieve management goals and objectives through natural processes and use of techniques that mimic those processes. To insure that long term goals and objectives are met, careful analysis and evaluation of these processes, time scales, and public perceptions is necessary.

- State fish and wildlife agencies share responsibility with the Forest Service and BLM for fish and wildlife resources on wild and scenic rivers. Identification and evaluation of water resource projects should be coordinated with the States, recognizing and supporting attainment of state fish and wildlife management objectives to the extent they are consistent with the outstanding values for which the river was designated or is being studied.

Step-by-Step Procedure

The following procedure is designed to evaluate proposed activities within a wild and scenic river ecosystem. This procedure is not simply one of disclosure. Rather, it is a framework to identify changes in free-flow conditions and evaluate the effects associated with project proposals.

1) Establish Need and Evaluate Consistency with Management Goals and Objectives

The first step is to define the need for the proposed activity is consistent with the management goals and objectives for the river. Management goals provide the standard for evaluation of effects. If the activity does not evidence a compelling need or is inconsistent with the management goals and objectives or other applicable laws (e.g. Wilderness Act, Endangered Species Act, etc.), the project may not be considered further.

For projects that appear needed to help attain the management goals and objectives, proceed with the following steps. The scope of analysis should be commensurate with the magnitude and complexity of the project proposal. The procedure should be accomplished via an interdisciplinary team with adequate skills for the analysis. Note that each step requires some professional judgment.

2) Define the Proposed Activity

Provide an objective description of the proposed activity. The level of detail should be proportional to the scope of the proposed project and should indicate whether the project is isolated or part of a more complex or comprehensive proposal.

- Project proponent(s)
- Purpose (clearly describe the need for the project)
- Location
- Duration of proposed activities
- Magnitude/extent of proposed activities
- Relationship to past and future management

3) Describe How the Proposed Activity Will Directly Alter Within-Channel Conditions

Address the magnitude and spatial extent of the effects the proposed activity will have on in-channel attributes. Special attention should be given to changes tin features which would affect the outstandingly remarkable and other significant resource values.

- What is the position of the proposed activity relative to the stream bed and banks?
- Does the proposed activity result in changes in:
  - Active channel location?
  - Channel geometry (i.e. cross-sectional shape or width/depth characteristics)?
  - Channel slope (rate or nature of vertical drop)?
  - Channel form (e.g. straight, meandering, or braided)?

- Relevant water quality parameters (e.g. turbidity, temperature, nutrient availability)?

4) *Describe How the Proposed Activity Will Directly Alter Riparian and/or Floodplain Conditions*

Address the magnitude and spatial extent of the effects the proposed activity will have on riparian/floodplain attributes. Special attention should be given to changes in features that would affect the outstandingly remarkable and other significant resource values.

- What is the position of the proposed activity relative to the riparian area and floodplain?
- Does the proposed activity result in changes in:
  - Vegetation composition, age structure, quantity, vigor, etc.?
  - Relevant soil properties such as compaction percent bare ground, etc.?
  - Relevant floodplain properties such as width, roughness, bank stability or susceptibility to erosion, etc.?

5) *Describe How the Proposed Activity Will Directly Alter Upland Conditions*

Address the magnitude and spatial extent of the effects the proposed activity will have on associated upland attributes. Special attention should be given to changes in features that would affect the outstandingly remarkable and other significant resource values.

- What is the position of the proposed activity relative to the uplands?
- Does the proposed activity result in changes in:
  - Vegetation composition, age structure, quantity, vigor, etc.?
  - Relevant soil properties such as compaction, percent bare ground, etc.?
  - Relevant hydrologic properties such as drainage patterns, the character of surface and subsurface flows, etc.?
- Will changes in upland conditions influence archaeological, cultural, or other identified significant resource values.

6) *Evaluate and Describe How Changes in On-Site Conditions Can/Will Alter Existing Hydrologic or Biologic Processes*

Evaluate potential changes in river and biological processes by quantifying, qualifying and modeling as appropriate.

- Does the proposed activity affect:
  - Ability of the channel to change course, re-occupy former segments, or inundate its floodplain?
  - Streambank erosion potential, sediment routing and deposition, or debris loading?
  - The amount or timing of flow in the channel?

- Existing flow patterns?
- Surface and subsurface flows?
- Flood storage (detention storage)?
- Aggradation/degradation of the channel?

- Does the proposed activity affect biological processes such as:
  - Reproduction, vigor, growth and/or secession of streamside vegetation?
  - Nutrient cycling?
  - Fish spawning and/or rearing success?
  - Riparian dependent avian species needs?
  - Amphibian/mollusk needs?

7) *Estimate the Magnitude and Spatial Extent of Potential Off-Site Changes*

Address potential off-site, or indirect effects of the proposed activity, acknowledging any uncertainties (i.e., a risk analysis).

- Consider and document:
  - Changes that influence other parts of the river system.
  - The range of circumstances under which off-site changes might occur (e.g., as may be related to flow frequency).
  - The probability or likelihood that predicted changes will be realized.
- Specify processes involved, such as water, sediment, movement of nutrients, etc.

8) *Define the Time Scale Over Which Steps 3 - 7 are Likely to Occur*

- Review steps 3 - 7 looking independently at the element of time.
- Consider whether conditions, processes and effects are temporary or persistent. That is, attempt to define and document the time scale over which effects will occur.

9) *Compare Project Analyses to Management Goals and Objectives*

Based on the analysis of steps 3-8, identify project effects on achievement, of management goals and objectives relative to free-flow, water quality, riparian area and floodplain conditions, and the outstandingly remarkable and other significant resource values.

Section 7 Determination

Based on the analysis of steps 3-9 document:

- Effects of the proposed activity on conditions of free-flow, including identification of the measures taken to minimize those effects.
- Any direct and adverse effects on the outstandingly remarkable and other significant resource values for which the river was designated or is being studied.
- Any unreasonable diminishing of scenic, recreational, or fish and wildlife values associated with projects above or below the area.

The determination should permit those water resource projects that are consistent with the legislation designating the affected wild and scenic river and the management objectives for the river as defined in the comprehensive river management plan, or in the case of study rivers, the proposed activities would not result in a reduced classification recommendation and is consistent with Forest Plan standards and guidelines. Permissible water resources projects will, to the extent practicable, maintain or enhance the free flowing characteristics of the river. Water resource projects that have a direct and adverse affect on designated river values or management objectives are not to be permitted.

It is important to note that water resources projects may be permitted even though they may have an effect on free flowing characteristics if:

- The specific purpose of the project is to protect or enhance the values for which the river was designated, restore the natural characteristics of the river, and/or improve the water quality of the river;
- the associated impacts on free flowing characteristics of the river are minimized to the extent practicable; and,
- the proponent and manager of the project is a federal, state, or local governmental entity.

Include the Section 7 determination as part of the broader NEPA analysis of the proposed activity. See the following section for additional information on the relationship of Section 7 determinations and the NEPA process.

Incorporation of Section 7 Determinations in the NEPA Process

The Code of Federal Regulation states:

> *"The determination of the effects of a proposed water resources project shall be made in compliance with NEPA."*

The following discussion offers more specific information regarding incorporation of the Section 7 procedure into the NEPA process. It also includes information relating to the decision document and the responsible official.

A proposed water resources project may be an independent project such as watershed or fish habitat restoration or construction of a boat ramp or fishing pier, or part of a larger program that serves a variety of purposes. In either situation, the Section 7 procedure is to be completed as a separate analysis by an interdisciplinary team. For designated rivers (Section 3a) and congressionally identified studied rivers (Section 5a), the Section 7 procedure would be explicitly documented in, or appended to the NEPA document with appropriate reference in the NEPA analysis. Similarly, for rivers identified for study via the land management planning process (Section 5d), an analysis as to the potential effect of a proposed project on free-flow and the outstandingly remarkable values should be incorporated, appended, or available in the analysis file.

The decision document will describe the Section 7 determination for the preferred alternative for a designated or congressionally identified study river. This determination should state whether the proposed project will affect free-flow characteristics, whether it will or will not have a "direct and adverse effect on the values for which the river was designated" (or might be added to the System), or whether proposed projects above or below the area will "unreasonably diminish" those resource values. The Section 7 evaluation may result in identification of water-resources projects which protect, restore or enhance the values for which the river was designated or identified for study. In approval of such project, the decision notice should clearly indicate that determination.

For study rivers identified via the land management planning process (i.e. Section 5d rivers), utilize the Section 7 procedure with the decision document referencing that an analysis was conducted to evaluate the potential effect of the proposed project on free-flow and the outstandingly remarkable values. Note, that Section 7 is not required for 5d rivers, but agency policy (FSH 1909.12 8.12) provides direction to protect the free-flowing condition and outstandingly remarkable values.

The responsible official changes with the status of the river and whether or not another federal agency is involved. For proposed water resources projects on a 3a or 5a river, in which there is another federal agency "assisting by loan, grant, license or otherwise...," the Regional Forester is the responsible official (reference FSM 2354.04e). If there is no other federal agency "assistance" for a project on a 3a or 5a river, the appropriate line officer signs the decision document. Decision documents for water resources projects on a 5d river are signed by the appropriate line officer.

Oversight and Review

The Regional Offices (Forest Service) and State Offices (BLM) are to provide for review of the Section 7 analysis completed for proposed water resources projects. This review process should be coordinated by the Recreation staff group and involve other appropriate staff areas such as fisheries, watershed, engineering, etc. The intent of this oversight is to ensure a consistent approach to the evaluation of proposed water resources projects in wild and scenic rivers. The review in not intended to make the final decision.

Summary

These procedures were developed to analyze projects that have the potential to affect the free-flowing condition and/or outstandingly remarkable values of designated and study wild and scenic rivers and determine which projects are consistent with the Act by protecting, restoring, and enhancing those river values. The scope of the analysis will vary with the magnitude and complexity of the proposed activity. The procedure requires interdisciplinary analysis and application of professional judgment within the requirements of the Act.

Examples of projects that would likely be subject to Section 7 analysis include, but are not limited to:

- Log removal for recreation user safety;
- Fisheries habitat and watershed restoration and enhancement projects;
- Bridge and other roadway construction/reconstruction projects;
- Bank stabilization projects;
- Recreation facilities such as boat ramps and fishing piers;
- Activities that require 404 permits from the Corps of Engineers.

Appendix B

Proposed Corridor Boundary Description

Proposed Corridor Boundary Description

Listed below is the legal description of the proposed upper Sandy National Wild and Scenic River boundary, located within Sections 24, 25, 26, Township 2 South, Range 7 East; Sections 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 29, 30, Township 2 South, Range 8 East; and unsurveyed sections 23, 24, 25, 26, Township 2 South, Range 8 1/2 East; Willamette Meridian, Clackamas County, Oregon, within the Zigzag Ranger District of the Mt Hood National Forest. More particularly described as:

Beginning at the Southwest Section Corner of Section 26, T2S, R7E; thence easterly along the section line between sections 26 & 35, approximately 990 feet to the intersection with the Mt Hood Wilderness Boundary; thence northeasterly along the Mt Hood Wilderness Boundary to the intersection with the Range line between sections 25 & 30, T2S, R7 & 8E; thence North along the Range line to a point 200 feet south of and perpendicular to the thread of Lost Creek, thence northeasterly parallel to and 200 feet southeasterly of the thread of Lost Creek to a point 200 feet southwesterly of and perpendicular to the thread of Short Creek; thence southeasterly parallel to and 200 feet southwesterly of the thread of Short Creek, across Forest Service road #1825-380, to a point 100 feet southerly of and perpendicular to the centerline of FS road #1825-380; thence northerly and then easterly parallel to and 100 feet easterly and southerly of the centerline of FS road #1825-30 to a point on the toe of the slope Cape Horn, Lat 45-22-57.5 N, Long 121-51-23.3 W; thence northerly and then easterly along the toe of the slope of Cape Horn to a point 200 feet southerly of and perpendicular to the thread of Lost Creek, Lat 45-23-05.4 N, Long 121-50-57.3 W; thence southeasterly parallel to and 200 feet southwesterly of the thread of Lost Creek, crossing an unnamed drainage into Lost Creek, to a point 200 feet southerly of and perpendicular to the junction of the thread of Lost Creek and the unnamed drainage, Lat 45-22-44.4 N, Long 121-49-59.3 W; thence northeasterly parallel to and 200 feet southeasterly of the thread of the unnamed drainage, crossing FS road #1825-109, to a point on the toe of a west slope, Lat 45-22-49.4 N, Long 121-49-34.3 W; thence northeasterly, crossing the unnamed drainage, and following the toe of the slope to a point Lat 45-23-16.4 N, Long 121-48-14.3 W, where the designation of the Sandy Wild & Scenic River changes from recreational to wild; thence continuing along the toe of the slope to a point on the Mt Hood Wilderness Boundary, Lat 45-23-05.4 N, Long 121-47-56.8 W; thence southeasterly on a straight line approximately 6250 feet to a point on a ridge, Lat 45-22-26.4 N, Long 121-46-50.8 W; thence easterly on a straight line, crossing Rushing Water Creek, to a point in the thread of an unnamed drainage which flows into the Sandy River, Lat 45-22-26.4 N, Long 121-46-29.3 W; thence southerly ascending the thread of the unnamed drainage to a point that is 1/8 mile southerly of and perpendicular to the thread of the Sandy River, Lat 45-22-14.9 N, Long 121-45-54.8 W; thence easterly parallel to and 1/8 mile southerly of the thread of the Sandy River to a point 1/8 mile southerly of and perpendicular to the head waters of the Sandy River, Lat 45-22-26.4 N, Long 121-43-43.8 W; thence northwesterly on a straight line to a point 1/8 mile northerly of and perpendicular to the head waters of the Sandy River, Lat 45-22-38.4 N, Long 121-43-50.3 W; thence westerly parallel to and 1/8 mile northerly of the thread of the Sandy River to the intersection with an unnamed drainage which flows into the Sandy River, Lat 45-22-25.9 N, Long 121-45-41.3 W; thence northwesterly on a straight line to the crest of a ridge, Lat 45-22-32.4 N, Long 121-45-46.3 W; thence northwesterly descending along the ridge to a point 200 feet northerly of and perpendicular to the thread of an unnamed drainage, Lat 45-22-49.4 N, Long 121-46-14.8 W; thence westerly parallel to and 200 feet northerly of the thread of Ramona Creek to a point 200 feet northerly of and perpendicular to FS trail #797; thence northwesterly parallel to and 200 feet northerly of FS trail #797 to a point 200 feet northerly of and perpendicular to the thread of Ramona Creek; thence northwesterly parallel to and 200 feet northeasterly of Ramona Creek to a point on the Mt Hood Wilderness Boundary, Lat 45-23-19.9 N, Long 121-47-37.8 W; thence northerly along the Mt Hood Wilderness Boundary, crossing the Muddy Fork of the Salmon River, to a point in the thread of an unnamed drainage which flows into the Muddy Fork, Lat 45-23-45.9 N, Long 121-47-33.3 W, said point designating where the Sandy Wild & Scenic River changes from Wild to Recreational; thence westerly on a straight line to the junction of Bald Mtn Trail #784 and a point 200 feet north of and perpendicular to the thread of the Muddy Fork; thence southwesterly parallel to and 200 feet northerly of the thread of the Muddy Fork to a point on

the toe of the southern slopes of Last Chance Mountain, Lat 45-23-23.9 N, Long 121-50-20.8 W; thence northwesterly along the toe of the slope to a point on the easterly edge of a sharp curve on FS road #1828, Lat 45-23-30.4 N, Long 121-50-49.8 W; thence westerly, crossing FS road #1828 to a point 100 feet northerly of and perpendicular to the centerline of FS road #1828; thence westerly parallel to and 100 feet northerly of the centerline of FS road #1828 to a point on the toe of the slope, Lat45-23-34.9 N, Long 121-51-22.3 W; thence northerly along the toe of the slope to a point crossing the Clear Fork of the Sandy River, Lat 45-23-53.4 N, Long 121-51-22.3 W; thence southerly along the toe of the slope to a point 100 feet northerly of and perpendicular to the centerline of FS road #1828, Lat 45-23-31.9 N, Long 121-51-34.8 W; thence southwesterly parallel to and 100 feet northwesterly of the centerline of FS road #1828, to a point 100 feet northwesterly of and perpendicular to the junction of FS roads #1828 and #1825; thence southwesterly parallel to and 100 feet northwesterly of the centerline of FS road #1825, to a point, Lat 45-22-59.4 N, Long 121-52-23.8 W, thence westerly on a straight line to a point in the centerline of FS road #18, Lat 45-22-59.4 N, Long 121-52-26.3 W, thence southwesterly along the centerline of FS road #18, to its intersection with the section line between sections 26 and 27, T2S, R7E., thence south on the section line between sections 26 and 27, T2 S, R7E, approximately 2640 feet to the point of beginning.

This is a preliminary boundary description subject to change through ground verification and other factors.

Appendix C

List of Preparers

List of Preparers

Interdisciplinary Team

John Davis, silviculturist for the team, has a B.S. in forestry from the University of Minnesota. He also has 2 years of graduate studies in silviculture from the University of Washington. He has 10 years of planning experience and has been on the Mt. Hood National Forest since 1983.

Tom Deroo, geologist for the team, has a B.S. in geology from the University of Washington. He has 14 years of experience as a geologist, all with the Forest Service. He has worked on the Mt. Hood National Forest since 1986.

Carol Hughes, wildlife biologist for the team, has a B.S. in Natural Resources with a major in Wildlife Biology from Ohio State University. She has 4 years of experience in planning and wildlife biology, with the last 3 years on the Mt. Hood National Forest.

Jeff Jaqua, cultural resource specialist for the team, has a B.A. in anthropology from the University of Montana and a B.S. in zoology from Montana State University. He has also pursued graduate studies in archeology at Portland State University and University of Idaho. He has worked for the Mt. Hood National Forest since 1978.

Gary Loeffler, landscape architect for the team, has a B.S. in biology from Oregon State University; a B.L.A. in Landscape Architecture from University of Oregon; and an M.R.P. in Regional Planning and Landscape Architecture from the University of Pennsylvania. His Forest Service work spans 22 years as a landscape architect on three forests, as well as providing assistance to several other forests throughout the Pacific Northwest.

Paul Norman, recreation specialist and team leader for the team, has a B.S. in Outdoor Recreation from Colorado State University. He has 14 years of planning experience on the Mt. Hood and Sierra National Forests. Prior to 1978, Paul was in private forestry consulting.

Diann Sheldon, fisheries biologist for the team, has a B.S. in Ecology and Evolutionary Biology from the University of Arizona. She has 5 1/2 years of experience in planning and fisheries biology, with the last 4 1/2 years being on the Mt. Hood National Forest.

Molly Sullivan, botanist for the team, has a B.A. in botany from the University of Hawaii and a M.S. in botany from the University of Rhode Island. She has 13 years experience in planning, botany and aquatic ecology.

Sharon Traxler, transportation planner for the team, has 13 years experience in road management/transportation planning on the Mt. Hood National Forest.

Debi Urich, fisheries biologist for the team, has a B.S. in Fisheries Science from Oregon State University. She has worked as a fisheries biologist since 1986 on the Mt. Hood National Forest.

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Karen Austin, Wildlife
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Ivars Steinblums, Hydrology
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