Roads Analysis Report

Columbia River Gorge National Scenic Area

March, 2003

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INTRODUCTION

Background

In January, 2001, the Forest Service issued the final National Forest System Road Management Rule. This rule revised regulations concerning the management, use and maintenance of the National Forest Transportation System. Consistent with changes in public demands and use of National Forest resources and the need to better manage funds available for road construction, reconstruction, maintenance and decommissioning, the final rule contains a requirement for a science-based transportation (roads) analysis. The final rule is intended to ensure that additions to the National Forest System road network are those deemed essential for resource management and use; that construction, reconstruction and maintenance of roads minimizes adverse environmental impacts; and that unneeded roads are decommissioned for the restoration of ecological processes.

The required roads analysis is **NOT** a decision-making process. Rather it is designed to provide an assessment of the existing National Forest road system from a landscape perspective. It is intended to highlight problem areas and opportunities in the road system so that Forest Service land managers can make better management decisions regarding the transportation system on National Forest lands.

Process

Roads analysis is a six-step process as described in the USDA Forest Service publication FS-643, *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System.* Included in the process is a set of possible issues and analysis questions, the answers to which can help managers make choices about road system management. An interdisciplinary team (IDT) determines the relevance of each question, incorporating public input wherever possible. Following are the steps:

Step 1. Setting up the analysis

Step 2. Describing the situation

Step 3. Identifying the issues

Step 4. Assessing benefits, problems and risks

Step 5. Describing opportunities and setting priorities

Step 6. Reporting (key findings and results)

STEP 1. SETTING UP THE ANALYSIS

Objectives of the Analysis

The overall objective of this roads analysis was to meet the requirement of the January, 2001, National Forest System Road Management Rule for completing a science-based transportation analysis.

To meet this requirement, a "forest-wide" roads analysis was undertaken to identify pertinent ecological, social and economic issues and needs essential to making future decisions about the characteristics of the Forest transportation system. These issues and needs were used to make recommendations for road management opportunities and for setting priorities that will improve the Forest road system by balancing the benefits of access with road-associated environmental effects; road management and maintenance costs; and social and community interests.

Interdisciplinary Team (IDT) Members

The Core IDT and their specialties:

Allen Morrissette (Team Leader)	Transportation Engineer
Diana Ross	Landscape Architect/Planner
Kim Kelly (alt. Cathy Bauer)	GIS Specialist
Mark Kreiter	Hydrology/Soils/Geology
Chuti Fiedler	Fisheries/Wildlife
Scott Springer	Recreation Planner
Heather Stiles (alt.'s Pete Peterson & Darren Kennedy)	Fire/Fuels
Robin Dobson	Ecological/Timber/Botany
Charlotte Kiser	Lands/Minerals/Special Uses
Virginia Kelly	Economics/Social/Civil Rights

The Extended IDT and their specialties:

Mike Ferris	Public Involvement
Stan Hinatsu	Recreation

Analysis Plan

The overall scale chosen for the analysis was forest-wide, but specialists were given the option of looking at watershed scale or smaller to assess benefits, problems and risks. <u>All potential National Forest System Roads (NFSR) within the Columbia River Gorge National Scenic Area (CRGNSA), classified and unclassified, were initially addressed.</u> Also considered were road enhancement projects (trailhead construction with possible short access roads) in the five-year planning horizon under the heading of capital improvements. <u>To date, no comprehensive transportation planning had been completed for the CRGNSA, so one desired outcome of this roads analysis was to determine the makeup of the National Forest System Roads within the CRGNSA.</u>

The assessment of benefits, problems and risks, combined with the issues identified in the public involvement process, led to the development of what the IDT considered to be the most important

summary rating factors. Consideration of these factors for each road resulted in a recommended maintenance level, road management strategy and priority for each road. Refer to Step 5 for further description of this process and the results.

Information Needs/Sources

Several applicable ongoing plans and analyses were kept in mind during the roads analysis process for possible adaptations to them:

- Watershed analysis not yet completed
- Late Successional Reserve plan
- Fish and wildlife Biological Assessments
- Right-of-way request, Department of Energy, Bonneville Power Administration (DOE) for reconstruction/construction of tower access road off of Smith-Cripes Road in Skamania County, WA.
- Right-of-way request, Longview Fibre Company, along current NFSR number 1502283 in Multnomah County, OR.

The IDT reviewed the following plans already completed for decisions that affect roads in the CRGNSA (see Table 1, Roads Direction from Completed Plans, for further descriptions of most of these plans):

- CRGNSA Management Plan
- Columbia Tribs East Watershed Analysis
- Columbia Tribs West Watershed Analysis
- Dog Mountain Watershed Restoration Project
- Woodard Creek Watershed Restoration Project
- Multnomah Basin Watershed Restoration Project
- Dog Mountain Open Space Plan
- Catherine Creek/Major Creek Open Space Plan
- White Salmon Wild & Scenic River Plan
- Klickitat Wild & Scenic River Plan
- Sandy River Delta EIS
- Wyeth Bench Plan
- Oregon Department of Environmental Quality Clean Water Act (CWA) Memorandum of Agreement (MOA)
- Washington State Department of Ecology CWA MOA
- CRGNSA Title 36, Code of Federal Regulations (CFR), Part 261.50 Orders
- Hamilton Road Restoration

INFRA, a Forest Service corporate infrastructure database, was queried for information about the current road system. GIS produced all map products used in the analysis, such as land ownership status overlaid by the road system; and resource mapping, such as streams and riparian areas, and big game winter range.

A public involvement plan was developed and implemented by the IDT to obtain public input regarding issues:

- Placed a summary article in the fall issue of “Gorge Views”.

- Put out a news release to local newspapers and radio stations.
- Mailed a scoping letter to county officials, public agency and private partners, special interest groups, congressional contacts and interested publics.
- On the CRGNSA website, posted the scoping letter, news release, roads analysis questions and answers, the document "What is Roads Analysis", comment form, the document "Roadway Terminology", and FS-643, *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System*, and preliminary maps.
- Conducted public open houses in Hood River, OR, and Stevenson, WA.

Table 1. Roads Direction from Completed Plans

NSA Management Plan

<u>All Land Use Designations: (including Open Space)</u>

1. The following uses shall be allowed without review:
   A. Maintenance, repair, and operation of existing dwellings, structures, trails, roads, railroads, and utility facilities.
2. All Land Use Designations allow new roads, except open space (open space would allow a new road associated with a recreation development).

Klickitat Wild and Scenic River Plan (1991)

- Minimal Development in first 200 ft. adjacent to river.
- No new bridges over the river.
- Provide an unpaved takeout at RM 10.2.
- Provide limited new river access points.

White Salmon Wild and Scenic River Plan (1991)

- Provide limited new access points.
- Allow no new roads in the 200 ft. buffer adjacent to the river.
- No new bridges over the river.
- New roads within WSR boundary must not be visible from the river.
- Construct and treat new roads so there is no erosion into the river; revegetate slopes immediately.
- Allow existing roads and bridges to be maintained or replaced in the same general location.

Dog Mountain Open Space Plan (1993)

- Closure order for vehicles, motorcycles, three wheeled motorbikes or other off-highway vehicles. Access would be retained for Forest Service administration, emergency, powerline access, and private/ state landowner access.
- Gate or place barrier along powerline in sections 13 and 18.
- Gate road at section 24 near North Lake.
- Gate road at electronic sires in suitable location to allow access to sites but close vehicular access from sites to Cook. Allow access to landowners until parcels are exchanged. Eventually block road permanently.
- Explore BPA's offer to gate roads to public, while allowing for BPA access.
- Roads under National Forest administration which are not necessary for BPA access shall be allowed to naturally revegetate. Except where otherwise noted for visual resource enhancement, most roads in the planning area would not require regarding or planting for rehabilitation.
  (all from page 12)

Table 1. (Continued)

Dog Mountain Watershed Restoration Project (1998)

- Gated along powerline road in section 18; road closed except for administration/ BPA.
- Tank trap to block road in section 13; road closed except for administration/ BPA.
- Tank trap to block road near Hidden Lake in section 5 and near North Lake in section 24; roads to be decommissioned.

Catherine Creek/ Major Creek Open Space Plan (1995)

- Block or rehabilitate roads which cause erosion.
- To help prevent noxious weed invasion, roads would not be obliterated. They would be blocked to vehicular access and allowed to naturally revegetate; with some seeding of native plants if necessary.
- Gate utility corridors.

Sandy River Delta EIS (1995)

- Roads 8400180, 8400182 would be used for the future multi-user trail system, BPA and NW natural Gas utility line access, and administrative access. The concept is to convert the roads to trails that are wide enough to allow vehicle access.

Woodard Creek Watershed Restoration Project (1998)

- Obliterated road 1420.
- Obliterated road 1440.
- Closed road 1459.

Multnomah Basin Watershed Restoration Project (1995)

- Close roads #15-014, #15-315, #15-150; gated and posted.
- Cannot find all files, map is per Virginia's memory.

Columbia Tribs East Watershed Analysis (1998)

- Consider not rebuilding the Eagle Creek trailhead if washed out by future flooding (page 73).
- Consider removal or relocation of the Wahclella Falls trailhead. Consider moving parking to the new ODOT lot. Consider moving present fish intake access road at Tanner Creek to the east edge of the floodplain (page 74).

Hamilton Road Restoration (2000)

- Closure and partial obliteration of road 1850370.

Columbia Tribs West Watershed Analysis (2001)

- Limit off road vehicles to existing roads with no vehicle closures on acquired lands on west end of watershed (page 67).

Wyeth Bench Road Closures (2001)

- Close five roads off the Wyeth Bench Road; only one has a number: 8400222. The roads are named: East Haul Road, West Haul Road, Meadow Road Access, Overlook Road and Sand Pit Road.

STEP 2. DESCRIBING THE SITUATION

Existing Road System in Relation to Current Plans

Physical and spatial information about the current road system was obtained from INFRA and GIS. Plans already completed were reviewed for management direction and desired future conditions. This review concluded that much of existing management direction has already been implemented. That management direction which has not yet been implemented was brought forward during the process that recommended opportunities and priorities for each road in the system.

Patterns and Levels of Use for the Existing Road System

The patterns and levels of use for the existing road system were estimated. Because of the number of property inholdings in the CRGNSA, there are multiple access needs on most National Forest roads. With the exception of recreation sites along the Columbia River, National Forest roads receive low traffic volumes. For an estimate of access needs by road, see 'Access' under 'VALUES', Appendix D—Road Values/Road Risks Ratings.

Funding for Road Maintenance, Operations and Construction

In preparation for Roads Analysis, the Forest system road inventories were updated. Included in that work were road condition surveys to estimate the cost of maintaining the road system to standard. This effort also resulted in an estimate of the cost of road maintenance work deferred in previous years due to lack of funding. The initial National Forest classified road system under consideration totaled approximately 185 miles. The recommended National Forest classified road system totals approximately 140 miles. Findings for the recommended National Forest classified road system are summarized as follows:

- Annual maintenance: total estimated cost is about $44,000 per year versus annual budget allocation estimated to be $35,000-$40,000.
- Deferred maintenance: total need is estimated to be approximately $1,500,000; annual budget allocation is variable and unknown (special appropriation subject to national politics and budget shifts) but current thinking is that it will take a minimum of 15-20 years to catch up.
- Decommissioning: total need (classified and unclassified roads) is just over 9 miles with an estimated total cost of $93,000. Presumably this work would come out of the annual maintenance budget and be accomplished over a period of 5-10 years.

New road construction (under capital improvements) contemplated for the CRGNSA totals less than 0.2 mile and would involve very short access roads to recreation sites. The balance of the estimated capital improvement program (approximately 0.4 miles) involves reconstruction of existing roads which will result in an increase in road maintenance level. Funding for this work (planning, design and construction) comes from allocations awarded by the Federal Highway Administration (FHWA) under the Forest Highway enhancement program. The NEPA process would have to be completed prior to implementing any capital improvements.

For a further breakdown of the estimated costs of annual maintenance, deferred maintenance and capital improvements, refer to Table 2, Economics of the Recommended Classified Road System.

While the lack of sufficient maintenance funding is ongoing and serious, it is important that issues are assessed not only from the economic perspective, but also from social and ecological perspectives. An appropriate balance needs to be struck between cost, providing access and minimizing ecological impacts.

TABLE 2:

ECONOMICS OF THE RECOMMENDED CLASSIFIED ROAD SYSTEM

($35,000-$40,000 estimated annual CRGNSA budget allocation for road maintenance)

							DEFERRED		**CAPITAL**	
				ANNUAL MAINTENANCE			**MAINTENANCE**		**IMPROVEMENTS** xxx	
			x	xx	xx	xx	xx	xx	xx	
OBJECTIVE			Avg. Cost	100%	50%	25%	100%	50%	100% Cost	
Maintenance Level		Miles	$/Mile/Yr.	Cost $/Yr.	Cost $/Yr.	Cost $/Yr.	Cost	Cost	FS Appro.	FHWA
1		38.9	86	3,345	3,345	3,345	0	0	0	0
2		70.5	171	12,056	6,028	3,014	1,090,000	586,500	0	0
3		16.7	987	16,483	8,241	4,121	39,000	19,500	0	0
4		4.6	2,632	12,107	12,107	12,107	346,000	346,000	0	4,100,000
5		0	3,290	0	0	0	0	0	0	0
D		7.4								
TOTALS		138.1		43,991	29,721	22,587	1,475,000	738,000	0	4,100,000

Notes:

OBJECTIVE Maintenance Level 4 includes 4 miles of existing plus 0.6 mile estimated capital improvements.

x Cost used in budgeting (BFES) process originally derived from Gifford Pinchot National Forest experience.

xx Levels 1 and 4 remain at 100% Forest Service maintenance and development, Levels 2 and 3 have optional costs depending upon contribution(s) of access partners.

xxx Capital improvements are estimated for 5-year period 2003 thru 2007; see following page for breakdown.

Definitions:

Annual Maintenance -- Work performed to maintain serviceability or to repair failures in the year in which it is scheduled to occur. Emergency repairs may need to be completed as a part of annual maintenance.

Deferred Maintenance -- Work that was not performed when it should have been, or when it was scheduled, and therefore was delayed to a future period. Code compliance, Management Plan direction, Biological Evaluation requirements or other standards not met on schedule are considered deferred maintenance.

Capital Improvements -- New construction; or construction resulting in significant change.

TABLE 2. (CONT'D.)

ECONOMICS OF THE RECOMMENDED CLASSIFIED ROAD SYSTEM (CONT'D.)			
CAPITAL IMPROVEMENTS ESTIMATED PROGRAM			
			EST. CONSTRUCTION
STATE	PROJECT NAME	EST. ROAD MILES#	COST, $ X 1,000
WA	Lyle-Klickitat Day Use Site	0.05	150
	Hamilton Creek Trailhead	0.1 ##	200
	Dog Mountain Trailhead	0.04 ##	550
	White Salmon River B-Z Launch Site	0.04 ##	250
	White Salmon River Husum Launch Site	0.1	550
	Klickitat River Park	0.2 ##	600
	Klickitat Rails-to-Trails	0.07 ###	1,400
OR	Oneonta Gorge Parking/Vista	0.01 ##	400
TOTALS		0.61	4,100
	#Access road plus length of parking area measured along its axis.		
	##Reconstruction (not new construction) that raises maintenance level.		
	###Part new construction; part reconstruction that raises maintenance level.		

STEP 3. IDENTIFYING ISSUES

Identification of Most Important Road Related Issues

Issues were generated by the IDT using their local knowledge of the road system and the results of their collective previous interaction with the public and special interest groups; private industry; county, state and local governments; and other federal agencies. Public responses received for this roads analysis, though limited in number, were also incorporated into issue development. The issues are sorted out under the following questions:

What are the primary public issues and concerns related to roads and access?

- Adjacent landowners privacy and levels of road use and road maintenance.
- Provision for fire protection.
- Adequate recreation road access.
- Use of closed roads as trails.

What are the primary management concerns (internal issues) related to roads and access?

- Resource protection.
- Inadequate funding for road maintenance and related activities.
- No formal agreements in place for sharing road maintenance with access partners.
- Unauthorized road maintenance by private landowners.

What are the primary legal constraints (issues) on roads and road management?

- Question of jurisdiction on many roads.
- Blocked from using some roads (Road 1852, et. al.; and Road 3078015).
- Adjacent landowners preventing public access (Road 3110320).

Addressing Most Important Road Related Issues

The primary public issues were all carried forward to Step 5 and addressed as was resource protection under primary management concerns. The management concern for inadequate funding for road maintenance was considered in Step 5 but was only partially solved. The remainder of the primary management concerns, and all of the primary legal issues couldn't be solved under this roads analysis. They will be highlighted for addressing outside of this process. However, in order to complete the process, these latter concerns and issues were factored into the ratings to the degree that they could be at this time.

STEP 4. ASSESSING BENEFITS, PROBLEMS AND RISKS

Benefits, Problems and Risks Associated with the Road System

The framework for completing this step was "Appendix 1. Ecological, Social and Economic Considerations" contained in USDA Forest Service publication FS-643, *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System.* This document provided possible issues and analysis questions, the answers to which provided the information baseline for assessing the benefits, problems and risks relative to the road system. The chosen scale and intensity for this effort were identified in Step 1.

The answers to the analysis questions considered in this roads analysis are contained in the following pages. Note that 'Scenic Resources' were also considered because of the special applicability of this resource to the CRGNSA.

General Public Transportation (GT)

GT (1): How does the road system connect to public roads and provide primary access to communities?

National Forest System Roads within the Columbia River Gorge National Scenic Area (CRGNSA) connect to numerous public roads operated and maintained by the States of Washington and Oregon or by county or city governments. However, no National Forest System Roads within the CRGNSA serve as primary through routes that connect communities.

Of greater relevance is how state and county roads within the CRGNSA act as the arterial and major collector road systems to give communities, as well as tourists, private residents, industries and county, state and federal agencies access to and through National Forest lands. These public roads connect to Forest collector and local roads where traffic is dispersed across National Forest lands for a variety of uses. The following tables list public roads identified as arterial and major collector roads most important to linking National Forest lands within the CRGNSA to local communities.

Arterial Public Roads	**Special Designation**
STATE OF WASHINGTON	
SR-14	Forest Highway
SR-141	Forest Highway
SR-142	Forest Highway (application submitted)
STATE OF OREGON	
Interstate 84	
US 30, Historic Columbia River Highway	All-American Road and Forest Highway
MULTNOMAH COUNTY	
Larch Mountain Road	Forest Highway

Major Collector Public Roads

SKAMANIA COUNTY	HOOD RIVER COUNTY
Kueffler Road	Country Club/Post Canyon Roads
Berge Road	
KLICKITAT COUNTY	WASCO COUNTY
Old Hwy. No. 8	Cherry Heights Road

GT (2): How does the road system connect large blocks of land in other ownership to public roads (ad hoc communities, subdivisions, inholdings, etc.)?

The checkerboard pattern of land ownership in the CRGNSA results in a large number of inholdings, including private residential and industrial; and county, state and federal agencies. With property acquisition in the CRGNSA ongoing, it is anticipated that the number of inholdings will reduce to some degree in the future. The National Forest System Roads in the CRGNSA currently providing connection of inholdings to public roads, and their combinations of inholdings, are too numerous to list here (reference the section "Patterns and Levels of Use for Existing Road System" under Step 2).

Where the inholding is private residential, the current connecting road management can generally be characterized as "open to passenger cars". These roads are typically one lane with aggregate surfacing.

Where the inholding is industrial; or county, state or federal agency, the current connecting road management can most often be characterized as "open to high clearance vehicles". However, in some cases for these inholdings, whether done consciously or due to lack of maintenance, the road management can be characterized as "closing naturally". Regardless of road management characteristic, these roads are typically one lane with pit run or native surfacing.

While there are many miles of road accessing inholdings that have a backlog of road maintenance to be performed, particularly on roads that are other than private residential access, and while only the roads accessing private residences could be considered drivable year around, these roads generally appear to be adequate in as-constructed (original) geometry and surfacing relative to traffic demand. Financial responsibility for improvements and maintenance on all of these roads should be determined through a commensurate share process.

Presently there are no formal agreements in place with any of the inholding entities for determining road maintenance obligations. But even if there were agreements in place, current funding levels limit the amount of staff and budget available for coordinating and performing road maintenance work when compared to the road maintenance obligations over the entire Forest road system. This reality points up the need for developing priorities for road maintenance.

GT (3): How does the road system affect managing roads with shared ownership or with limited jurisdiction (RS2477, cost share, prescriptive rights, FLPMA easements, FRTA easements, DOT easements)?

Many roads crossing National Forest lands fall under the jurisdiction of entities other than the Forest Service. When necessary, cooperative agreements should be established to share road improvement and maintenance responsibilities when all partners benefit. At present there are no formal agreements in place with any of these entities for the purpose of sharing these responsibilities.

Rights of access by law, reciprocal rights or easements are generally recorded in CRGNSA files and county courthouse documents. The Forest Service recognizes these rights and will work with the owners to preserve access while protecting the natural resources and facilities on adjacent National Forest lands.

Forest Service jurisdiction (via fee title, easement or agreement) appears to be in question on some currently designated National Forest System Roads where they cross other land ownerships. It is beyond the scope of the Roads Analysis process, however, to complete verification of jurisdiction at this time. The Roads Analysis process is designed to settle the basic question of needed road access to National Forest lands. Following the process, for roads deemed necessary to access to National Forest lands where jurisdiction is in question, it will have to be verified or obtained prior to expending any Forest Service funds for road improvements or maintenance.

The goal should be to share a single road with other landowners whenever feasible rather than construction parallel road systems.

GT (4): How does the road system address the safety of road users?

In 1975, the Forest Service developed a Memorandum of Understanding with the Federal Highway Administration that required the Forest Service to apply the provisions of the national highway safety program, established by the Highway Safety Act, to all roads open to public travel. In 1982, this agreement was modified to define "open to public travel" as "those roads passable by four-wheeled standard passenger cars and open to general public use without restrictive gates, prohibitive signs…" Most roads maintained at level 3, 4 or 5 would normally meet this definition. Design, maintenance and traffic control on these roads emphasizes user safety and economic efficiency. Safety work on these level 3, 4 and 5 roads, such as surface maintenance, roadside clearing and installation and maintenance of warning and regulatory signs, is given the highest priority for accomplishment. Traffic control signing follows standards set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

The CRGNSA is at least somewhat unique in that National Forest System Road access to some National Forest lands within the CRGNSA is over roads that also access private residences. Further, the CRGNSA doesn't currently have any level 5 roads on its system, nor are any planned. The following table summarizes possible road access (management) strategies to be applied to National Forest System Roads in the CRGNSA relative to meeting the Highway Safety Act.

Maintenance Level	Description of road access/application of Highway Safety Act
3	Private residential access with general public use restricted. *Highway Safety Act does not apply*.
3	Private residential access with general public use accepted. *Highway Safety Act applies. (These roads will be given high priority for safety work.)*
4	Forest Service administered recreation sites, including access roads and trailheads, with general public use encouraged. *Highway Safety Act applies. (These roads will be given high priority for safety work.)*

When accidents do occur on Forest roads, often the CRGNSA is not immediately informed unless an employee is involved. One reason that the CRGNSA might not be immediately informed may be due to confusion because of the multiple jurisdictions over many of the Forest access roads. Accidents involving only public motorists are reported to the local sheriff or state patrol, if reported at all. When the CRGNSA does become aware of an accident, an investigation is initiated to attempt to identify the cause. If a feature of the road is found to be unsafe, addressing the condition becomes a high priority. Presently there is no comprehensive program on the CRGNSA for tracking accident locations and rates as required by the Highway Safety Act. The CRGNSA needs to address this area of non-compliance.

GT (4) Cont'd.

Travel management regulations where applicable need to be posted on the ground and described on the Forest Visitor map. These regulations have been established by the CRGNSA to enable safe motorized travel while protecting natural resources and minimizing conflicts between users.

Social Issues (SI)

National Forest roads in the CRGNSA must be considered in context with the mixed public and private ownership pattern, and mix of federal, state, county, and private roads. The road system in the CRGNSA is highly developed (an interstate, several state highways and numerous county roads) and managed to a great degree by other public agencies. The amount of roads under Forest Service jurisdiction is relatively light (relative to other jurisdictions).

Most of the roads came under Forest Service jurisdiction as a result of land acquisition since 1987. In many areas of mixed ownership, the Forest Service shares road access with local landowners and residents. In some areas, roads represent lanes or driveways to houses that have been removed.

While the answers are geared to the roads under Forest Service jurisdiction, it is within the context explained above.

SI (1): What are people's perceived needs and values for roads? How does road management affect people's dependence on, need for, and desire for roads?

- Access
- Motorized recreation (driving for pleasure, Motorcycle, OHV).
- Non-motorized recreation: Mountain biking, horseback riding, hiking on primitive roads.

SI (2): What are people's perceived needs and values for access? How does road management affect people's dependence on, need for, and desire for access?

- Residential access along roads shared by local landowners and NFS lands.
- Access to private land between or beyond NFS lands.
- Non-motorized recreational access to newly acquired lands. For some recreationists, the roads provide access to new non-motorized recreation opportunities (e.g. hiking a large tract of land),
- Motorized recreation: Motorcycle and OHV on the roads; hunting and camping access near the roads.
- Access to electronic or utility sites.
- There is very little need for road access to move commodities from National Forest lands to markets, since there is almost no timber harvest or agriculture and no mining occurring on NFS lands.

SI (3): How does the road system affect access to paleontological, archaeological, and historical sites?

Few paleontological sites are known to exist in the Columbia River Gorge. Cataclysmic flood events would have destroyed sites older than about 10,000 years ago. (I know no more!).

Many archaeological sites are accessed by the developed road system, are located on private lands, or are located on islands. Few archaeological sites are located on NFS lands that are accessed only by NFS roads. An example includes the primitive NFS road providing foot access to the site above

Roland Lake. Road access to Native Americans sites can provide access for Native American use, but also can allow access for undesirable use that can damage Native American sites.

Most historic sites in the Columbia River Gorge are accessed by the developed road system (Multnomah Falls, Eagle Creek, Crown Point, Historic Highway, private homes). A few potentially eligible historic sites are accessed solely by NFS roads (e.g. Sandy River Delta dike). The Forest Service is pursuing acquisition of a number of properties with historic resources. Whether or not to provide access to the historic resources needs to be considered if the properties are acquired.

SI (4): How does the road system affect cultural and traditional uses (such as plant gathering, and access to traditional and cultural sites) and American Indian treaty rights?

The Columbia River Gorge is very important to Native Americans, who have traditionally and who continue to harvest salmon and traditional plants such as bitterroot. Most fishing occurs in the Columbia River or on the biggest tributaries (e.g. White Salmon, Klickitat). Fishing occurs from traditional platforms along the Columbia or the Klickitat or from boats. Both shore fishing access and boat launches are located on lands other than NFS. Several "in-lieu" fishing sites have been developed in the past decade by the Army Corps of Engineers, and more are planned. Fishing access is only minimally connected to NFS roads.

There are many important traditional and cultural Native Americans sites in the Columbia River Gorge, including village sites, rock art and "vision quest" sites. These sites are located on NFS, State and private lands; and accessed by other federal, state, private and NFS roads. Many important sites are located on Columbia River islands, which can only be accessed by boat.

Road access to Native Americans sites can provide access for Native American use, but also can allow access for undesirable use that can damage Native American sites.

Road management on certain NFS lands could affect access to traditional plant gathering or hunting by Native Americans.

SI (5): How are roads that constitute historic sites affected by road management?

- No NFS roads are historic sites. The HCRH is a historic site managed by ODOT.

SI (6): How is community social and economic health affected by road management (for example, lifestyles, businesses, tourism industry, infrastructure maintenance)?

- Most retail business is located in Urban Areas, accessed by state highways or I-84, not NFS roads.
- There is very little need for road access to move commodities from National Forest lands to markets, since there is almost timber harvest or agriculture and no mining occurring on NFS lands.
- Where commodities are moving from private lands to markets, they are traveling on roads that are entirely non-NFS, or a mix of NFS/non-NFS.

- Most heavily used recreation sites are accessed by state highways or I-84, not NFS roads.
- NFS roads are part of the residential access network for numerous people living out "in the country".
- Some landowners think the Forest Service should contribute more to road maintenance on roads with both private and public land.

SI (7): What is the perceived social and economic dependency of a community on an unroaded area versus the value of that unroaded area for its intrinsic existence and symbolic values?

Most of the NSA is extensively roaded urban-interface "front country", with federal, state and county roads. A notable exception is the "waterfall zone" of western Oregon. This area contains two RARE II Roadless Areas. An extensive trail system, primarily for hikers, has been developed in this area and is heavily used. It is very important recreationally for people from the Portland Metro area. Visitors contribute to some degree (unquantified) to the local economy, primarily at Cascade Locks where tourism services are available (restaurants, stores, gas). In this respect, the economic value of the area is due to its unroaded nature and the visitors this draws.

SI (8): How does road management affect wilderness attributes, including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation?

There are no designated wilderness areas within the NSA. However, the "waterfall zone" of western Oregon is adjacent to, and provides trail access into the Hatfield Wilderness. This unroaded zone provides some wilderness attributes, including natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation. These attributes are affected in some areas by traffic sounds and views of development (highways, Bonneville dam, etc).

A few other smaller areas, namely Dog Mountain and Catherine/Major Creeks offer a degree of natural integrity, natural appearance, opportunities for solitude, and opportunities for primitive recreation. Recreation is the most common use people have of these areas. There are existing, primitive roads in these two areas. Road management would directly affect the "wilderness" attributes of these types of areas. The primitive roads themselves are used as trails, particularly at Catherine Creek. The people that use these areas are drawn to it for non-motorized recreation opportunities, so allowing motor vehicles on these roads would distract from their experience.

SI (9): What are traditional uses of animal and plant species in the area of analysis?

- The Columbia River Gorge is very important to Native Americans, who have traditionally and who continue to harvest salmon and traditional plants such as bitterroot.
- There is some gathering of plants such as mushrooms, bear grass and berries. Since the Forest Service in the NSA does not allow commercial harvesting, it is expected that most collection is for person use. Some collecting of animals is suspected, e.g. California Mountain king snakes.
- Fishing is very popular, on the Columbia as well as its tributaries.
- Hunting is an established activity.
- Farming and commercial forestry occurs in the NSA, although to a small degree on NFS lands.

SI (10): How does road management affect people's sense of place?

The Columbia River Gorge is a cultural landscape combining communities, agriculture, forestry, residences, historic sites, Native American sites, recreation and habitat for natural systems. The road system in the CRGNSA is highly developed (an interstate, several state highways and numerous county roads). Since there is a relatively small amount of unroaded area, its scarcity leads to people placing a high value on it. For example, the unroaded areas are very popular for hiking.

Civil Rights Issues

CR (1): How does the road system, or its management, affect certain groups of people (minority, ethnic, cultural, racial, disabled, and low-income groups)?

- The road system is very accessible in the NSA as a whole (interstate, federal highways, state highways, etc.). Overall, the NSA road system is accessible to all with a vehicle, and to most types of vehicle.
- In a relative sense, there are many fewer roads available for the types of "primitive" motorized recreation that require a specialized vehicle (OHV, 4 wheel drive).
- Road management on certain NFS lands could affect access to traditional plant gathering or hunting by Native Americans.

Economic Issues

The Columbia River Gorge is an important transportation corridor. It is an east-west corridor linking the Pacific Ocean and coastal cities to the Inland Empire and the rest of the country. An interstate, state highways, railroads and river barges carry enormous goods through this sea-level corridor. It is a critical link in the nation's economy.

The local road system is the primarily means by which local goods and people move about the local region. County and private roads access most of the private land and much of the public land as well.

The road system under Forest Service jurisdiction is a very minor economic component of both the national and local transportation systems. There are few National Forest roads, and they tend to be short access roads to acquired properties.

EC (1): How does the road system affect the agency's direct costs and revenues? What, if any, changes in the road system will increase net revenue to the agency by reducing cost, increasing revenue, or both?

By and large, the NFS roads do not bring direct revenues to the Forest Service. No timber harvesting occurs on NFS lands. There are some special use permits (e.g. pasture) on NFS lands, but the road access to these lands is largely via non-NFS roads. The Forest Service does not collect

fees for personal use forest products gathering, and does not currently permit commercial gathering. Most recreation fee sites are accessed by I-84, SR 14 or the HCRH. In many cases, only the recreation site access road (the "drive-way") and parking area itself are NFS lands.

Road maintenance costs range from $86/mile/year to $2,632/mile/year.
Costs for road decommissioning are typically: $5,000 - $10,000/mile.
Costs for road closure are typically: $1,000 - $3,000/mile.
No new NFS roads are planned, except short access roads to new recreation sites.

A complete cost benefit analysis for management of specific roads (e.g. maintenance, closure, etc) could be conducted once recommendations are made.

EC (2): How does the road system affect the priced and non-priced consequences included in economic efficiency analysis used to assess net benefits to society?

- The road system provides access to motorized and nonmotorized recreation opportunities, which are an important part of the Columbia River Gorge economy. There is also a value to the unroaded recreation opportunities, because of their relative scarcity in the NSA.
- The road system provides fire suppression access, which is an important consideration in areas with private land and private homes. The road system also provides access that may result in a fire (e.g. people with fireworks, campfires, smoking).
- Noxious weeds tend to spread on travel corridors. The road system provides access for noxious weeds, and the concurrent economic cost to either treat the weeds or the impacts to agriculture or native systems from weeds.
- The road system provides access for dumping garbage, for which there are costs to either clean-up, or potential water, soil, scenic impacts from not cleaning it up. Motor vehicle fuel spills are possible from the road system.
- Some unpaved roads may create dust in the summer.
- In some areas, roads have been built on unstable areas, which can create ongoing maintenance costs. Roads which are not adequately maintained can have costs associated with slope failure, erosion, sedimentation, etc.
- The road system provides access to private land and residences.

EC (3): How does the road system affect the distribution of benefits and costs among affected people?

Potential New Roads
No new NFS roads are planned, except short access roads to new recreation sites.

Maintain Existing Roads
Maintaining existing roads would maintain the status quo in regarding to recreation access, fire suppression, weeds, garbage, etc.

Closing or Decommission Roads

- More nonmotorized recreation access and less motorized recreation access. Since many of the NFS roads are more primitive, closing these roads would affect people who enjoy the challenge of driving a primitive road.
- Hunting access would be lower, while solitude for wildlife would be higher.
- The Forest Service would have higher initial costs in planning, design and implementation for road closures or decommissioning, but lower maintenance costs over the long run.
- Costs for treating weeds would be lower and/or less habitat impacts from weeds.
- Costs for cleaning up litter and dumping would be lower.
- Access to start fires would be lower, but fire suppression could be higher.

ROADS ANALYSIS –SCENIC RESOURCES

INTRODUCTION

The ideal relationship between roads and the scenic resource is that roads would provide the platform from which to view the landscape. The scenic goal is to minimize the contrast between the road and the landscape. The main elements that contribute to minimal contrast are 1) treatment of cut and fill slopes, 2) alignment, 3) scale, and 4) road "furniture" that take design elements from the natural landscape. Roads should provide access to scenery, not become a negative impact to it.

The major impediments to roadway design reaching the above goals are 1) designing roads to avoid legal liability rather than for the general public good, 2) unconscious design, (i.e. not considering the total effect on the landscape of a myriad of details) and 3) lack of scenic resource evaluation of projects coupled with a paucity of design professionals involved in projects. Roads important to the scenic resource (KVA roads) should have a corridor plan in place to ensure maintenance of scenic quality.

WHAT ARE THE EFFECTS TO SCENIC RESOURCES OF THE FOLLOWING:

ROAD CLOSURES or DECOMMISSIONING

ROADS THAT ARE KVAS
Not likely. If it occurs, it will mean that either the KVA list is shortened or it may become a KVA trail.

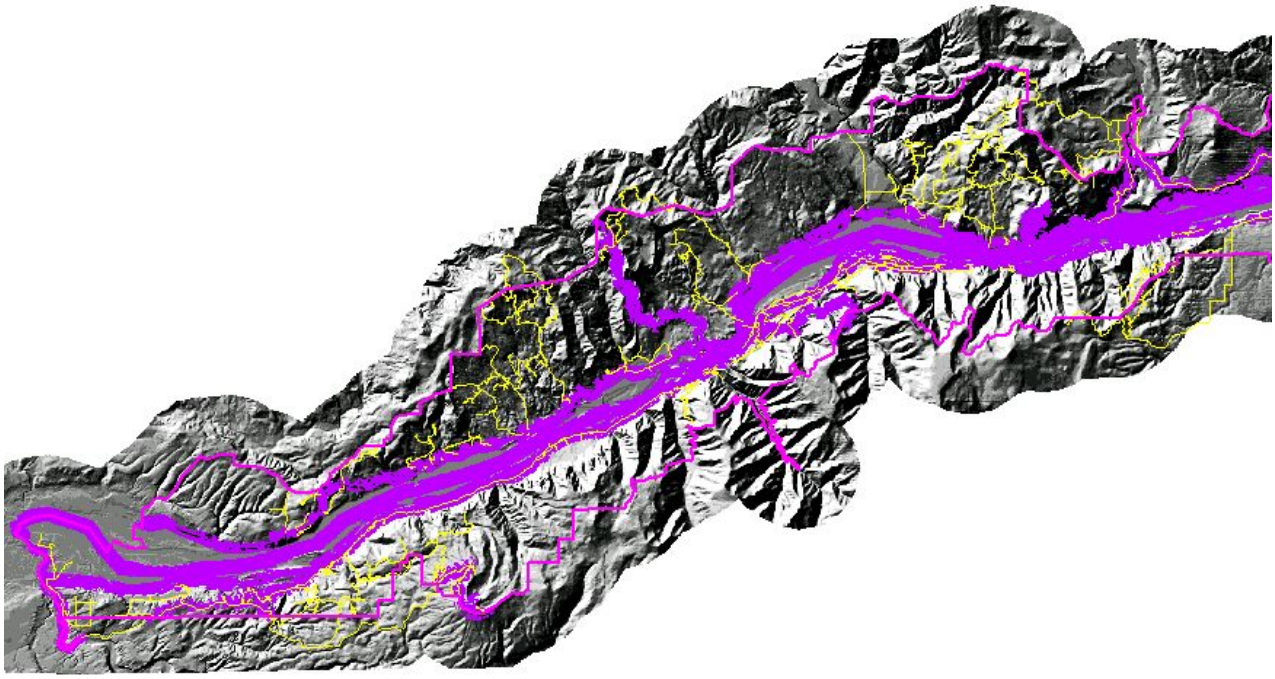
ROADS THAT ARE PARTIALLY VISIBLE FROM KVAS
The impact to scenery would depend on whether the road negatively impacted other KVAs when open. If so, the closure should consider how to mitigate the impact to other KVAs. For example, if a road considered for closure contains an unsightly cut visible from other KVAs, the plan for closure should consider re-contouring and/or re-planting the visible slope. If the road under consideration for closure is on a steep visible slope, it should be stabilized and revegetated (including the planting of trees if in a forested area).

ROADS IN THE FOREGROUND OF KVAS
Negative scenic impact of road closures in the Foreground of KVAs (0-1/4 mile) involve :

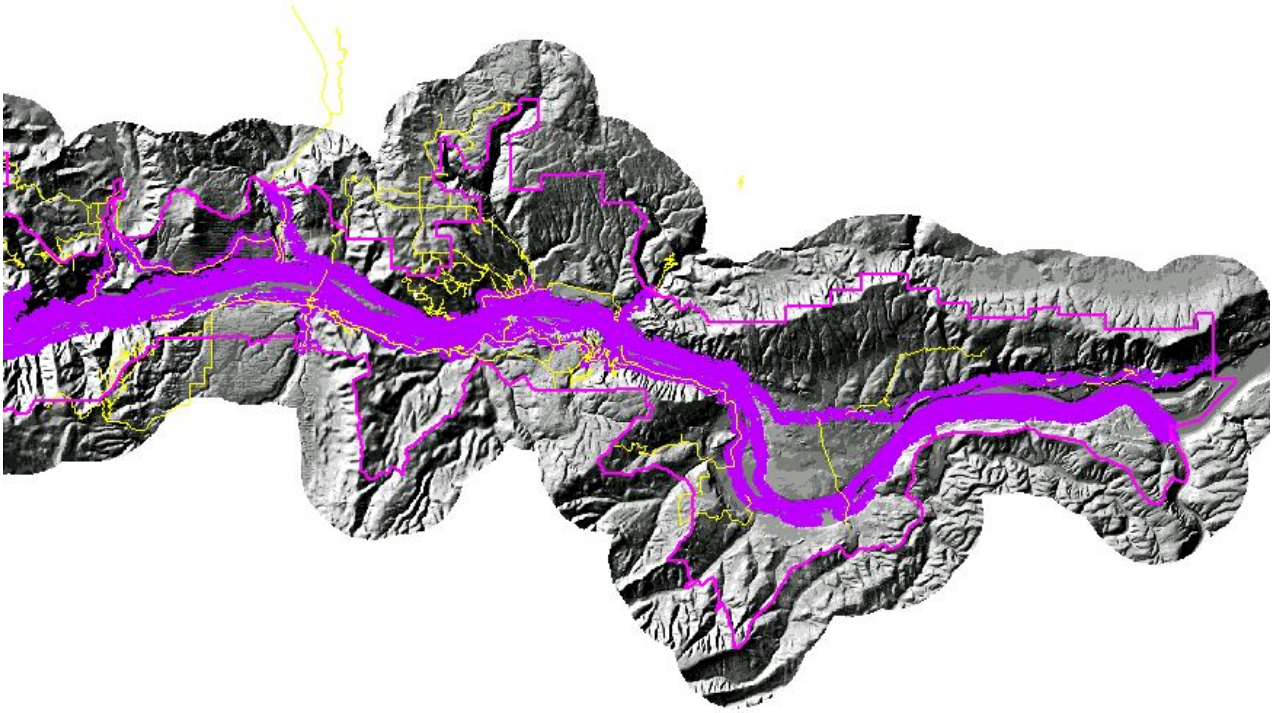
- Visible steep, unnaturally contoured berms,
- "tank traps",
- MUTCD signing,
- metal gates, and
- unnatural configurations of placed boulders.

The use of "context sensitive design" for road closures involves recognizing these impacts and designing road closures that avoid them. Some solutions:

- Avoid gated closures, if needed, gate the road outside of the Foreground distance or around a curve, etc.
- Use obliteration of the road entry where possible.
- Place natural materials in natural patterns.



Yellow on Purple: **Roads in KVA Foregrounds-West half NSA** ↑
Pink: NSA Boundary
Red: Point KVAs
East half NSA ↓



ROCK STABILIZATION PROJECTS OR OTHER CUT/FILL SLOPE PROJECTS

ROADS THAT ARE KVAS

- Potential for High Scenic Impact if Rock Gabions, Mesh, Rockfall Fences or unnatural rock cuts are employed to stabilize slopes in the Foreground of KVAs
- Other methods that can be used:
  - Re-sloping
  - Road realignment to provide rockfall catchment
  - Upslope containment (Fences, Mesh hidden from view upslope)
- Rock cuts—impacts from drill-holes,
- Contrasting unweathered rock
- Unnatural blasting pattern
- Laying back slopes with a slope greater than 2 to 1 encourages erosion and discourages revegetation.
- Retaining walls can be used to stabilize slopes (see Road Furniture)

ROADS THAT ARE PARTIALLY VISIBLE FROM KVAS

- The same effects as above except some methods may not be visible from Middleground (1/4-3 Miles) or Background (3-Infinity) distances.

ROADS IN THE FOREGROUND OF KVAS

- The Same effects as for roads that are KVAs

ROAD MAINTENANCE, RE-ALIGNMENTS and NEW ROADS

ROADS THAT ARE KVAS

- Scenic impact if an abandoned alignment is not obliterated and replanted
- In general, scenic roads need to maintain curves as opposed to tangents—too many tangents impact viewing angles.
- Should follow contours where possible,
- Grades of 4% or less—impacts from roads on steep alignments, cut slopes, fills slopes
- Scenic roads have more appeal if they seem to be part of the landscape. That is, fairly narrow and minimal clear zone.
- Bridges and viaducts can be used to avoid disturbing unstable slopes, etc.
- Mechanical and Herbicide brushing create a negative scenic impact—brushing should be done “by hand” where visibility is impaired. (actually mechanized with people’s brains involved behind a chain saw, pruner, etc)

ROADS THAT ARE PARTIALLY VISIBLE FROM KVAS

Roads that are not KVAs but are travel routes for forest visitors would require the same considerations as those for roads that are KVAs, however, the emphasis would be in balance with level of use and the Visual Quality Objectives for that land use designation.

ROADS IN THE FOREGROUND OF KVAS

These roads would have the same considerations as roads that are KVAs in the foreground areas.

ROAD "FURNITURE", SIGNS, ETC.

ROADS THAT ARE KVAS

The following guide to "furniture" avoids the cumulative negative scenic effects common along roads and highways:

- Bridges-Use to avoid disturbance to characteristic landscape, design with elements taken from the landscape
- Culverts-Culvert ends should not be visible from the roadway, if they are, they should be covered with soil and planted or painted a dark-earthtone color.
- Signs and other visible traffic devices-Developing a uniform and coordinated sign policy that does not create undue "sign pollution" and follows scenic color and design guidelines is one of the most important elements for identity and scenic quality.
- Retaining Walls-Native material where possible, rustic appearance where not native materials
- Guard-rails-Corten Steel-use to save "clear zone" trees
- Curbs-Consider the use of natural stone curbs where appropriate.
- Barriers-Avoid the use of free-way type barriers. Natural barriers or guardrails are more effective.
- Bollards-Dominant natural material should decide bollard material. Not steel.
- Boulder Placement-Boulder placement is preferable to retaining walls but must be well designed.
- Rock Walls- Differ from retaining walls in that they are usually dry laid-they are a good solution where roads cannot meet the 2 to 1 slope needed for stability.
- Colors/Reflectivity-All road "furniture" should be non-reflective and dark earthtone in color where color and reflectivity is not required for safety. (Such as the back of signs, barriers, etc.).
- Plantings-Native plantings that reflect the plant community in the immediate vicinity.

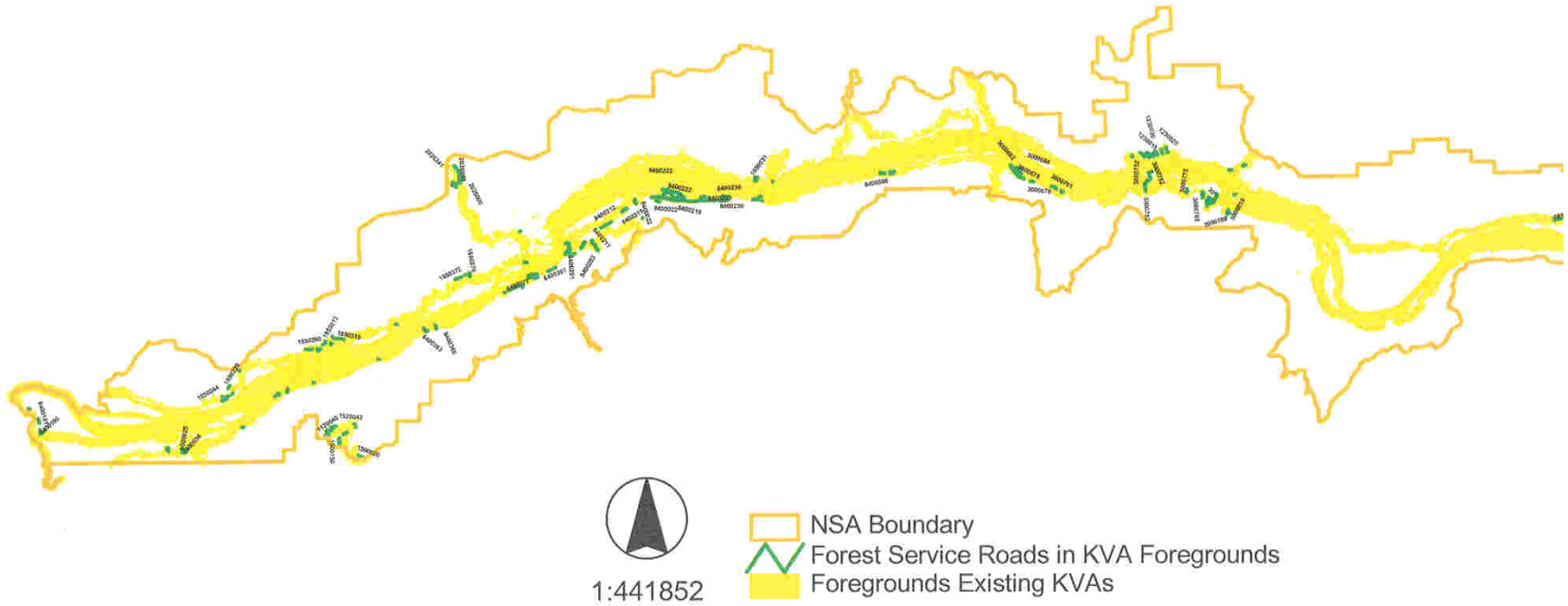
ROADS THAT ARE PARTIALLY VISIBLE FROM KVAS

Roads that are not KVAs but are travel routes for forest visitors would require the same considerations as those for roads that are KVAs, however, the emphasis would be in balance with level of use and the Visual Quality Objectives for that land use designation.

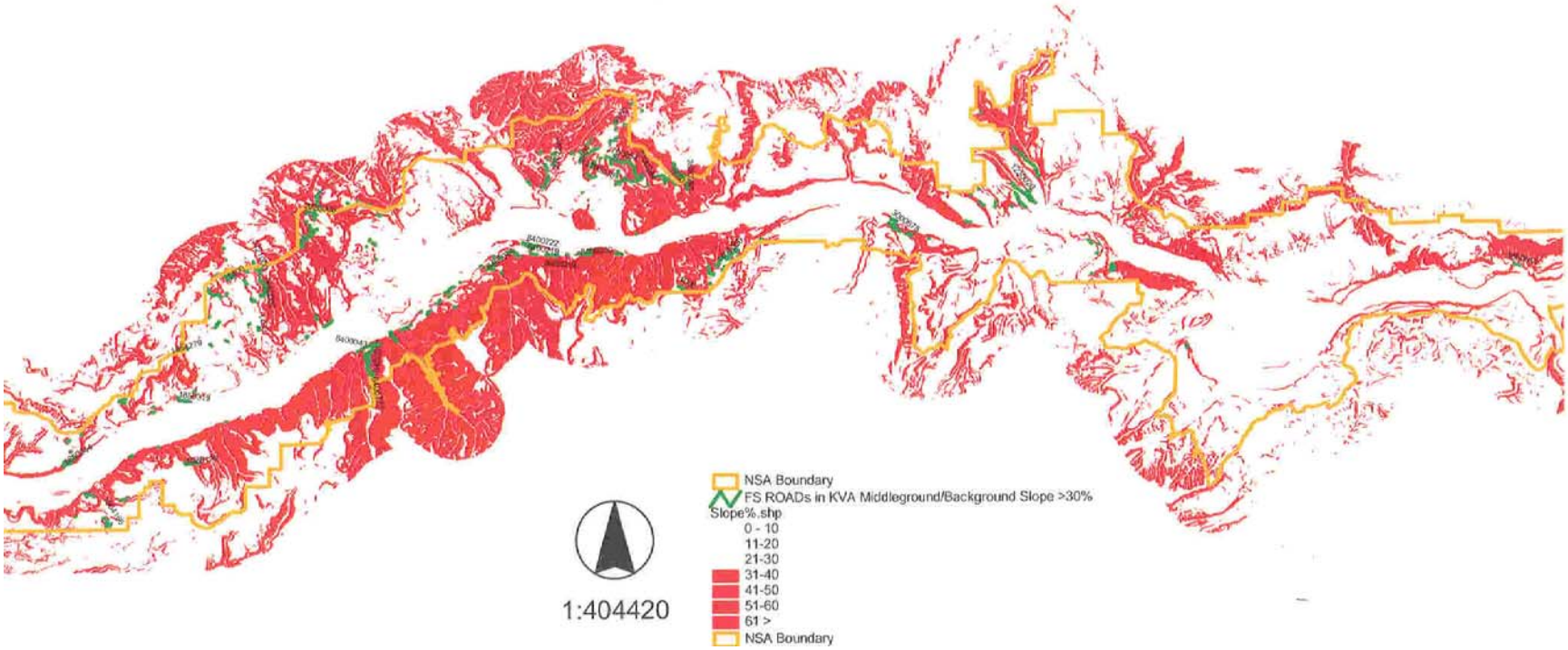
ROADS IN THE FOREGROUND OF KVAS

These roads would have the same considerations as roads that are KVAs in the foreground areas.

FOREST SERVICE ROADS
RISK TO SCENIC RESOURCES FOREGROUNDS



FOREST SERVICE ROADS
RISK TO SCENIC RESOURCES
MIDDLEGROUND AND BACKGROUND



MM (1): How does the road system affect access to locatable, leasable, and salable minerals?

CRGNSA Management Plan General Policies and Guidelines state that in the General Management Area (GMA), existing development or production of mineral resources may continue unless the Columbia Gorge Commission determines that the uses adversely affect the scenic, cultural, natural, or recreation resources of the Scenic Area. These uses will be considered discontinued and subject to land use ordinances under the Management Plan if any of the following conditions exist:

A. The mined land has been reclaimed naturally or artificially to a point where it is re-vegetated to 50 percent of its original cover (considering both basal and canopy) or has reverted to another beneficial use, such as grazing. Mined land shall not include terrain that was merely leveled or cleared of vegetation.
B. The site has not maintained a required state permit.
C. The site has not operated legally within 5 years before the date of adoption of the Management Plan.

Uses involving the exploration, development, or production of sand, gravel, or crushed rock in Special Management Area (SMA) may continue if both of the following conditions exist:

A. The sand, gravel, or crushed rock is used for construction or maintenance of roads used to manage or harvest forest products in the SMA.
B. A determination by the Forest Service finds that the use does not adversely affect the scenic, cultural, natural, or recreation resources.

Locatable Minerals (deposits subject to location & development under General Mining Law of 1872 (as amended))
The Forest Service does not manage the mineral resources on National Forest System lands. That authority rests with the Secretary of the Interior. Forest Service authority is directed at the use of the surface of National Forest system lands in connection to the operations authorized under the United States Mining laws, which confer a statutory right to enter upon the public lands to search for minerals. Forest Service regulations provide that operations shall minimize adverse environmental impacts to the surface resources.

Leasable Minerals (oil, gas, coal, oil shale, etc.)
Road access for leasable minerals is generally planned and developed on a large grid and on an individual basis. Production of leasable minerals will require some high-standard haul roads. Existing arterial and collector roads are utilized to access the general proximity and are sufficient for that purpose. Transportation plans are generally developed as part of each leasable activity.

Salable Minerals (Common varieties – sand, gravel, clay, rock, stone)
Existing arterial and collector roads are sufficient to gain access to the general proximity of salable proposals. The value of salable common variety minerals is very sensitive to transportation costs. However, the Forest Service has total discretionary authority for disposal of common variety minerals and is not obligated by any statutory requirements.

CRGNSA EXISTING ROCK QUARRIES

Road No.	***Name***	***Location***	***Remarks***
1230225	Major Creek	MP 0.1	
1850372	Hamilton	MP 1.0	
2130105	Sevenmile Hill	MP 0.2	Restoration EA
2700469	Augspurger	MP 0.1	
8400219	Wyeth Bench	MP 0.2	

RM (1): How does the road system affect access to range allotments?

The road network in the CRGNSA is adequate for administration of the range management program.

No peer-reviewed studies have assessed the effects of national forest roads in general on livestock grazing or ecosystem management. Results from the Columbia River basin program are tentative and show no causal relations. The results of studies examining the influence of roads on forested landscapes must be carefully extended because the results from studies in eastern forests may not apply to western forests (Miller, et al 1996). Specifically, no science-based information was found on how National Forest roads affect livestock grazing. Many questions remain, including actual costs of any closures to permittees and the effects of any road closure to administering range management programs, including weed programs, and compliance.

Roads used for access to range allotments in CRGNSA:

Columbia Hills - #1850945

SP (1): How does the road system affect access for collecting special forest products?

The current road system provides adequate access for collecting special forest products such as mushrooms, recreational rock collections, ferns, transplants, Christmas trees, firewood, etc. If road closure or seasonal closure is considered in a project or watershed analysis, access for special forest products will be considered.

The CRGNSA has a very small special forest products program and coordinates with the two adjoining forests, the Mt. Hood and Gifford Pinchot National Forests. Most permits are issued by the Mt. Hood NF or Gifford Pinchot NF.

SU (1): How does the road system affect special use permit sites (concessionaires, communication sites, utility corridors, and so on)?

The existing road system is sufficient to deal with almost all recreation special uses. Safe and efficient access to areas under special use authorization has a direct effect on the economics of an operation, either thru volume of customers, or operation and maintenance costs. Most recreation special use proposals/authorizations are designed around existing road systems.

Access and Forest Service responsibility under ANICLA and RS2477 are considered in recreation and non-rec special use permits. Many of these uses rely on the existing road access or utility corridors to accommodate construction, operation, and maintenance. Some requests require reconstruction of old roads or new construction to meet their needs. These requests are analyzed thru the NEPA process and are addressed in the associated decisions.

VEGETATON MANAGEMENT ACCESS

INTRODUCTION

The Columbia River Gorge National Scenic Area (CRGNSA) is administratively withdrawn from regulated timber harvest. This means that all vegetation management benefits and is supported by the scenic, cultural, natural, or recreation resources of the CRGNSA. We recently conducted a review of the need for vegetation management projects in the near future. This review revealed that the landscape settings River Bottomlands and Oak Woodlands are high priority areas for restoration projects. This analysis emphasizes the need for roads in high priority areas where access to forest tree species is important.

HOW DOES THE ROAD SYSTEM AFFECT MANAGING VEGETATION?

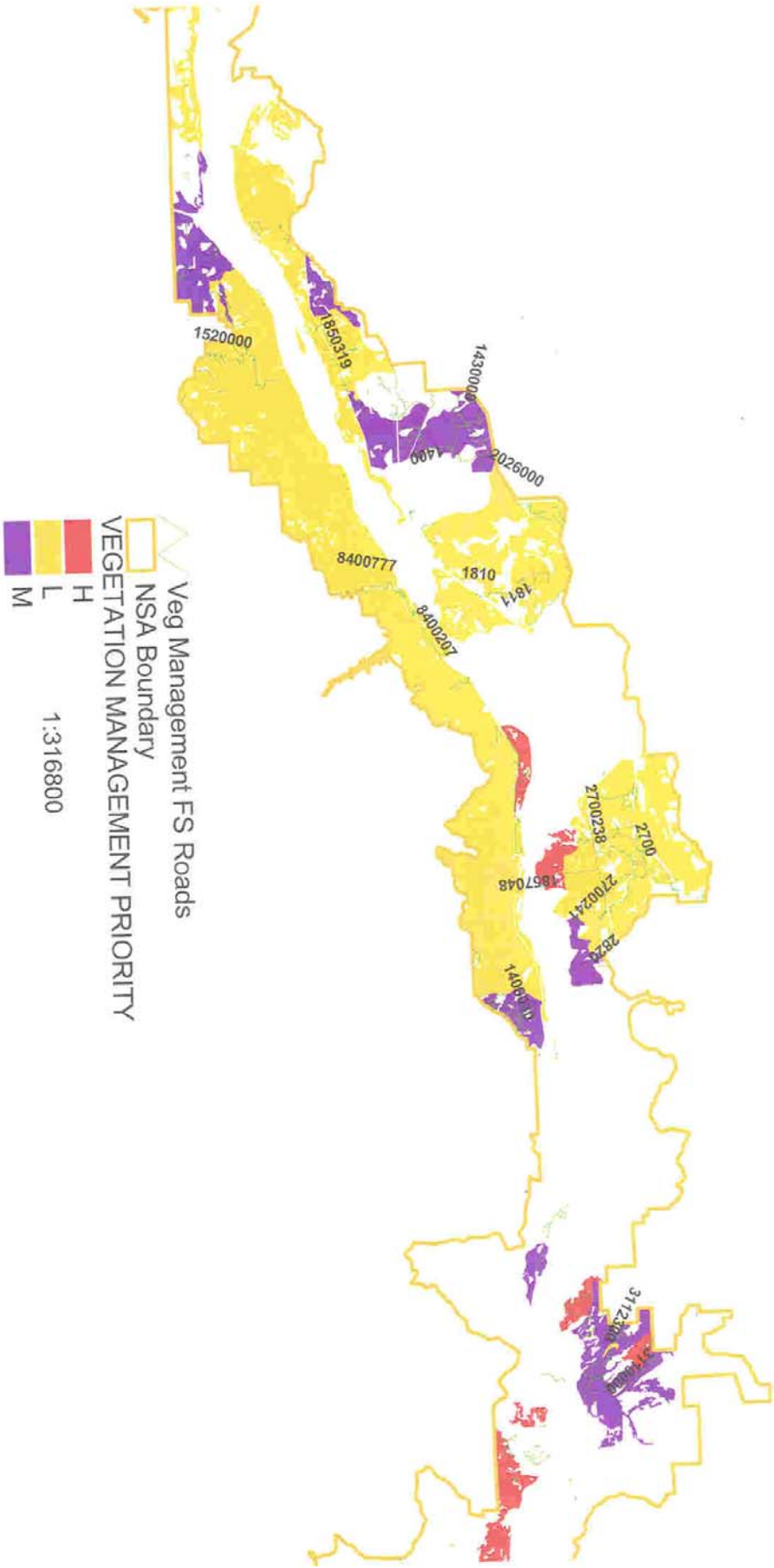
- **Relationship of Vegetation Management Priority and Road Management**

Vegetation Management Priority was stratified into High, Medium and Low priority areas. For the purposes of road analysis, it was assumed that roads within the High and Medium priority areas would have High access value and that roads within the Low priority areas would be surplus to vegetation management needs in the foreseeable future.

- **Oak Woodlands-** Stands that were once open and park-like are now dense with small trees. These areas also generally contain less than one-half to one-third as many large trees in the over-story than occurred before changes in land use occurred about 100 years ago. The current condition is primarily a result of fire exclusion and timber harvest, which created an under-story of small diameter trees, an accumulation of fine texture woody material, and the absence of large diameter oak, pine and fir. These stands were considered either High or Medium priority depending on the existing condition.

- **Mixed Conifer Forest-** The coniferous forests of the Columbia Gorge are mostly mid-seral in their successional development. Early and mid-seral forests occupy flat, mid-slope and ridge top sites at lower and mid-elevations. Timber harvest and stand replacing fires created these conditions. Currently fire exclusion is preventing the natural thinning historically created by creeping, low intensity fires. These stands were considered either Low or Medium priority depending on whether or not they were located in the Late-Successional Reserve (LSR). The mid-seral stands in the LSR are approaching or have reached the average age of 80 which makes vegetation management more challenging in an LSR. Other stands that were considered low priority were stands containing high percentages of Alder. Alder pockets create needed structural diversity within the forest and thus lower the need for restoration.

- **Northwest Forest Plan Late Successional Reserves Mixed Conifer Forest-** Late successional forest habitats tend to be located in canyon bottoms, and at upper elevations where fires were less frequent or lower in intensity. These stands are rare in the CRGNSA. Most of the Late Successional Reserve is at mid-seral stage. All stands within the Late-Successional Reserve were considered Low priority.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Aquatic Analysis for Roads Analysis

AQ (1): How and where does the road system modify the surface and subsurface hydrology of the area?
AQ (4): How and were do road-stream crossings influence local stream channels and water quality?
AQ (6): How and where is the road system "hydrologically connected" to the stream system? How do the connections affect water quality and quantity (such as, the delivery of sediments and chemicals, thermal increases, elevated peak flows)?
AQ (9): How does the road system alter physical channel dynamics, including isolation of floodplains; constraints on channel migration; and the movement of large wood, fine organic matter and sediment?
AQ (10): How and where does the road system restrict the migration and movement of aquatic organisms? What aquatic species are affected and to what extent?

Roads may influence peak flow through the road cut-slope interception of subsurface flow and routing it to surface waters using ditch lines as pseudo-channels (Jones, et al 1996 and Wemple, et al 1996). The road surface also collects rainfall due to surface compaction, and routes this water to adjacent channels. Road crossings of streams can interrupt the natural flow of wood, water and sediment due to constriction of the channel and associated floodplain. Crossings can also disrupt the flow of aquatic organisms such as fish, by creating a barrier to movement from high stream velocities or jump height.

The existing road system in the Scenic Area was analyzed to determine the influence the road system may have on the factors mentioned in the above paragraph. GIS analysis was used to identify sub-watersheds (6th field watersheds) that had a concern for road influence on hydrology. The number of road/stream crossings was normalized by the number of stream miles in each sub-watershed to determine sub-watersheds that had the highest number of road/stream crossings per mile of stream. This in turn gives an indication of the opportunity to route intercepted subsurface flow and road runoff to adjacent surface waters. It also identifies sub-watersheds that have high aquatic fragmentation that would interrupt the flow of biological and physical components that move up and down stream channels. Other information such as location of existing seeps, springs and other groundwater is not available for the entire analysis area at this time. The table below shows the sub-watersheds that had the highest number of stream crossings per mile of stream and are considered to be in the worst condition for this particular metric.

Sub-watershed Name	Sub-watershed Acres	Number of Crossings/Mile of Stream
THREEMILE CREEK	13164.8	3.5
MAIN MILL CREEK	12322.3	1.9
BEAVER CREEK	25430.6	1.7
ROWENA CREEK	32293.0	1.5
CARSON CREEK	22118.2	1.5
VIENTO CREEK	17954.0	1.2
LOWER HOOD RIVER	10599.4	1.2
LATOURELL CREEK	28572.7	1.2
HAMILTON CREEK	27671.8	1.2
CHENOWETH CREEK	18261.2	1.0
TANNER CREEK	29724.1	0.8

AQ (2): How and were does the road system generate surface erosion?

As discussed in the background section of the manual, surface erosion occurs on most wildland roads due to exposure of soil to precipitation. Road density can be used as a surrogate for surface erosion based on the concept that the more road mileage in an area, the higher the amount of erosion that may occur. Road density was calculated for sub-watersheds within the Scenic Area and those with the highest road density are displayed in the table below. These areas are considered to have the highest potential for generating surface erosion based on high road densities.

Sub-watershed Name	Sub-watershed Acres	Road Density (mi/mi^2)
ROWENA CREEK	32293.0	3.7
CARSON CREEK	22118.2	3.6
VIENTO CREEK	17954.0	3.4
MIDDLE COLUMBIA/THREEMILE CREEK	41407.3	3.1
LATOURELL CREEK	28572.7	3.0
LOWER WIND RIVER	17397.4	3.0
LOWER HOOD RIVER	10599.4	2.9
COLUMBIA RIVER/MURDOCK	17619.8	2.8
HAMILTON CREEK	27671.8	2.7
MAIN MILL CREEK	12322.3	2.6
GRAYS CREEK	40311.7	2.6

AQ (3): How and where does the road system affect mass wasting?

A good discussion of how roads can influence mass wasting is included in the background section of the manual. For the Scenic Area, roads were considered to be higher risk to affect mass wasting if they were on side slopes greater than 55%. In general, roads on these steeper slopes have a greater incidence of fillslope failure and resulting downslope land sliding. These road systems also cross steeper channels that in turn plug culverts with debris and cause mass failures as well. Road density for roads on slopes greater than 55% (expressed as miles of road on slopes greater than 55% per mi^2 of basin area) was calculated for each sub-watershed and the sub-watersheds that had the greatest potential for mass wasting are displayed in the table below.

Sub-watershed Name	Road Density >55% slope
VIENTO CREEK	0.14
TANNER CREEK	0.12
ROWENA CREEK	0.11
LOWER LITTLE WHITE SALMON RIVER	0.11
LATOURELL CREEK	0.09
COLUMBIA RIVER/MURDOCK	0.08
LOWER WHITE SALMON RIVER	0.07
GRAYS CREEK	0.06
LOWER WIND RIVER	0.05
MIDDLE COLUMBIA/THREEMILE CREEK	0.03
ROCK CREEK	0.03

AQ (11): How does the road system affect shading, litterfall, and riparian plant communities?

Constructing roads next to streams removes riparian vegetation to accommodate road right-of-way, improve visibility and increase safety. This vegetation removal can reduce stream shading and reduce large woody debris recruitment thus decreasing habitat quality for aquatic organisms. An analysis was completed that identifies sub-watersheds having the highest road mileage in riparian areas. GIS was used to calculate the number of road miles within 200 feet of a stream. The sub-watersheds having the most road mileage adjacent to streams are displayed in the table below.

Sub-watershed Name	Sub-watershed Acres	Miles of Road within 200 ft of Streams
GRAYS CREEK	40311.7	42.3
MIDDLE COLUMBIA/THREEMILE CREEK	41407.3	29.4
ROWENA CREEK	32293.0	27.3
LATOURELL CREEK	28572.7	26.4
HAMILTON CREEK	27671.8	25.1
CARSON CREEK	22118.2	24.7
VIENTO CREEK	17954.0	16.7
ROCK CREEK	27452.6	13.8
TANNER CREEK	29724.1	13.6
MAIN MILL CREEK	12322.3	12.7
MOUTH OF KLICKITAT RIVER	32026.4	9.8

EF (1): What ecological attributes, particularly those unique to the region, would be affected by roading of currently unroaded areas?

Firstly, in the Gorge there are few large areas that would be considered un-roaded. Most of the Gorge has been roaded for a variety of reasons ranging from logging to major transportation routes, to residential development. Nonetheless, the areas that remain un-roaded become increasingly important when considering the ecological integrity of the area in question.

The uniqueness of the Gorge lies in its function as a low elevation corridor from west to east through the Cascade Mountains, both for humans and for flora and other fauna. Furthermore, it also becomes an important linkage corridor between the Oregon and Washington Cascades. The geological history and geomorphology of the Gorge also has created an unusual assemblage of habitats, ranging from low elevation talus to basalt cliffs with waterfalls, from the wet west side forests to the dry steepe in the east rain shadow. This assemblage of habitats has created a particularly interesting ecology, which not only needs to be recognized, but its integrity and function protected to the maximum extent possible.

The ecological function of the landscape lies in its ability to provide homes to its inhabitants. While roads are critical to humans in that they provide access from their homes to their work or food supplies, these same roads impede travel of other flora and fauna. Some small mollusks, for example, are not able to cross a road and, thereby, the road has disrupted the ecological function for that species. For most fauna crossing a road is a very hazardous and dangerous proposition and in that sense disrupts their normal behavior and use of their home. As a result the ecological function and integrity become compromised to varying degrees depending on the size and use of the road and the species in question. Most of the roads in the Gorge are state and county roads which are paved and receive relatively high usage; these are particularly disruptive to most fauna. The other roads impede fauna to a lesser degree but can be equally disruptive for some species.

The remaining unroaded areas, such as the Mt Hood National Forest area within the Gorge and Major Creek as two examples, become increasingly important in preserving the ecological function and integrity of the Gorge by preserving them in an unroaded condition. Low usage forest roads, although not recommended, or temporary roads in these areas would have minimal impacts.

EF (2): To what degree do the presence, type, and location of roads increase the introduction and spread of exotic plant and animal species, insects, diseases, and parasites? What are the potential effects of such introductions to plant and animal species and ecosystem function in the area?

The introduction of exotics species is almost entirely human related (extremely few occur as a result of natural introductions). The majority of people travel by roads and, therefore, the likelihood of introductions increases with increased road numbers. Some introductions can be innocuous, seed attached to tires of vehicles or shoes, while others are a result of dumping yard waste or house pets, such as turtles, etc. Likewise, more people will travel paved roads and maintained roads and, therefore, the likelihood of introductions increases with the number of improved roads. In the Gorge there are more improved roads and more homes than in other National Forest areas creating a more likely environment for pest introductions. This is further increased by the existence of railroads on both sides of the river; railroads are notorious vectors for all kinds of exotic introductions.

The impacts from these exotic introductions have been and continue to be very damaging to the native flora and fauna. Usually the impacts are more severe due to degraded ecological function and integrity creating niches for the establishment of the exotic species. This is clearly the situation leading to the infestation of yellow star thistle in the east Gorge (past grazing had eliminated the native bunch grasses and large herbaceous species and created an unstable vegetative community with an unoccupied niche which was suitable for yellow star thistle). The second (the first being to stop introduction at their point of entry) best defense against exotics is to maintain a healthy and functional ecosystem.

Some exotics are not necessarily from another country or continent, but are a result of expanding ranges due to the effects of human settlement. This is the case for such species as the brown-headed cowbird (which is adapted to forest clearings and agricultural lands and whose range has increased with changing landuse patterns), or the California ground squirrel which likewise has followed human development. Since roads are the key beginnings to human activities, these same roads become the routes for these exotic species to follow. To maintain the function and integrity of the native ecosystem, road development must be carefully considered and minimal in all cases.

EF (3): To what degree do the presence, type, and location of roads contribute to the control of insects, diseases, and parasites?

Given that a pest has become established, the use of these roads do allow for easier control; but the degree of control will be compromised by the increased human access. The premise of pest management is prevention and this will be most effective by limiting the ease of human access for reasons explained above, and by protecting the ecological function and integrity of the landscape. The use of roads continues to be important for pest control and for management of the ecological function, but these roads must only be open to the general public if the ecological function and integrity is not compromised.

It is not sufficient to simply identify the existence of a pest, such as an insect infestation or a disease, but it is imperative to identify the cause of the infestation. For example, typically tree beetle infestations are a result of poor forest health and not a result of beetle populations; thus the solution is not related to the insects but to the ecological function and integrity of the forest.

Likewise, for most diseases; diseases usually become a problem when the hosts are predisposed by poor health and not by the mere existence of the causal organism.

On the other hand, exotic insects and diseases from other regions of the World can become introduced into a genetically predisposed population and create massive problems. Typically, these types of introductions are more related to trade laws and other means of interception than related to road densities and uses. But road access could become critical in efforts to confine and eradicate these types of introductions. A good example is the recent introduction from Europe of the causal organism for sudden oak death.

EF (4): How does the road system affect ecological disturbance regimes in the area?

The most important ecological disturbance for the Gorge is fire followed by landslides. Fires were probably predominantly set by Native Americans; lightning strikes tend to be few at lower elevations in this area. The vegetation communities found in the Gorge are predominantly fire dependent, especially in the eastern portions. Even in the western portions low intensity fires were probably not uncommonly set by Native Americans. Major fires were probably not common (occurring at 200-300 years intervals). In the eastern portions (oak/pine/grasslands) fire was more likely on a 1-10 year interval and quite likely more frequent than expected due to the high use by Native Americans. The eastern vegetation communities are fire dependent and without fire health problems are clearly evident.

The road system has promoted residential development creating the problematic urban/forest interface. As a result, all fires are rapidly extinguished with all means available and this rapid response is primarily due to the road system. The affect of roads have definitively decrease the numbers of fires through the ecosystem and this has helped to de-stabilize the ecological function and integrity of the area. As a result forest health has become an increasingly serious problem for the region and will continue until fire or a surrogate for fire is re-introduced. While the road system may prevent fires from getting established, they may help in implementing the likely need for a fire surrogate, such as long term thinnings.

EF (5): What are the adverse effects of noise caused by developing, using, and maintaining roads?

The effects of noise related to roads is relatively benign as compared to vehicles, developments, and the physical changes resulting from roads and their development. Noise does, however, disturb all fauna to varying degrees. Humans often complain and wildlife is commonly disturbed by noise. However, all faunal species, including humans, tend to adapt to noise and this becomes a less significant adverse affect of roads.

Terrestrial Wildlife (TW)

TW (1): What are the direct effects of the road system on terrestrial species habitat?

Roads cause a direct loss of native habitat as displaced by the road prism, as well as fragments adjacent habitat. For example, the Columbia River has high-speed freeways along both of its banks in its entirety within the Columbia River Gorge National Scenic Area (CRGNSA). This removes low-elevation hardwood and conifer riparian habitat, as well as disrupts the river's shoreline as a travel corridor for wildlife. The CRGNSA has a high road density as compared to other forests due to a high percentage of private and other non-federal in-holdings that require residential, recreational, and connection access. In addition, many powerline corridors exist to transport hydropower energy from the lower Columbia River dams within the Gorge to numerous distribution points throughout the Pacific Northwest. The table below depicts the road density within 12 habitat types within the CRGNSA. Lands designated as urban area (28, 526 acres) were not analyzed.

The contiguous area encompassed by the CRGNSA totals approximately 292, 800 acres. Roads mapped within the scenic area total over 1, 276 miles. From the GIS layer, total road density averages out to 2.79 miles per square mile overall. For clarification, this density does not include many miles of 4-wheel drive roads on non-federal land that are poorly logged within the GIS system. National Forest System roads total approximately 198 miles out of the 1276, or about 15% of the total roads in the CRGNSA.

		Roads Analysis (National Forest System roads and connectors only)		All Roads		Acres of habitat in road prism
	Acres	Miles of road	Miles per sq. mile	Miles of road	Miles per sq. mile	(Assumption of 12' prism)
whemlock_Dougfir_mesic_forest	85,865.4	131.0	0.98	214.0	1.59	311.2
wredcedar_whemlock_wet_forest	2,004.9	3.1	0.97	4.4	1.40	6.4
dougfir_oak_ponderosa_pine	8,506.3	14.7	1.11	28.2	2.12	41.0
ponderosa_pine_oak_woodland	7,448.5	6.7	0.57	30.1	2.58	43.7
oak_woodlands	15,039.0	22.5	0.96	52.0	2.21	75.6
hardwoods_oftenriparian	19,244.4	41.3	1.37	121.2	4.03	176.2
grassland_shrubland	8,168.3	6.9	0.54	31.6	2.47	45.9
rangelands	34,478.3	10.6	0.20	44.5	0.83	64.8
pastures_orchards_crop_lands	30,487.9	55.1	1.16	172.1	3.61	250.4
talus_cliffs	3,301.9	1.0	0.20	11.7	2.28	17.1
shifting_powerline_private_other	11,330.4	35.2	1.99	46.6	2.63	67.7
wetland_palustrine	3,788.0	0.9	0.15	1.9	0.33	2.8
All terrestrial habitat within the CRGNSA, excluding urban areas	**229,663.3**	328.9	**0.92**	758.2	**2.11**	1102.9

TW (2): How does the road system facilitate human activities that affect habitat?

Roads allow an expansion of human activities that affect wildlife habitat through removal or conversion of native wildlife habitat. This habitat is primarily converted to residential and commercial development, recreational facilities/areas, and agricultural plots (logging, farming, orchards). Riparian areas are often highly altered in urban and agricultural areas. Presently, 32% of the CRGNSA landbase (93,492 of the 292,818 acres) is in urban, cropland, orchard, pasture or rangelands habitat classification. With this conversion, some species of wildlife are favored while others are stressed or eliminated. Species richness usually declines rapidly with increases in human disturbance, conversion of native habitat to urban or agricultural areas, and decreasing distance from human habitation. Particular species are early seral specialists or human tolerant, and readily adapt to these habitats. Examples include robins, house finch, killdeer, crows, swallows, red-tailed hawk, skunks, raccoons, deer, and bear. Non-native species are often early seral specialists that are expanding their range due to an increase in this habitat change. Examples in this category include starlings, California quail, house sparrows, rock dove (pigeon), house mouse, Eastern fox and gray squirrels, and opossums.

TW (3): How does the road system affect the legal and illegal human activities (including trapping, hunting, poaching, harassment, road kill, or illegal kill levels)? What are the effects on wildlife species?

Roads increase the probability of human contact with wildlife, both directly through injury and mortality from road kill, as well as indirectly through disturbance and harassment. Open roads increase big game vulnerability to harvest by facilitating hunting access. Big game, such as deer and elk, are well documented to be sensitive to open roads and human presence. This disturbance is especially critical during the winter and early spring when animals can ill afford to expend energy to repeatedly avoid human presence on their winter range. A decline in elk use of areas can be attributed to increases in road density. Forest Plans within Oregon and Washington generally agree that road density in big game winter range shall not exceed 1.5 miles per square mile of designated habitat. At this density the percentage for deer and elk habitat use potential drops to around 60%, as compared to unroaded areas.

The CRGNSA currently has 147,519 acres of mapped deer and elk winter range (112,882 acres in Washington and 34,637 acres in Oregon). Animals with summer range in nearby areas concentrate in the CRGNSA due to the low elevation. This area becomes the bottleneck for local populations during severe winters that force animals into areas with the lowest snow depths. CRGNSA road density within Washington and Oregon states' designated deer/elk winter range is at 1.98 miles/mi^2 and 1.61 miles/mi^2, respectively. When only National forest roads and their connectors are evaluated, this density drops to 0.98 miles/mi^2 in both states. This is roughly the road density on the National Forest Service portion of lands within the CRGNSA. National Forest road density should be reduced on deer/elk winter range, where possible, to reduce the overall density of roads within the CRGNSA to around 1.5 miles/mi^2.

<u>High value rating for wildlife will be placed on National Forest System roads in deer/elk winter range.</u>

TW (4): How does the road system directly affect unique communities or special features in the area? (Special habitat features include talus slopes and other rock formations, cliffs, caves, and wetlands)

Unique communities in the CRGNSA include lowland talus and cliffs, wetlands, bottomland riparian hardwood forests, and oak (or mixed oak/conifer) woodlands. With the exception of wetlands, all the communities named above have road densities of over 2 miles/mi^2 (reference table in question TW1).

Significant features in the landscape include habitat that harbor federally Threatened or Endangered species. There are no endangered wildlife species in the CRGNSA, but there are 2 threatened species; the northern spotted owl and the bald eagle.
Spotted owl habitat is set aside through the Late Successional Reserve (LSR) system designated lands. The LSR lands within the CRGNSA overlap with the Mt. Hood and Gifford Pinchot National Forests in an effort to retain old-growth coniferous forest habitat, and associated wildlife species, in large contiguous patches. Roads fragment this habitat, thereby decreasing interior habitat. The CRGNSA contains 17,350 acres of LSR lands. The LSR boundaries go well beyond the scenic area to the north and south, and total around 236,611 acres in size. There are 69.3 of roads in or adjacent to CRGNSA LSRs.
There were 9 documented bald eagle nests in the CRGNSA during the 2002 breeding season. All nests were fairly close to the Columbia River, which supplies an abundant food source of fish. Eagles choose nest sites distant from human disturbance, so it is not a surprise that all the nests are at least ¼ mile from open roads, or are sight buffered from roads through steep topography and/or thick cover of large coniferous trees.

<u>High value rating for wildlife will be placed on roads through or immediately adjacent to talus/cliffs, wetlands, bottomland riparian hardwood forests, and oak (or mixed oak/conifer) woodlands.</u>

<u>High value rating for wildlife will be placed on roads that bisect the LSR or are within the interior habitat.</u>

Protection (PT)

PT (1): How does the road system affect fuels management?

Drought conditions, an increase in the number of homes being built in the wildland, and excessive fuel buildup have resulted in many catastrophic wildfires in the last decade and beyond. The National Fire Plan addresses the realization that land managers need to begin addressing the issue of fuels reduction. Historically, the CRGNSA has not treated fuel buildup either by prescribed burning or mechanical treatment. There are fuels reduction treatment projects being discussed at the CRGNSA in areas where wildland urban interface is a concern, and the risk to lives and property is at stake.

Roads play an important part in fuels treatment by providing fuel breads for prescribed burn areas and access for vehicles, equipment, personnel and mechanical equipment. Manual removal of fuel reduction debris would be largely dependent on road location, access and condition.

PT (2): How does the road system affect the capacity of the Forest Service and cooperators to suppress wildfires?

Roads significantly affect the efficiency, response time and cost of wildfire suppression. The further that a fire is from an accessible, usable road, the more time it takes for suppression resources and equipment to reach the fire. Thus, the fire gets larger, making it more costly to suppress and more dangerous for firefighters.

Roads differ in their value to suppression resources. For example, ridgetop roads are more useful for firebreaks and helicopter landing areas than a mid slope road would be. Road condition in respect to slope, width, height and fuel density are all factors in determining value of the road.

National Fire Management Analysis System (NFMAS) is the system used to determine funding for individual units. This analysis takes into account fire history, firefighter production rates, cost and net value change, with the output being the optimum fire organization for the unit. Funding appropriated for fire preparedness and presuppression is directly connected to the outputs of this analysis and is predicated on the access provided by the existing road system.

Public and commercial road access oftentimes lead to increased human caused ignitions, but this effect is highly variable in incidence from place to place. In the Columbia River Gorge, the majority of fire starts are human caused with most being along federal, state and county roads.

PT (3): How does the road system affect risk to firefighters and to public safety?

The greatest fire safety concern associated with road access is in the wildland urban interface. Some private access roads will not accommodate large emergency vehicles due to road width, trees, limbs, bridges and turnarounds. This significantly increases the danger to firefighters, their equipment, and the ability of the private party to exit the fire area safely and quickly.

In the CRGNSA, many roads accessing federal property run through private property. If these roads are not properly maintained, either by the federal government or the private party, access in an emergency situation could be severely hampered. If a road is determined to be a National Forest Systems road and also leads to a private residence, there should be a maintenance priority for that road. Consequences could be a financial impact for both parties.

PT (4): How does the road system contribute to airborne dust emissions resulting in reduced visibility and human health concerns?

During extended periods of low humidity's and lack of rainfall, non-paved road surfaces will create dusty conditions. This could be a potential health concern as well as reducing visibility.

During fire incidences that go beyond the initial attack phase, and if the road condition is suitable, it is common to use large water tenders to wet the road surfaces to alleviate this problem. This typically does not occur on a short duration fire.

Recreation Report

Roads and their relation to recreation use is evident in every part of the Columbia River Gorge National Scenic Area, from east to west. The Historic Columbia River Highway, is located in the western portion of the state of Oregon and the Historic Sam Hill Road slowly winds its way up from the Columbia River to the basalt plateau near Goldendale, Washington. Roads provide access and opportunity, both in their design and location.

The roads themselves provide educational and aesthetic experiences in their form, functional access, and opportunity for recreation in their use.

Recreation use in the Columbia River Gorge has long been tied to access. Recreation was included in the 1986 legislative language that created the congressionally designated area. Included in the first purpose of the Act is a directive to "protect and enhance the recreation resources" (Columbia River Gorge Commission and USDA FS, 1992). The Gorge Commission, which was formed as a part of the act, is further directed to prepare an assessment of the NSA for its current and potential recreation opportunities. To complete this task the Forest Service produced several reports on the current supply and future needs for recreation facilities and access. Information used to prepare this came from many sources and compilations. The goal was to identify areas of development or enhancement that would be compatible with protection of the other, scenic natural and cultural, resources that the Forest Service and Gorge Commission are charged in protecting.

The Recreation Development Plan is detailed in the Management Plan for the Columbia River Gorge National Scenic Area. This plan is all inclusive, detailing private, state, county, and federal recreation sites, opportunities, and compatibilities. The opportunity and compatibilities of which are tied to one of four recreation intensity classes (RIC). These recreation intensity class designations provide sideboards in what type of recreational activity can occur and where it is allowed. RIC 4 represents allowing the highest level of development, use and impacts; RIC 1 the least.

Much of this information will be used in the following roads analysis to determine the level and type of existing and future road access and development on or to National Forest system lands within the Columbia River Gorge National Scenic Area

Unroaded Recreation (UR)

1. Is there now or will there be in the future excess supply or excess demand for unroaded recreation opportunities?

The population of the metro Portland/Vancouver area and the small communities located within the Urban Areas of the Columbia River Gorge have increased annually. The 2000 census reported a, 2.9% and 2% respectively. This increase in people has also created a heighten demand existing unroaded recreation opportunities.

The draft 2003 Oregon Statewide Comprehensive Outdoor Recreation Plan (SCORP) emphasized the need for additional unroaded recreation opportunities near the Portland-Metro area. This report shows that as our population grows in size and age the benefits of fitness activities is causing increased demand for recreation/fitness activities that are close to home and available daily. Walking/running for exercise and walking for pleasure are the areas of greatest demand for metro residents.

Non-metro related demands also reflect the need for fitness and foot travel. The statewide relative needs priority index in the SCORP shows that hiking, non-motorized boat ramp use, and backpacking are three activities where demand exceeds current supply. Additionally, the report indicates the top activities demanded and the highest relative needs are located in areas surrounding the Portland-Metro area.

In 2001, researchers from Penn State University (Graefe, Burns and Robinson) surveyed recreation visitors to the Columbia River Gorge. This survey encompassed a statistically sound number of visitors and recreation sites within the Gorge region. It was administered year-round and 96% of the respondents were given a face-to-face interview. The respondents to the survey reported that 42% of there time was spent in undeveloped areas during their visit. Additionally, the survey included a detailed list of recreational activities of which respondents could categorize their use of the forest. Hiking was the most frequently reported recreational activity (57%).

It is concluded that demand for unroaded recreation opportunities will continue to exceed supply in the region.

2. Is developing new roads into unroaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quality, quantity, or type of unroaded recreation opportunities?

There has not been any new road construction accessing unroaded recreation on National Forests by the NSA.
Road decommissioning has had the most substantial change on the quality and type of unroaded recreation. Two areas of high Off-Highway Vehicle (OHV) and Four-Wheel Drive activity in the late 1990's included Multnomah Basin and Wyeth Bench both located in the Columbia River Gorge National Scenic Area.
These two areas were characterized by second growth forestlands with an extensive network of existing logging/skid roads. These roads created excellent surfaces for all-terrain vehicle use and motorcycle play. These roads too led to other non-forest unroaded trails and recreation settings. Conflict among users (hikers and OHV's), severe environmental damage, and in some cases illegal activities were associated with these areas and the use/users they attracted.
Several attempts in were made a gating/closing the areas. These failed due to the fact that the roads still existed beyond the gate. In 1993, efforts were made by the Forest to eliminate the OHV users, damage and illegal activities that followed them by decommissioning a number of the lateral roads. After extensive decommissioning efforts and enforcement, the action was eventually successful in eliminating the users or displacing the use off of National Forest.
The quality and type of unroaded recreation use of these two area has improved since that time and the actions used is seen as a tactic to solve problems Gorge wide. Additionally, these actions have improved the quantity of environment of these west-end areas and is being considered elsewhere.

Changing Maintenance levels has had some degree on improvement in the type and quality of unroaded recreation. Generally these road prisms are evolving into trails providing equestrian or single-track mountain biking trails. These groups seek tread, vehicle interaction and distance, which unmaintained roads could provide. The numbers of conversions however are minimal on the Forest and exact use numbers have not been collected.

3. What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining roads, on the quality, quantity, and type of unroaded recreation opportunities?

Visitors engage in certain recreation activities and/or are motivated to visit certain areas for differing reasons. Generally, people tend to participate in recreation activity by choice and in an expected environmental setting. Factors influencing this choice are many. The Recreation Opportunity Spectrum (ROS) is the best paradigm to understand the relationship of impacts to visitor motivations and resource setting (Hammit and Cole, 1987). It is believed the visitor selects an activity with an expected degree of biological, social and physical characteristics surrounding them based on experiences that these settings can provide.

Graefe, Burns and Robinson reported that over half of the visitors interviewed were participating in a unroaded recreation opportunity in the Columbia River Gorge, hiking by trail. The ROS setting most associated with this unroaded recreation opportunity is semi-primitive non-motorized. It was reported that these hikers travel in small groups or in pairs and have a high degree of satisfaction with the scenery and attractiveness of the forest landscape within the Gorge (Graefe, Burns, and Robinson, 2001). Adverse effects to the unroaded recreation experience caused by road construction, use, and maintenance can ultimately lead to dissatisfaction. As was the case in the Larch Mountain and Wyeth Bench areas noted previously. Connelly, etal found that visitor's feelings with regard to the quality of the natural environment around them rated highest in achieving over visitor satisfaction. This conclusion further correlates with the Gorge visitor's satisfaction results that Graefe etal reported in 2001.

Understanding the visitors overall level of satisfaction and managing for negative impacts to the visitors experience is the role of the recreation manager. Managers can alter certain elements under their control within the ROS setting. These factors can include: permits, signage, vegetation management and access by motorized vehicles. These actions are all intended to have a reduction of impacts to the type and quality of the recreation setting and visitors experience.

In summary, visitors to the Columbia River Gorge Area are best satisfied with fewer impacts to unroaded opportunities in semi-primitive non-motorized settings. Minimizing the effects of road noise, maintenance, and construction would further benefit the quality, quantity, type, and setting and visitors to the Gorge.

4. Who participates in unroaded recreation in the areas affected by constructing, maintaining, and decommissioning roads?

Participants in unroaded recreation are generally over the age of 16 (17-55), travel singularly or in pairs, are frequent repeat visitors and appear overall to be very satisfied with the area they visit in providing the activity, setting and condition of the activity (trail-use) (Graefe, Burns, and Robinson, 2001)

5. What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

In the 2001 survey results, data collected from four unroaded natural areas, Sandy River Delta, Dog Mountain, Wind River Hot Holes, and Catherine Creek was analyzed in use for this response. Visitors to these areas all agreed that it was very important for their visit to 1) be outdoors, 2) enable them to experience the natural surroundings, and 3) participate in physical exercise.
Of their experience to these areas visitors rated the importance of a number of items from scenery to feelings of safety. Importance in scenery, condition of the natural environment, and attractiveness of the forest landscape ranked highest to these visitors.
It is concluded that their attachment and feels are very strong to these areas

Each of the 4-unroaded opportunities provides a unique setting and is well dispersed geographically within the 80-mile long NSA boundary. Interstate 84 or State Highway 14 and county roads easily access each. All sites have varying levels of development, but not all include a restroom or developed parking area. These areas provide only non-motorized access, with a low level of managerial presence (i.e. regulation and signage). They service a number of different users groups with possibly competing interests (equestrian, hiker, mtn. biker, walker, hunter). Based on this information, there are no opportunities or alternative locations that provide these physical, managerial and social settings within a 20-mile radius of each.

Roaded Recreation (RR)

1. Is there now or will there be in the future excess supply or excess demand for roaded recreation opportunities?

The state of Oregon and Washington combined population increased in from 1990-2000 20.5%. This increase coupled with the urban sprawl of the Portland/Vancouver metro area into suburbs and rural areas of the western Gorge has meant that there are more cars on the roads, with people driving farther to shop, work, and play. Surprisingly Washington State's network of highways has expanded relatively little since 1960 (WaDNR, 1998)

In 1965 12.9 million visits were made to Washington's State Parks. In 1987 that number increase to 42.3 million visits and 50.9 million in 1997. This dramatic increase of nearly 300 percent occurred over a 28-year period (WaDNR, 1998). State parks and Washington State Department of Natural Resources, which provide many of the acreage totals for roaded recreation in Washington State, have however not been able to keep pace with user demands to these areas.
Since 2000, both Oregon, Washington State and municipal parks commission budgets have seen dramatic declines. This decline is effectively reducing services and development of recreation

opportunities throughout the two states. It is also recognized to create a lack of acquisition of additional lands for recreation development. The Oregon SCORP reported that 4 or more of the eleven regions in the state reported that demand exceeds current supply for a number of activities; biking on surfaced backcountry trails and 4-wheel driving designated 4x4 trails. Declining budgets and an ever increasing population has led to a situation of excess demand for many recreation opportunities, roaded recreation among the top.

These reductions in recreation development and demand are not reserved to the states. Since 1990 the number of roaded recreation developments and access to them on federal lands has decreased as well, mirroring the budgetary and demand dilemmas that the states are currently facing.

2. Is developing new roads into roaded areas, decommissioning of existing roads, or changing the maintenance of existing roads causing substantial changes in the quality, quantity, or type of roaded recreation opportunities?

Of the actions listed above, improvements to existing roads and decommissioning of roads has had the most substantial changes to the quality, quantity and type of roaded recreation opportunities in the Gorge region. Roaded recreation opportunities in the Columbia River Gorge occur in numerous ways. These include: off-highway vehicles, sightseers, and bikers.

Access to recreation sites and use of roads for sightseeing and biking is generally from existing state and county road systems. Without these systems, recreation opportunities on National Forest would be seriously affected. Maintenance of surface and safety improvements to a number of recreation sites within the Columbia River Gorge has also improved roaded recreation opportunities. Improvements to these routes have created a notable increase in visitor access and satisfaction to roaded and unroaded recreation (Graefe, Burns, Robinson, 2001).

Road decommissioning has had the most substantial change on the quality and type of roaded recreation. Examples of this action include two areas Multnomah Basin and Wyeth Bench, which were noted previously. This type of recreation is usually found in dispersed settings or on existing road surfaces. Many of these offerings are being eliminated do to resource damages and impacts to other users social experience.

Because of the unorganized nature and offerings in the Gorge region for this type of recreation opportunity, many motorized vehicles are tempted to travel off-road. Impacts to the natural resources associated with these areas have led to administrative closure and further exclusion by regulation.

Changing maintenance levels has had some degree of improvement to the type and quality of roaded recreation. The reduction of maintenance and exclusion of motorized vehicles are evolving roads into trails. These are providing equestrian or single-track mountain biking experiences in an increasing manner. These user groups seek hardened surfaces for good traction, no vehicle interaction and greater travel distances, all of which un-maintained roads provide.

3. What are the adverse effects of noise and other disturbances caused by developing, using, and maintaining roads, on the quality, quantity, and type of roaded recreation opportunities?

Adverse effects caused by road activity in roaded environments are generally thought to be acceptable. Consequently people who seek these types of recreation experiences are prepared to be impacted by these activities. They seem to regard the road conditions they encounter acceptable. Overall satisfaction with the experience of roaded recreation appeared at one of the highest levels in this recreation opportunity at the Historic Highway 30-Twin Tunnels segment.

Some Gorge visitors reported they were most affected by the level of disturbance associated with the condition of the roads and parking lots. People visiting Crown Point State Park and the Historic Columbia River Highway, in that area, ranked availability of parking as the most important factor affecting their experience at this site (Graefe, Burns, and Robinson, 2001)

4. Who participates in roaded recreation in the areas affected by constructing, maintaining, and decommissioning roads?

Roaded recreation participants in the Columbia River Gorge Region are generally people interested in1 of three activities. These are 1) driving for pleasure on asphalt-surfaced roads, 2) accessing trailheads or 3) seeking OHV opportunities that roads in the forest provide.

5. What are these participants' attachments to the area, how strong are their feelings, and are alternative opportunities and locations available?

The Gorge Region achieves the highest visitor use numbers in driving for pleasure, roaded recreation. These individuals have a high attachment to the scenery associated with areas visible from the road or at viewpoints. They generally access these sites by using asphalt surfaces and tend not to venture out of the Interstate Highway corridor.

The experiences that the unit has had with OHV users are centered around use of two areas. Their overall use of the Gorge roads however, appears to be increasing. Many of these users are singles or pairs and access the network of roads associated with the Bonneville Power Lines. They are not organized as a user group and tend to be displaced easily. Law enforcement activities have reduced their presence and impacts in certain areas of the Gorge.

Many people enjoy front country trail experiences in the Gorge. Organized hiking groups such as Mazamas, Friends of the Gorge, Washington Trails Association and the Ptarmigans hike Gorge Trails and naturally recovering jeep roads often. These groups are organized, tactical and are persistence users of many of these abandon roads. There are many opportunities for them at access these roads do to the network of Bonneville Power Administration electrical power lines and access roads they require. Their attachments are strong and some have passionate feelings with regard to access to areas of the forest these roads provide.

Bibliography

Columbia River Gorge Commission and USDA Forest Service. 1992. ***Management Plan for the Columbia River Gorge National Scenic Area***. Chapter 4.

Connelly, N.A., Brown, T.L. and Wilkins, B.T. 1985. ***Factors Critical for Camping Satisfaction. Proceedings-National Wilderness Research Conference: Current Research,*** General Technical Report INT-212. USDA Forest Service.

Graefe, A.R., Burns, R.C. and Robinson, K. ***Recreationist's in the Columbia River Gorge National Scenic Area: A Survey of Users Characteristics, Behaviors and Attitudes.*** The Pennsylvania State University. 79 pages

Hammitt, W. E. and Cole, D. N. 1987. ***Wildland Recreation: Ecology and Management***. Wiley and Sons Publishing, 341 pages.

Oregon Parks and Recreation Department. 2002, ***DRAFT 2003-2007 Oregon Statewide Comprehensive Outdoor Recreation Plan***. Unknown Pages

Washington State Department of Natural Resources. 1998. ***Our Changing Nature: Natural Resource Trends in Washington State***. 75 pages.

Washington State Interagency Commission for Outdoor Recreation, 2002, ***An Assessment of Outdoor Recreation in Washington State***. 116 pages.

STEP 5. DESCRIBING OPPORTUNITIES AND SETTING PRIORITIES

Introduction

Completion of this step by the IDT involved pulling together the issues and concerns, benefits, problems and risks identified in preceding steps. The objective was to compare the road system with what is desirable or acceptable. Because no comprehensive transportation plan had previously been completed for the CRGNSA, an initial National Forest classified road system of approximately 185 miles was considered. As a part of the evaluation process, the recommended National Forest classified road system was pared to approximately 140 miles. This was due in the largest part to not including other federal (DOE) roads in areas where Forest Service management activities were anticipated to be minor. For these situations, it was assumed that as another federal agency, minor administrative use by the Forest Service would be allowed. Included in both the initial and recommended road systems were approximately 2.5 miles of unclassified roads.

Methodology

A value/risk assessment was made for each road in the initial system, both classified and unclassified. The 'value' was the 'access' provided. The 'risks' were 'aquatic, wildlife and scenic' rated as 'high' or 'low' based upon the appropriate specialist's criteria from Step 4. Both values and risks considered the issues and concerns from Step 3.

The starting point in getting from the value/risks ratings to recommendations for opportunities and priorities was the Road Maintenance/Road Closure Initial Recommendation Matrix (Table 3). The matrix outcomes were modified when deemed necessary because of known road conditions or to respond to particular issues and concerns from Step 3. Also in this phase of the process, the opportunity was identified to not include a road as a NFSR.

Maps were completed to illustrate the results of the recommendations. One public concern that was addressed on the maps but couldn't readily be addressed elsewhere in this step was landowner's privacy. The legend includes a color code for roads that restrict public use where this concern was anticipated.

Results

The results of this step are contained in the Appendices hereinafter referenced. All of the documents referenced cover both classified and unclassified roads, except for the maps. The short lengths of the unclassified roads can't be seen at the map scale used. However, the roads analysis project file contains information on locating all unclassified roads.

Appendix B—Roads Analysis Recommendations.
Appendix D—Road Values/Road Risks Ratings.
Appendix E—Maps.

Table 3.

ROAD MAINTENANCE/ROAD CLOSURE INITIAL RECOMMENDATION MATRIX					
GENERAL NOTE: HIGH PRIORITY FOR IMPLEMENATATION OF MANAGEMENT PLANS					
WITH SIGNED DECISION NOTICES.					
			PRIORITY	PRIORITY	
VALUES	CODE	RATING	MAINT.	CLOSURE	REMARKS
Access	R		M or H	None	'H' MAINT. for Highway Safety Act roads or with
					'H' Aquatic.
					'M' MAINT. for Non-Highway Safety Act roads
					and 'L' Aquatic.
	F		Any	No DE	
	V		Any	No DE	
	PR		M or H	None	'H' MAINTENANCE with 'H' Aquatic.
					'M' MAINT. for Non-Highway Safety Act roads.
	PI, Other		Any	CA or CN	'H' MAINT. for water production facility access.
	Agency				
	L		L	Any	
RISKS					
Aquatic		H	H	H	High priority, Clean Water Act MOA's with DOE,
					DEQ; and fish programmatics.
		L	L	L	
Wildlife		H	L	H	
		L	Any	L	
Scenic		FG	Any	Any	
		MG	Any	Any	
KEY:					
R = Recreation Use					
F = Fire Protection					
V = Vegetation Management					
PR = Private Residential					
PI = Private Industrial					
L = Low					
M = Medium					
H = High					
FG = Foreground					
MG = Middleground					
DE = Decommission					
CA = Close Administratively					
CN = Close Naturally					

STEP 6. KEY RESULTS AND FINDINGS

Public Issues

Adjacent landowners privacy and levels of road use and road maintenance.

- The map legend has a color code for roads with private residential access which indicates that those roads are for private ownership associated and administrative traffic only and not for public access. *How these roads will be marked or signed on the ground (or if they will be signed or marked at all) remains as an issue.*
- Roads with private residential access were given no lower than a medium priority for road maintenance. Where these roads had high aquatic concerns, they were given a high priority for maintenance.

Provision for fire protection.

- With the exception of one local road 0.1 mile in length, no roads indicated as having a value for fire access were recommended for decommissioning.
- The majority of roads accessing larger land areas are recommended for managing as open to high clearance vehicles (maintenance level 2).

Adequate recreation road access.

- Of the almost 140 miles comprising the recommended road system:
  About 3 percent will be maintained open to the public for passenger cars.
  About 30 percent will be maintained open to the public for high clearance vehicles.
  About 10 percent are recommended for closing naturally (brushing in) and are currently open to the public for high clearance vehicles.
  About 20 percent of existing roads open to high clearance vehicles will have a reduction in maintenance level or more restrictive management, but only 1 percent of these roads are recommended for decommissioning (refer to Appendix C—Summary of Changes from Current Road Management).
- Roads having a value for recreation access were given at least a medium priority for road maintenance.

Use of closed roads as trails.

- No recommendations were made to restrict the use of closed roads as trails beyond any current management direction.

Management Issues

Resource protection.

- Risk to resources (aquatic, wildlife and scenic) were considered in the value/risk assessment for each road and in the prioritization of road maintenance and road closures or decommissioning.

Inadequate funding for road maintenance and related activities.

- Using the road maintenance priorities developed in this process, all high priority annual road maintenance, and most of the medium priority annual road maintenance could be performed within existing budget (see Table 4, Annual Maintenance Cost by Priority for the Recommended Classified Road System).
- There is no money within the existing road maintenance budget remaining after the annual maintenance described above for recommended road closures and decommissioning, the estimated cost for which is displayed in Table 5, Road Closure & Road Decommissioning Cost by Priority. One option to free up some funding for this work would be to not perform the medium priority road maintenance on level 2 and level 1 roads, but this would allow accomplishing only about 1 mile of this work per year.

No formal agreements in place for sharing road maintenance with access partners.

- Sharing annual road maintenance work where it could be shared (i.e., on many level 2 and level 3 roads) would free up additional funds for road closure and decommissioning, or to put toward deferred maintenance. *There are currently no formal agreements in place and so pursing these agreements remains an issue.*

Unauthorized road maintenance by private landowners or others.

- Unauthorized road maintenance has occurred on National Forest System Roads at times to the detriment of the resource. *Eliminating unauthorized road maintenance remains as an issue and is related to the issue above regarding formal agreements for sharing maintenance.*

Legal Issues

Jurisdiction is in question on many roads.

- Forest Service jurisdiction (via fee title, easement or agreement) appears to be in question on some currently designated National Forest System Roads where they cross other land ownerships. The jurisdictions indicated presently in INFRA need to be checked for accuracy and updated as necessary. *Verifying jurisdiction on National Forest System Roads remains an issue.*

The Forest Service and/or public are prevented from using some roads.

- Road 1852, et. al.; Road 3078015; and Road 3110320 are places where this is occurring. *Obtaining legal and appropriate access on these roads is an ongoing issue.*

Process for Future Road Acquisitions

The CRGNSA will still be acquiring properties beyond this formal process. Where existing roads are acquired, the following process is recommended:

- Lands should bring the basic information (approximate location, length, any known issues, etc.) to the monthly IDT meeting. Where more complex issues are anticipated, it is recommended that information be sent out prior to the IDT meeting.
- Current management direction should be checked for applicability to the road.
- The road should be briefly rated for values/risks.
- The decision should be the road management direction for the road with priority for maintenance or closure as appropriate.

Where issues remain to be resolved, the decision may need to carryover to the next IDT meeting.

Table 4.

ANNUAL MAINTENANCE COST BY PRIORITY FOR THE RECOMMENDED CLASSIFIED ROAD SYSTEM

($35,000-$40,000 estimated annual CRGNSA budget allocation for road maintenance.)

OBJECTIVE Maintenance Level		Avg.Cost $/Mi./Yr.	Priority	Miles	Cost by Priority H	M	L
4	#	2,632	H	4.6	12,107		
			M	0		0	
			L	0			0
3		987	H	4.7	4,639		
			M	12		11,844	
			L	0			0
2		171	H	35.4	6,053		
			M	21.9		3,745	
			L	13.2			2,257
1	##	86	H	22.2	1,909		
			M	11.3		972	
			L	5.4			464
totals				130.7	24,708	16,561	2,721

Includes existing miles plus capital improvements.
Miles/costs after all objective maintenance level 1 roads are to standard for closure.

Table 5.

ROAD CLOSURE & ROAD DECOMMISSIONING COST BY PRIORITY (CLASSIFIED & UNCLASSIFIED ROADS)

	OBJECTIVE Maintenance Level		Avg. Cost $/mile	Priority	Miles	Cost by Priority H	M	L
Classified	1	#	3,000	H	8.4	25,200		
				M	1.9		5,700	
				L	0			0
	D		10,000	H	6.1	61,000		
				M	0.5		5,000	
				L	0.8			8,000
Unclassified	D	##	10,000	H	0.4	4,000		
				M	1.45		14,500	
				L	0			0
Totals						90,200	25,200	8,000

28.6 miles closing naturally OR closure device already in place.
0.5 miles closing naturally.