

Salmon-Challis National Forest

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Roads Analysis Report

Forest-wide Roads Analysis

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Executive Summary:

The Forest Service Road Policy, effective January 2001, requires national forests to complete science-based roads analysis with local public and other agencies involvement. Roads analysis must be completed before road management decisions are implemented. Three levels of roads analysis are required; Forest-wide, watershed or area, and project level. The policy recommends a six-step process to identify the minimum road system necessary to meet access needs, identify road-related resource issues, and consider available funding. The six steps include: setting up the analysis; describing the situation; identifying issues; assessing benefits, problems, and risks; describing opportunities and setting priorities; and reporting.

This report documents the procedure used for the Forest-wide roads analysis on the Salmon-Challis National Forest. Ninety-six National Forest Service Roads (NFSR) totaling 1,066 miles were considered in this Forest-wide analysis. The report provides general information for the 61 watersheds on the Forest and sets the context for more in-depth analyses at the individual watershed or project level. It also identifies resource and safety risks associated with the main access roads and sets priorities for addressing these concerns.

Legal access, through right-of-way acquisition, is becoming more of an issue as private land changes ownership. Long-time landowners generally allowed unrestricted Forest access through their property. In many cases, when these properties sell, the new landowners are not willing to allow continued Forest access. Seventy-three right-of-way cases are identified for these main access roads.

Lemhi County performs cooperative road maintenance on 33 miles of forest service jurisdiction roads. In 1995, the Lost River Highway District, in Custer County, assumed jurisdiction and maintenance responsibility on 110 miles of main access roads on the Lost River Ranger District. At this time, neither Lemhi nor Custer counties are interested in assuming jurisdiction of additional forest service roads. However, opportunities may exist for additional cooperative maintenance efficiency, and they should be explored.

Twenty percent (210 miles) of the road miles analyzed present a high risk to aquatic resources, terrestrial wildlife, watershed condition, or user safety. Twenty-one percent (226 miles) present a moderately high risk, 22 percent (235 miles) a moderate risk, 23 percent (244 miles) a moderately low risk, and 14 percent (151 miles) a low risk to resources and user safety.

The report recommends reducing objective maintenance levels on 248 miles of the 1,066 miles of roads analyzed and the operational maintenance levels on 81 miles. It also recommends increasing the operational maintenance levels on 140 miles. Overall, the recommendations represent reductions in recurrent annual maintenance, deferred maintenance, and capital improvement needs of about \$30,000,000. It reduces the government's risks associated with roads classified as being suitable for passenger cars by managing them for high clearance vehicles (exempt from Highway Safety Act). Potential Public Forest Service Roads (PFSR) were also addressed in the analysis. Of the 701 miles previously proposed, 438 miles were determined to not meet the criteria for PFSR designation.

The recommendations of the Forest-Wide Roads Analysis are expected to be valid and useful to managers through the next planning period (10 to 15 years from date of implementation). Roads analysis is considered a "living" or dynamic document and can be updated and corrected as needed. The results from this analysis will be used during the Forest Land and Resource Management Plan (FLRMP) revision process.

Introduction:

Roads analysis is conducted at three scales. This Forest-wide roads analysis addresses the main access roads, and in general, the classified (system) roads throughout the Forest. Watershed and project level roads analysis evaluates all classified and unclassified (nonsystem) roads within the watershed or project area and makes recommendations for their management. Forest-wide roads analysis must be completed within two years of the National Forest Road Policy effective date. Watershed and project scale analyses are ongoing as these assessments are conducted.

The objective of roads analysis is to provide decision-makers with critical information for developing and maintaining a road system that is safe and responsive to public needs and desires, is affordable and efficient to manage, has minimal adverse ecological effects, and is in balance with available funding for needed management actions. This report is not a decision-making document. It is used to inform decisions through the National Environmental Policy Act (NEPA) process.

Methods:

Forest Service Manual direction and Miscellaneous Publication FS-643, *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System* were used to guide the analysis.

The process used to identify the main access roads began by considering maintenance level 3 through 5 roads (suitable for sedans), the Arterial-Collector road system, roads proposed as Potential Public Forest Service Roads (PFSR), and important maintenance level 2 roads (high clearance vehicle). The interdisciplinary team (ID Team) and Forest Supervisor agreed on which roads to include in the analysis. Rangers provided feedback and some roads were removed and others added.

Resource specialists' evaluations were conducted at the 5th field hydrologic unit (HUC), or watershed level. Risk ratings were assigned for their resource for the road segments within the watershed. These ratings, along with safety concerns, were used to develop a composite priority rating for addressing the concerns.

The product of the analysis is a report for decision-makers and the public that documents the information and analyses used to identify opportunities, risks, and establish priorities for national forest system roads. Included in this report is a map showing the known road system for the Forest, and tabular data showing the risks and opportunities for each road or road segment. Additional information, maps, and tables necessary to display priorities, methodology, and changes to the road system are also included in the appendices.

Conclusions:

This roads analysis recommends changes in maintenance levels, functional class, and PFSR designation. It identifies roads with known safety concerns and risks to resources caused by the road system. Each watershed on the Forest was analyzed for road-related risks to aquatic resources, terrestrial wildlife, and watershed condition that can focus project or area planning efforts and field data collection. The risk assessment provides useful information for future watershed and project analyses.

Applying these recommendations can provide more efficient and effective road maintenance, reduce road-related environmental effects, mitigate safety concerns, and provide appropriate access for national forest use and administration. Recommendations are shown in Table 1, Road Management Recommendations, Value/Risk Analysis.

Implementation of these recommendations requires several steps: Ranger approval of revised Road Management Objectives; update INFRA database; inform and direct road maintenance crews; and appropriately sign and map changes.

Analysis Results and Recommendations:

The results of this analysis are displayed in Table 1, Road Management Recommendations, Value/Risk Analysis. This section defines terms and explains the entries and rationale used to make these recommendations.

Functional Classes: The way a road services land and resource management needs, and the character of the service it provides.

A - Arterial road provides service to large land areas and usually connects with other arterials or public highways.

C - Collector road provides service to smaller land areas than an arterial road, usually connects arterial roads to local roads or terminal facilities.

L - Local road connects terminal facilities with forest collector or arterial roads or public highways, usually single purpose transportation facilities.

Maintenance Level:

Objective Maint. Level - The maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns.

Operational Maint. Level - The maintenance level currently assigned to the road considering today's needs, road condition, budget constraints, and environmental concerns.

Recommended Maint. Level - If approved, would become the Objective Maintenance Level.

Maintenance Level Descriptions:

1. Basic custodial care (closed)
2. High clearance vehicles
3. Suitable for passenger cars
4. Moderate degree of user comfort
5. High degree of user comfort

Potential Public Forest Service Roads:

If column is blank, it was never proposed as a Public Forest Service Road. Columns with an "N" were previously proposed but were removed during this analysis. The ID Team determined that they did not meet the criteria for Public Road designation.

Ranger Districts:

1. Salmon-Cobalt Ranger District
2. Challis Ranger District
3. Yankee Fork Ranger District
4. Lost River Ranger District
6. Middle Fork Ranger District
7. North Fork Ranger District
8. Leadore Ranger District

Access for:

Administration - Road provides access to administrative site, campground, and/or significant trailhead. The remaining roads provide access for resource management, administering permits, and to general forest areas for management activities.

Commercial/Recreation/Private access - All of the roads listed are important for these uses to some degree. A primary purpose when developing this system of roads was to allow for commercial activities and use of the resources, such as timber, grazing, and minerals activities. Outfitter/Guide special uses occur

throughout the Forest, and they use this system for access. Many of these uses are throughout the Forest, so they are not limited to any specific roads or restricted from using roads needed to operate their businesses. These roads also provide access to private inholdings, for which the Forest Service cannot deny reasonable access.

The road system was developed for resource access and management, and it remains appropriate for these uses. In cases where the current road standards do not meet the access needed for specific activities, after appropriate environmental analysis, the road may be improved to the necessary standard. The specific project or activity is responsible for any environmental analysis and road improvements.

Rating scale for resource risks and safety:

- L - Low Risk
- ML - Moderately Low Risk
- M - Moderate Risk
- MH - Moderately High Risk
- H - High Risk

Risk is defined as the potential for adverse environmental effects. High Risk rating indicates the greatest potential for negative effects.

Score:

Score is the numerical sum for the resource and safety risk values for a road or road segment. Higher number means higher priority for investment of time and funds to mitigate the risk and accommodate uses. Resource risks are related to the watershed risks and the road. Appendix B contains the Risk Rating Tables for Aquatic Ecosystems, Terrestrial Wildlife, and Watershed Resources. This information is valuable for performing roads analysis at the watershed and project scales. It addresses overall resource concerns related to the road system within the watershed.

Rating scale: L=0; ML=1; M=2; MH=3; H=4; Safety - Not known to be an issue (column is blank)=0; Safety concerns (column contains "Y")=4. Safety concerns can be related to the road itself, or by the way people drive the road.

Priority:

Priority for addressing resource and safety concerns is based on the Score (numerical sum) for the resources and safety.

Composite Priority Ratings based on Score: L=2-5; ML=6-7; M=8-9; MH=10-11; H=12-16.

- L - Low Priority to address resource risks and safety
- ML - Moderately Low Priority
- M - Moderate Priority
- MH - Moderately High Priority
- H - High Priority

Work items for the specific roads are readily available to managers and are documented in the INFRA database. The Work Items Report is not reproduced for this document; it is updated as needed in INFRA.

Table 1, Road Management Recommendations, Value/Risk Analysis

Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District	Access for			Resource Risks/Safety				Score	Priority
											Administration	Commercial	Recreation/Private	Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety		
40004	Indian Springs	10.50	L		2	2	2			6	x	x	x	L	L	M		2	L
40007	Loon Creek	4.35	C		3	3	3			6	x	x	x	M	L	M		4	L
40008	Beaver Creek	5.58	C		4	3	3	N		3	x	x	x	M	M	MH		7	ML
40008	Beaver Creek	7.83	C		4	3	2	N		6	x	x	x	M	ML	M		5	L
40008	Beaver Creek	6.10	C		3	2	2	N		6	x	x	x	M	L	M		4	L
40008	Beaver Creek	1.00	L		3	1	2	N		6	x	x	x	M	L	M		4	L
40013	Yankee Fork	3.10	A		5	4	5	Y		3	x	x	x	H	L	H		8	M
40013	Yankee Fork	5.45	A		5	3	5	Y		3	x	x	x	H	L	H		8	M
40027	Asher Creek-Knapp Creek	4.02	L		3	3	2			3		x	x	M	M	MH		7	ML
40032	Basin Butte-Red Mountain	3.50	L		3	2	2			3	x	x	x	M	M	M		6	ML
40034	Basin Creek	6.30	C		3	2	2			3		x	x	H	M	MH		9	M
40040	Thompson Creek	8.50	C		3	2	2	N	1	3		x	x	H	M	MH		9	M
40041	Squaw Creek	5.18	C		3	3	2	N	1	3		x	x	H	M	MH		9	M
40051	Bayhorse	4.08	C		4	3	3	N	3	3	x	x	x	H	M	M	Y	12	H
40055	Morgan-Panther Creek	10.51	A		5	4	3	Y	3	2	x	x	x	H	M	H	Y	14	H
40057	West Fork Morgan Creek	5.26	C		3	3	3	N		2	x	x	x	H	M	H		10	MH
40069	Buster Lake	6.50	L		3	2	2	N		2		x	x	H	M	H	Y	14	H
40070	Custer Motorway	17.60	C		4	2	3	N		3	x	x	x	H	L	H	Y	12	H
40070	Custer Motorway	12.32	C		4	3	3	N		2	x	x	x	H	M	H		10	MH

Table 1		Access for											Resource Risks/Safety				Score	Priority	
Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District	Administration	Commercial	Recreation/Private	Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety	Score	Priority
40080	Challis Creek	9.90	C		4	3	3		2		x	x	x	H	M	H		10	MH
40083	Lola Creek	2.41	L		4	3	3		3		x	x	x	H	M	MH		9	M
40086	Sleeping Deer	7.42	C		3	2	2	N	2		x	x	x	L	M	H		6	ML
40086	Sleeping Deer	23.60	C		3	2	2	N	6		x	x	x	L	L	M	Y	6	ML
40094	Morse Creek	6.48	L		3	2	2	N	2			x	x	M	ML	M		5	L
40097	North Fork Big Creek	3.50	L		3	2	2	N	2		x	x	x	L	L	M		2	L
40101	Sawmill Canyon	6.73	C		3	3	3	N	1	4	x	x	x	H	M	MH		9	M
40101	Sawmill Canyon	2.19	C		3	2	2		4			x	x	M	M	MH		7	ML
40102	Squaw Creek	2.30	L		3	2	2		2	4		x	x	M	M	M		6	ML
40105	Timber Creek	1.02	C		3	2	2	N	4			x	x	M	M	M		6	ML
40105	Timber Creek	1.09	L		3	2	2	N	4			x	x	M	M	M		6	ML
40110	Spud Basin-Grouse Peak	13.40	L		2	2	2		2			x	x	L	ML	M		3	L
40111	Leaton Gulch-Lawson Creek	16.60	C		3	2	2		2		x	x	x	L	M	MH		5	L
40112	Lime Creek-Grouse Creek	8.10	C		2	2	2		1	2		x	x	M	L	M		4	L
40125	Arco Pass	9.34	L		2	2	2	N	1	4		x	x	L	ML	M		3	L
40135	Copper Basin	17.64	C		3	2	3	Y	1	4	x	x	x	H	M	M	Y	12	H
40144	Alder Creek	11.99	L		3	2	2	N	1	4		x	x	M	L	H		6	ML
40172	Beaver-Loon	26.48	A	C	3	2	2	N	3	3	x	x	x	H	ML	M	Y	11	MH
40172	Beaver-Loon	20.86	A		4	3	3	N	6		x	x	x	H	L	MH		7	ML
40198	Cape Horn Creek	3.04	L	A	5	4	3	Y	3		x	x	x	H	M	MH	Y	13	H
40203	Marsh Creek	7.86	L	C	3	3	3	N	1	3		x	x	M	M	MH		7	ML

Table 1		Access for											Resource Risks/Safety						
Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District	Administration	Commercial	Recreation/Private	Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety	Score	Priority
40218	Lead Belt Creek	7.46	C		3	2	2	N		4		x	x	H	M	H		10	MH
40220	Left Fork Iron Bog	4.00	L		3	2	2	N		4	x	x	x	M	M	H		8	M
40279	Birch Springs (Borah TH)	3.70	L		3	2	3			4	x	x	x	L	L	M		2	L
40521	Cherry Creek	1.44	L		3	2	2	N	1	4		x	x	M	M	H		8	M
40521	Cherry Creek	2.40	L		2	2	2			4		x	x	L	M	H		6	ML
40523	Quigley Bear Loop	5.50	C		2	2	2			4		x	x	L	M	MH		5	L
40530	Kinnikinic	3.40	L		3	2	2		2	3		x	x	H	M	M		8	M
40551	Boundary Creek	11.05	L		4	3	3	Y		6	x	x	x	H	L	M	Y	10	MH
40687	King Canyon (hang glider)	1.00	L		2	2	2			4	x	x	x	L	M	M		4	L
46568	Dagger Creek	5.72	L		4	3	3	Y		6	x	x	x	H	L	M	Y	10	MH
46579	Fir Creek	6.43	A		4	3	3	Y		6	x	x	x	H	L	M	Y	10	MH
60002	Meadow Lake	4.92	L		4	3	3	N	2	8	x	x	x	L	M	M	Y	8	M
60005	Sage-Hull Creek	9.64	C		3	3	3	N	2	7		x	x	L	H	H		8	M
60005	Sage-Hull Creek	8.06	C	L	3	2	2	N		7		x	x	L	H	H		8	M
60008	Hayden Creek	4.25	C		3	3	3	N		8	x	x	x	M	M	M		6	ML
60009	Bear Valley Creek	4.80	L		3	3	3	N		8	x	x	x	H	M	M		8	M
60010	Hayden-Mill Creek	13.38	C		3	3	3	N		8		x	x	M	M	M		6	ML
60010	Hayden-Mill Creek	3.11	C		3	2	3	N		8		x	x	M	M	M		6	ML
60012	Grizzly	5.29	C		3	3	3			8		x	x	L	M	MH		5	L
60012	Grizzly	2.91	C	L	2	2	2			8		x	x	L	M	M		4	L
60013	Lemhi Pass	3.79	C		3	2	3	Y	1	8	x	x	x	H	H	MH	Y	15	H

Table 1												Access for			Resource Risks/Safety							
Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District		Administration	Commercial	Recreation/Private		Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety		Score	Priority
60014	Twelve Mile	9.02	C		3	3	2			1		x	x		H	H	M				10	MH
60018	McKim Creek	8.40	C	L	2	2	2		2	1		x	x		M	H	MH				9	M
60020	Ridge	2.53	A	L	2	2	2		1	1	x	x	x		L	H	H				8	M
60020	Ridge	1.92	A	C	3	3	2			1		x	x		L	H	H				8	M
60020	Ridge	18.94	A	C	3	3	3	N		1		x	x		L	H	MH				7	ML
60020	Ridge	18.95	A	C	3	3	3			1	x	x	x		L	H	MH				7	ML
60021	Williams Creek	8.73	A		4	4	4	Y		1	x	x	x		H	H	H	Y			16	H
60021	Williams Creek	2.84	A		3	3	3	Y		1	x	x	x		H	H	H				12	H
60023	Stormy Peak	17.40	A		3	3	3	N	3	1	x	x	x		L	H	H	Y			12	H
60023	Stormy Peak	10.84	C		2	2	2			1		x	x		L	H	H				8	M
60028	Lake Creek	2.33	C		4	4	4	N		1	x	x	x		L	H	M	Y			10	MH
60028	Lake Creek	2.68	C		3	3	3	N		1	x	x	x		L	H	M				6	ML
60028	Lake Creek	16.67	C		2	2	2		2	1		x	x		L	H	MH				7	ML
60030	Salmon River	16.81	A		5	4	5	Y		7	x	x	x		L	H	H	Y			12	H
60030	Salmon River	9.78	A		4	3	4	Y		7	x	x	x		M	H	H	Y			14	H
60030	Salmon River	7.42	A	C	4	3	3	Y	4	7	x	x	x		M	H	MH	Y			13	H
60030	Salmon River	11.92	L		4	3	3	Y		7	x	x	x		M	MH	M	Y			11	MH
60032	Pine Creek	6.94	C		3	3	2			7		x	x		H	H	H				12	H
60032	Pine creek	5.26	C		2	2	2			7		x	x		M	H	H				10	MH
60038	Spring Creek	16.11	C		3	3	3	Y	1	7	x	x	x		M	H	H				10	MH
60044	State Line	7.10	C		3	3	3	Y		7	x	x	x		L	L	M				2	L

Table 1													Access for			Resource Risks/Safety						
Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District		Administration	Commercial	Recreation/Private		Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety		Score	Priority
60044	State Line	8.61	C	L	3	2	3	N		7		x	x	x		L	L	M			2	L
60045	Iron Creek	3.76	C		3	3	2		2	1			x	x		H	H	M			10	MH
60045	Iron Creek	21.68	C		2	2	2			1			x	x		H	H	MH			11	MH
60055	Morgan-Panther Creek	44.40	A		3	3	3	Y	6	1		x	x	x		H	H	MH	Y		15	H
60061	Moose Creek	4.00	C		3	3	2			1			x	x		L	H	H			8	M
60061	Moose Creek	10.30	C	L	2	2	2			1			x	x		L	H	H			8	M
60065	Horse Creek	3.70	L		3	3	3	N		7		x	x	x		L	L	M			2	L
60071	Fourth of July	10.00	C	L	3	2	2	N		7		x	x	x		L	H	M			6	ML
60076	Moccasin-Napias	6.12	L		2	2	2			1			x	x		H	H	H	Y		16	H
60078	Lick Creek	14.60	L		3	2	2	N		7			x	x		L	H	H			8	M
60079	Dahlonga Creek	8.61	C		3	3	3	Y	1	7			x	x		H	H	H	Y		16	H
60083	Peel Tree-Hat Creek	7.10	C		3	3	2			1		x	x	x		M	H	MH			9	M
60083	Peel Tree-Hat Creek	19.00	C		2	2	2			1			x	x		L	M	H	Y		10	MH
60088	West Fork Hughes Creek	7.83	C		3	3	3	N		7			x	x		L	H	H			8	M
60089	Ditch Creek	3.81	L		3	3	3	N		7			x	x		L	H	H			8	M
60091	Hughes Creek	3.96	C		3	3	3	N	1	7			x	x		M	H	H			10	MH
60092	Granite Mountain	4.90	L		3	2	3	N		7		x	x	x		L	H	H			8	M
60096	Big Eight Mile	5.80	L		3	3	3	N	2	8		x	x	x		H	M	M			8	M
60098	Phelan Creek	5.54	C		3	4	3		1	1			x	x		H	H	H			12	H
60099	Copper Creek	11.99	L		2	2	2			1			x	x		M	H	MH			9	M
60101	Deep Creek	11.25	A		3	3	3	Y	1	1		x	x	x		M	H	MH			9	M

Table 1												Access for			Resource Risks/Safety					
Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District	Administration	Commercial	Recreation/Private	Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety	Score	Priority	
60105	Timber Creek	8.09	L		3	2	3	N	2	8	x	x	x	L	M	M		4	L	
60108	Silver Creek	14.05	C		3	3	3	N	1	1	x	x	x	H	L	M		6	ML	
60112	Yellowjacket	7.11	C		3	3	3	N		1	x	x	x	H	H	H	Y	16	H	
60112	Yellowjacket	8.19	L		3	3	3	N	3	1	x	x	x	H	M	M		8	M	
60112	Yellowjacket	15.40	L		2	2	2			1	x	x	x	H	M	M		8	M	
60113	Crags	10.98	L		3	2	3	N		1	x	x	x	L	M	M		4	L	
60114	Hoodoo Meadows	6.54	L		3	3	3			1	x	x	x	L	M	M		4	L	
60115	Blackbird	2.17	C		3	3	2		1	1		x	x	H	H	M		10	MH	
60116	Musgrove Ridge	4.21	C		2	2	2			1		x	x	M	H	M		8	M	
60123	Colson Creek-State Line	11.45	C		3	3	3	Y	1	7	x	x	x	L	H	MH		7	ML	
60123	Colson Creek-State Line	16.84	C		3	2	3	Y		7		x	x	M	H	MH		9	M	
60129	Diamond Creek	3.90	L	C	3	3	2		1	1		x	x	L	H	M		6	ML	
60129	Diamond Creek	12.62	L	C	2	2	2			1		x	x	L	H	M		6	ML	
60130	Cruikshank	4.13	L		3	2	2			8		x	x	H	M	MH		9	M	
60150	McDevitt Creek	8.10	C		2	2	2			1		x	x	H	H	MH		11	MH	
60156	Twin Creek	0.80	L		3	3	3			7	x	x	x	M	H	H		10	MH	
60167	Blackbird Ridge	15.22	L		2	2	2			1		x	x	L	H	MH		7	ML	
60172	Middle Fork Timber Creek	1.60	L		3	2	3	N		8	x	x	x	M	M	M		6	ML	
60185	Warm Springs	22.69	C		3	3	3	Y	2	8		x	x	L	H	MH	Y	11	MH	
60242	Leesburg	5.09	C		3	4	3	N	6	1		x	x	H	H	H		12	H	
60275	Hawley Creek	2.86	L		3	3	3		2	8	x	x	x	H	M	MH		9	M	

Table 1											Access for			Resource Risks/Safety						
Road Number	Road Name	Segment Length (Miles)	Functional Class	Recommended Func. Cl.	Objective Mtc. Level	Operational Mtc. Lv.	Recommend Mtc. Lv.	Potential Public FS Road	Right-of-Way Cases	Ranger District		Administration	Commercial	Recreation/Private	Aquatic Ecosystem	Terrestrial Wildlife	Watershed Resource	Safety	Score	Priority
60300	Jureano Mountain	9.78	C		3	3	3	N		1		x	x		M	H	H		10	MH
60300	Jureano Mountain	3.21	C		3	3	3			1		x	x		M	H	H		10	MH
60300	Jureano Mountain	2.01	C	L	2	2	2			1		x	x		M	H	H		10	MH
60301	Trapper Ridge	4.36	C		3	3	2			1		x	x		L	H	H		8	M
60350	Haynes Creek	2.19	L		3	3	3			1		x	x		M	M	M		6	ML
60391	Wallace Lake	1.02	L		3	2	3	N		1	x	x	x		L	H	M		6	ML

Road Management Recommendation Matrix

Applicable for Roads Analysis at all scales, use for Forest-wide scale	Applicable for Roads Analysis at the watershed and project scales
<p>High Value/High Risk*</p> <p>Roads are part of the Forest’s main transportation system. Recommend maintenance at objective level.</p> <p>High value and risk indicates highest priority for investment of time and money to mitigate risk and accommodate uses. Mitigation depends on specific risks and includes, but is not limited to, additional maintenance effort, reconstruction and/or relocation.</p> <p>Closure or seasonal restriction as a mitigation is not likely on a main access road.</p>	<p>Low Value/High Risk</p> <p>Access for enjoyment or use of the Forest resources is not needed on these roads.</p> <p>High risk indicates high priority for investment of time and money. Mitigation depends on specific risks and may include additional maintenance effort, reconstruction, relocation, closure, or decommissioning. Additional analysis may be needed to determine most effective mitigations and to determine level and type of use. Options include reducing maintenance level to reduce cost, administratively closing, or decommissioning.</p>
<p>High Value/Low Risk*</p> <p>Roads are part of the Forest’s main transportation system. Recommend maintenance at objective level. Recommend continued FS and/or cooperative maintenance.</p> <p>Low risk indicates low to moderate priority for investment of time or money to mitigate risk. Mitigation depends on specific risks as listed above.</p>	<p>Low Value/Low Risk</p> <p>Access for enjoyment or use of the Forest resources is not needed on these roads.</p> <p>Additional information may be needed to determine level and type of use. Recommend reducing maintenance costs, where appropriate, by reducing maintenance level, administratively closing, or decommissioning.</p>

*The ID Team decided that to better help management in making decisions, it would include “Moderate” risks in its ratings. This indicates there are some risks but helps separate the truly “High” and “Low” risk roads from those with some risk to resource values. This should allow Forest managers to make well-informed road management decisions and prioritize limited funding.

The resource specialists’ reports, beginning on page 19, identify the factors considered in determining risk ratings. The individual resource risk ratings and composite risk rating are shown for each road. This information is useful to managers making road management decisions. Appendix B contains the resource rating tables used to determine the composite ratings for each road.

Notes:

1. Risks are evaluated for aquatic ecosystems, terrestrial wildlife, watershed resources, and user safety. A scale of High, Moderate, and Low are used in rating resource risks.
2. If the Operational Maintenance Level is incorrect, or the Objective Maintenance Level should be changed, update the INFRA database. Road Management Objectives may need to be modified and approved by Rangers.
3. Access needs to be maintained for these high value roads. Recommend maintenance level for type and volume of traffic experienced or expected. Activities associated with a change include inventory updating or correcting, and modifying signing and mapping to reflect maintenance level, (e.g., vertical route markers installed on maintenance level 2 roads).
4. Risk values developed for this analysis are based on the 61 watersheds within the Forest.

Existing Road System and Forest Plan Direction:

The Salmon-Challis National Forest currently has 3,927 miles of classified roads on its system. It is estimated that an additional 5,000 to 6,000 miles of unclassified, nonsystem roads exist throughout the Forest. These evolved by various means over time. Some are old “jammer” logging roads that were never included in the system, some were constructed for other activities on the Forest, such as “temporary” mining access roads; and others were created by people driving off established roads. Inventory work is currently being conducted to identify all roads within the Forest boundaries and will take at least two more years to complete. Priority watershed and project areas are inventoried first. Table 1, beginning on page 7, displays the status of the main road system and recommendations for change.

Easement and rights-of-way cases are coordinated through the Zone Realty Specialist. Priorities are set by the Forest Supervisors within the zone, and the highest priorities go to the cases where road improvement projects are planned. In addition to the work plan priorities, the Zone Realty Specialist does the “easy” cases as time allows. Seventy-three cases have been identified for the main access roads, and they are shown in Table 1.

Very little cooperative road maintenance is performed on Forest Service jurisdiction roads by the local counties. Only Lemhi County currently has a cooperative maintenance agreement with the Forest. They maintain 33 miles of Forest roads and plow snow on an additional 59 miles of roads. Custer County used to cooperate on road maintenance before the Forests were consolidated but no longer does. The Lost River Highway District, in Custer County, assumed jurisdiction of 110 miles of Forest roads in 1995.

The Salmon-Challis National Forest operates under the *Salmon Land and Resource Management Plan* and the *Challis Land Resource Management Plan* (FLRMP). This will continue until Forest Plan revision is completed, which is scheduled to begin in 2005. The Plans were written during a period when timber management was emphasized, both prescribed significant amounts of roadwork related to accessing timber stands, and budgets were not a major consideration for accomplishing these road improvement projects. Management emphasis and priorities changed, and most of the road improvement and development projects identified in the FLRMPs never occurred. These documents are available for review, and specifics will not be covered in this report.

Generally, the FLRMPs call for a safe and efficient transportation system, maintenance and reconstruction of roads for their intended use and to protect resources, and closure of unneeded roads and roads causing resource damage. These activities are ongoing within budget limitations. Compliance with specific direction in the Salmon Plan to maintain arterial and collector roads to at least maintenance level 3 has not been fully achieved. One hundred and fifty miles of arterial and collector roads on the Salmon are not being maintained to at least this level. The FLRMPs also call for annual updates, as needed, for the travel plans. This has not occurred on the Salmon since 1988 or the Challis since 1994.

Social and Economic Factors:

Recommended maintenance levels were developed through public and other agencies’ comments along with recreation objectives for developed sites and administrative access needs. Economics, socioeconomics, other agencies, and recreational uses influence how the road system is managed. This is what constitutes the expected types and amounts of traffic using the roads. Comments received from the public, other agencies, and considerations of the ID Team were used to make recommendations for access management. Since no decisions are made or specific projects proposed by this report, cultural resource managers provided no input at this time. Cultural resources will be addressed at watershed and project level roads analyses once potential projects are identified.

Economics: In fiscal year 2001, 27 percent of the road miles were maintained Forest-wide, but only 5 percent to the objective maintenance level. Data collected during road condition surveys completed in the past few years show an estimated deferred maintenance and capital improvement backlog of \$111,446,000.

Based on objective maintenance levels, annual maintenance needs are estimated to be \$4,716,100. However, this analysis of 1,066 miles reduces the estimated deferred maintenance and capital improvement needs to \$82,021,500, and recurrent annual maintenance to \$3,676,900.

Beginning in 1999, condition surveys have been performed on Forest Service jurisdiction roads as part of the deferred maintenance reporting requirements. This information is recorded in the INFRA database, the Forest Service’s corporate database for asset management. Condition surveys are based on the objective maintenance level for a road and identify work needed to achieve the desired maintenance level and resource protection. Work items include annual maintenance, deferred maintenance, and capital improvements necessary to meet access and resource objectives.

Table 2 shows data for roads analyzed in this report. Amounts are from the INFRA database. The most recent data available, fiscal year 2001, shows 85 percent of the miles of maintenance level 3 through 5 roads have been surveyed. Road specific data are not included in this report since it is available in the INFRA database (Road Cost Data Report is 961 pages).

Table 2, Investment Needs for Current and Proposed Road Standards, Main Access Roads

Objective Maintenance Level			Annual Maintenance Need		Deferred Maintenance Need		Capital Improvement Need	
Mtc. Level	Current (Miles)	Proposed (Miles)	Current (Dollars)	Proposed (Dollars)	Current (Dollars)	Proposed (Dollars)	Current (Dollars)	Proposed (Dollars)
2	223.50	471.36	96,100	202,700	1,591,300	3,356,100	0	0
3	654.75	548.48	1,866,000	1,563,200	29,372,100	24,604,800	11,294,450	9,461,300
4	148.88	20.84	837,500	117,200	17,374,300	2,432,000	5,694,650	797,150
5	38.91	25.36	352,500	229,800	12,572,600	8,194,300	1,038,900	677,100
Total	1066.04	1066.04	3,152,100	2,112,900	60,910,300	38,587,200	18,028,000	10,935,600

For the 1,066 miles analyzed, cost reductions are realized by reducing some objective maintenance levels to more appropriate levels. The estimated annual maintenance need is reduced by \$1,039,200 per year, deferred maintenance by \$22,332,100 and capital improvements by \$7,092,400. Annual maintenance is a recurrent cost, while deferred maintenance and capital improvements are one-time costs for the planning period. Needed investments are reduced because some roads would not be upgraded or maintained to the existing objective maintenance levels, and less work is required to meet the recommended maintenance levels.

Recommendations from this analysis will ultimately affect the remainder of the road system. The objective maintenance levels for other roads could be reduced, and similar changes are expected. For this to occur, watershed or project scale roads analysis must be completed, and road management objectives approved by District Rangers. Effects to the rest of the road system are not quantified in this report but will be addressed when those roads are analyzed.

Road maintenance funding is expected to remain relatively stable, at about \$1,350,000 annually, for the foreseeable future. Improvement projects, such as reconstruction and relocation, are funded on a regional priority basis and vary from zero to over a million dollars annually. If the Forest Service becomes a public road agency, annual maintenance funding could increase to meet the needs of roads designated as Public Forest Service roads. This would require the reauthorization bill for gas tax expenditures to include the Forest Service as a public road agency.

Socioeconomics: The current Forest road system provides access for recreation, private inholdings, grazing allotments and personal use wood gathering. Access is a primary socioeconomic concern for the public.

A large percentage of the local public places an existence value on roads beyond their actual use. Roads are culturally important, representing the preservation of access for historic and traditional uses and the opportunity for future uses. At the local community level, there is a pervasive sensitivity and defensiveness regarding Forest roads issues. Roads represent traditional communal rights seen as threatened by the federal

government and roadless area proponents. Local residents seem to feel that broad-scale road closures are occurring all around them at the expense of their traditional use and control of the area. Most are very sensitive to roads issues and feel the need to defend their communal rights against outside influences. Reduction of Forest access in any form is resisted, and any loss of roads is seen as a loss of control. In the seven main community areas (Salmon, North Fork/Gibbonsville, Leadore/Tendoy, Pahsimeroi, Challis, Stanley, and Big Lost), three community “narratives” describe beliefs about and relationships with the land. The narratives reflect community identity and the values and beliefs through which community members define their relationship to the land.

The first narrative is based on the belief that resources often have value only within the framework of their use by community members. A second narrative also stresses the importance of resource use for economic opportunity, but codifies prior communal use rights into formal rights (water rights, grazing permits, etc.). Those benefiting from the use (primarily ranchers) are seen to have an obligation of social and political participation in the community. These two narratives dominate the perspectives of all communities except Stanley, where recreation rather than ranching serves as the focal point for communally legitimated rights exercised under community control.

A third community narrative defines use within the context of conservation and quality of life, linking resource use with long-term stewardship. Customary rights are seen as secondary if they run contrary to conservation and quality of life. Decisions should be made outside the local area and include input from a variety of interests. This narrative was present only in the Stanley and Salmon areas.

Focus group research for the Salmon Interface Watershed Assessment in July of 2002 validated these narratives. Most interest groups subscribe to the dominant narratives and place a high degree of importance on the maintenance and enhancement of traditional uses of the area such as logging, mining, grazing, and access via roads and trails. Environmental interests supported environmentally mitigated uses of the area and preservation of roadless areas.

Most local communities depend economically, to some extent, upon the recreational use of Forest roads. Some very small communities and businesses, such as the historic Shoup Mine and Store and the Panther Creek Inn, rely entirely on Forest roads for access.

Public comments revealed a list of concerns, including inadequate funding of road maintenance, a desire to gate rather than obliterate roads, inadequate signing, rights-of-way and private property barriers to public access, illegal ATV use on roads and other areas, enforcement of travel regulations, a desire for cost-sharing between the Forest Service and county governments for road maintenance, and the limiting of access to the Forest for disabled or elderly persons by closing roads or downgrading road maintenance. Overwhelmingly, however, the public would rather have the “downgraded” roads kept open rather than be denied vehicular access because of road closures.

Public and Other Agencies Involvement: In July 2002, a brochure describing the Roads Analysis Process (RAP) was produced and mailed to the Schedule of Proposed Actions (SOPA) mailing list for the Forest. The SOPA list includes 105 names of individuals and groups who have expressed interest in management of the Forest. The brochure included a map showing which roads were being addressed, what roads analysis is intended to accomplish, the schedule for the public meetings, and comment cards that could be mailed back. The brochure was also available on the Forest Internet site along with links to the road policy, questions and answers about the road policy, and Miscellaneous Publication FS-643, *Roads Analysis: Informing Decisions About Managing the National Forest Transportation System*.

News releases were sent to newspapers serving the local communities. These include the *Salmon Recorder Herald*, *Challis Messenger*, *Arco Advertiser*, and the *Idaho Falls Post Register*. The news releases included information about the process, advertised the public meetings, and requested comments. Radio announcements, on the local station for Salmon and Challis, advertised the meetings and solicited comments.

Public meetings and meetings with other agencies were held during August and September 2002. Four public meetings were held: one in Mackay, two in Challis, and one in Salmon. Total attendance at the meetings was 22 people. Forest personnel also met with the Idaho Department of Transportation, Salmon and Challis Field Offices for the Bureau of Land Management (BLM), the Butte, Custer, and Lemhi County Commissions, and the Salmon City Council. The Shoshone-Bannock and Nez Perce Tribes were contacted repeatedly, in writing and by phone, but no responses were received or any interest expressed by them.

The purpose of the meetings was to inform the public and the other agencies about the RAP, and to accept comments on how the Forest could better manage its transportation system, to what level roads should be maintained to meet the needs for the type of use expected, and where problems exist.

Custer County, in particular, provided many useful comments about specific roads. The commissioners are, as are the other local officials, very interested in our connected road system. They expressed concern about roads in the Lost River Highway District that the County now has jurisdiction over and the maintenance responsibility. They discussed abandoning these roads because they were not adequately funded to maintain them and felt they received more recreation traffic than “farm to market” use. The Challis National Forest used to have cooperative maintenance agreements with Custer County. The commissioners said they could be interested in cooperating again, but the agreements would have to be equitable, i.e., they would want some compensation for performing maintenance on our jurisdiction roads.

Specific comments about specific roads are the most useful, and this information was considered in the analysis. Specific comments were received during the meetings, from the County Commissions and City Council, and by mail. Many comments were of a general nature, such as, “don’t close any roads”, “protect all streams and stream crossings”, or “remove roads, don’t build or improve.” Many people are upset about others driving anywhere or taking all terrain vehicles (ATV) off designated routes without regard for travel restrictions/prohibitions or resource damage.

Comments were recorded from statements made at the meetings, maps were made available, comment cards were filled out, telephone calls received, letters and comment cards mailed in, and comments received by e-mail. Fifty comments were recorded during the public and agency meetings, 12 mailed in, two e-mails, one faxed, four phone calls, and one letter supporting the local governments’ desires to preserve access from Idaho Congressman Simpson’s office.

Most of the comments received emphasized the need to preserve access to and through the Forest. All of the comments from local governments and public emphasized this. They were less concerned about how the road was maintained or managed, as long as it was open and available for use. Comments received are in the project files.

Recreation Access: The Salmon-Challis National Forest has existing direction, through Forest Land and Resource Management Planning, to provide a wide range of recreation opportunities. This range of opportunities is dependent on a wide spectrum of recreation settings, ranging from highly developed and modified to completely natural. With approximately 80 percent of the entire Forest land base in designated Wilderness and inventoried roadless areas, our strength and emphasis is obviously toward the primitive and semi-primitive end of the spectrum. This fact also emphasizes the need for the access provided by the remaining 20 percent of the land base that is roaded and developed.

A well-distributed road network is essential for access to the undeveloped portions of the Forest, as well as to the many and varied developed recreation sites scattered throughout the Forest. These developed sites include campgrounds, picnic grounds, boat launches, and trailheads of various development scales.

Maintenance levels (both objective levels and operational levels) directly affect the type of vehicle that can access these important recreation sites. For this reason a minimum maintenance level 3 is desired for roads leading to developed recreation sites and major backcountry access points.

Roads analysis at the watershed and project scales will consider the following recreation attributes:

- Developed Recreation Sites
- General Forest Areas
- Roaded vs. Unroaded

Recreation Opportunity Spectrum classifications:

- Roaded-Natural Appearing
- Semi-Primitive Motorized
- Semi-Primitive Nonmotorized
- Primitive

Natural Resources:

Natural resource considerations were used to develop risk ratings for watersheds across the Forest. Risk ratings were developed for aquatic ecosystems, terrestrial wildlife, and watershed resources. The objective maintenance level and road management in general, considers resource impacts in determining how roads are managed and maintained. Drainage is always emphasized regardless of maintenance level. Drivability for the types and volumes of traffic are determined by maintenance level.

Aquatic Ecosystems: The Aquatic Resources section of this roads analysis tier to PACFISH and INFISH, as well as the *Road Density Analysis Team Final Report, 2670/6840*, interagency executive direction, dated April 3, 2002, and provides a mid-scale assessment to guide subsequent fine-scale analyses at watershed and project levels. Aquatic objectives of this assessment are to:

- Classify road densities for comparing stream habitat influences between 4th field HUC subbasins
- Rank 5th field HUC watersheds for the relative degree of road influence on fisheries populations
- Summarize fish population status using Inland West Watershed Initiative classifications
- Identify opportunities to reduce road impacts in support of fisheries recovery programs

Basin-wide, coarse-scale analyses (Interior Columbia Basin Ecosystem Management Project) have identified the subbasins of the upper Salmon River drainage (includes Salmon-Challis NF) as primary areas for survival and recovery of four Endangered Species Act (ESA) listed fish species within the Columbia River Basin. These watersheds are key to re-establishing historic headwater habitat linkages of relict fish populations extending from the Snake River north to Canada. The interagency executive direction states that these subbasins and the Wilderness, Wilderness Study, Roadless Area Review and Evaluation (RARE II), and undesignated low road density areas that they contain, "...should be considered a critical component in any locally developed conservation strategy for listed fish species within the Interior Columbia Basin."

The upper Salmon River drainage contains approximately 7,000 miles of roads (Table 3, Appendix B) of which 3,927 miles are managed by the Salmon-Challis National Forest. Approximately 1,100 miles of these roads occur within Riparian Habitat Conservation Areas (RHCAs) of perennial streams, the streamside buffer zones prescribed by PACFISH and INFISH (Table 4, Appendix B). Road segments within on-Forest RHCAs contain approximately 5,400 road-stream crossing points, of which 5,000 are estimated to be culvert crossings. Eighty percent of these crossings are estimated to occur within anadromous and resident species watersheds, with the remaining 20 percent occurring within watersheds that contain listed resident species, such as bull trout, and sensitive species, such as westslope cutthroat trout. Road densities and relative fish population influence ratings are shown in Table 5, Appendix B, for 5th field watersheds. A 4th/5th field watershed cross-reference, Table 6, is also found in Appendix B.

General road management and aquatic resource issues are identified in the Roads Analysis Handbook. In addition, primary local issues identified in FLRMPs for the Salmon and Challis National Forests include stream fragmentation and loss of connectivity through creation of fish migration barriers, initiation of channel down-cutting due to road densities and culvert placements, and increased sediment generation. To

a lesser degree, but potentially as serious, are periodic chemical or material spills along roadways adjacent to streams or rivers.

Benefits of the forest road system for aquatic resources are primarily associated with the provision of access for conducting management activities. Without sufficient human access, inventories, monitoring, and project work are often limited and extremely difficult. Idaho Department of Fish and Game and the Shoshone-Bannock Tribes use forest roads for access to stock fish and monitor populations.

Primary road management concerns for aquatic resources, in order of significance, include:

- Stream crossings creating migration barriers
- Stream crossings concentrating and directing surface runoff, road drainage and suspended sediment directly to streams
- Stream crossings creating channel down-cutting, increasing channel gradients and lowering riparian water tables
- Roads within RHCAs increasing sediment from poor surface drainage and maintenance blading
- Roads within RHCAs resulting in the loss of riparian canopy and shading
- Roads within RHCAs resulting in stream channelization, floodplain fragmentation, increased peak flows and downstream bank erosion, especially below road segments with bank armoring
- Initiation of human conflicts and impacts to natural processes associated with large woody debris accumulation, beaver dams, in-stream bar formation, and natural channel changes following high runoff events.

Road management risks to aquatic resources are primarily associated with the long-term cumulative effects to channel stability, floodplain form and functions, natural process, and declines in the biological productivity of aquatic habitat elements.

Tables 5 and 7, Appendix B, display Aquatic Risk Ratings for each watershed on the Salmon-Challis National Forest. In addition to evaluations for general road management as noted above, specific indicators were used to determine aquatic risk for each watershed. These indicators are road density by watershed, road density within RHCAs of perennial streams, and a comparative watershed ranking for road density effects on local fish populations, using bull trout as an indicator species.

Road density by watershed is expressed as total miles of road per square mile of watershed area. Road density within the RHCA is expressed as miles of road per square mile of perennial stream RHCAs within each watershed. The comparative Fisheries Index Rating for road density effects on local fish populations is a numerical rating between 1 and 4, indicating the relative degree of influence to stream habitats within each watershed (Ref. Table 5, Footnote).

In addition to their effects on bull trout populations, road densities throughout watersheds of the Upper Columbia River Basin have been divided into three categories in the *Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin* (page 67). Road densities less than 0.7 miles per square mile are considered low; road densities between 0.7 and 1.7 miles per square mile are considered moderate; and road densities greater than 1.7 miles per square mile are considered high.

PACFISH/INFISH priority watersheds are also noted (Table 5) for watersheds that, in whole or in part, were designated as priority areas for Anadromous and Resident fisheries recovery, during ESA Section – 7 consultations for amending the Salmon and Challis plans.

Table 7, Appendix B, documents the rationale used and the aquatic risk ratings shown in Table 1, Road Management Recommendations, Value/Risk Analysis.

Terrestrial Wildlife: Effects of roads, both open and closed to motorized uses, on various wildlife species includes direct loss of habitat (road surface), disturbance and/or interruption of necessary biological activities such as feeding/foraging, displacement to more secure habitats that may or may not be of equal

quality, habitat fragmentation, increased vulnerability to predators and/or hunter harvest, increased vulnerability to poaching, and avoidance of previously preferred habitats. Such effects were first realized in the case of hunted species such as elk and deer.

Declines in populations of big game coincided with increased road building activities as timber management escalated during the 1950s and 1960s, peaking in the 1970s. These declines precipitated extensive studies and generated a very large body of literature and habitat models that clearly showed the decrease in habitat effectiveness that occurs as available habitats are roaded and animals, especially hunted species, become subject to increased human presence. Lyon (1983) compared the various predictive habitat effectiveness models and concluded that all were very similar and slight differences only became noticeable after habitat effectiveness was decreased by 25 to 50 percent (i.e., road densities exceeded one to two miles per square mile).

Armed with this new body of knowledge and concerned about declining elk populations and increased demand for elk hunting opportunities in the intermountain west, agency biologists recommended and land managers implemented motorized travel restrictions to help restore habitat effectiveness. The success of this program, combined with an increase in habitat, was very apparent as elk populations rebounded across the range of the species.

As human populations continue to increase and demands for both consumptive and non-consumptive recreational uses escalate, habitat security remains the primary limiting factor for many species. The ability to conduct biologically critical activities such as feeding/foraging and reproduction in undisturbed habitats of suitable quality is critical to long-term species viability. Loss of secure habitats results in greatly increased energy expenditures and often loss of individuals and/or populations of both hunted species and sensitive unhunted species.

Providing secure habitats for critical wildlife activities and times, such as elk calving or winter stress periods, is the single most important habitat management technique to help ensure healthy, viable populations. The most effective way to accomplish this objective is by controlling motorized access to such habitats. The current FLRMP calls for maintaining big game habitat effectiveness at 80 percent or more of potential. To do this, open road density should not exceed approximately 0.5 miles per square mile of available habitat.

For the purposes of this analysis, a composite wildlife habitat risk rating, expressing the potential for adverse effects to important wildlife habitat values, was assigned to each main Forest road (Table 8, Appendix B) and each HUC5 Watershed (Table 9, Appendix B) on the Salmon-Challis National Forest. Three indicators of equal importance were considered when assigning the Composite Wildlife Rating: Road Density, Habitat Component, and Habitat Effectiveness.

Road density within each watershed is the total miles of arterial, collector, and local roads open to motorized vehicles divided by the total area to get the average miles of open road per square mile. This number is conservative since additional miles of jeep trails and “two-tracks” are present in most watersheds. Open road densities of less than 0.5 miles per square mile were rated low; 0.5 to 0.99 miles per square mile were rated moderate; and 1.0 miles per square mile or greater were rated high.

The habitat component indicator was based upon the presence or absence of special habitat attributes within the watershed. The special attributes considered were big game winter range, migration routes, birthing/rearing areas and important wildlife areas listed in the current FLRMPs. Watersheds with only normal quality habitat attributes received a low rating; those with one special attribute were rated moderate; and those with two or more special attributes were rated high.

The habitat effectiveness indicator was based upon the presence or absence of the following additional habitat attributes:

- Fragmentation, i.e., total road density, open and closed, of 0.75 miles per square mile or greater
- Potential for noxious weed infestation and/or spread
- Potential for direct mortality due to animal/vehicle collisions, i.e., road kill

- Presence or absence of habitats utilized by Federally listed Endangered, Threatened or Proposed species.

Watersheds with zero to one of the attributes rated low; those with two were rated moderate; and three or more rated high. The ratings for each of the three indicators were then scored as L=2.0, M=4.0 and H=6.0. These scores were totaled for each watershed. The total score divided by 3 yielded the Composite Wildlife Rating score for each watershed. Those total scores were rated as follows: L=2.0-3.0, M=3.1-5.0 and H=5.1-6.0.

Thirteen of the 61 watersheds on the Forest received a Composite Wildlife Rating of High, 22 rated Moderate, and 26 were rated Low. Five of these 13 watersheds; Deadwater, Deep-Moyer, Napias, North Fork, and Shoup received High ratings for all three indicators.

Watershed Resource: The effects of roads on watershed values, such as hydrologic functions and resultant water quality, are well documented in the literature. Roads influence groundwater interception, runoff distribution over time and space, and the potential for sediment production and delivery to streams.

A Watershed Risk Rating, expressing the potential for adverse effects to watershed values, was assigned to each main road (Table 10, Appendix B) and each watershed (Table 11, Appendix B) on the Salmon-Challis National Forest. Three indicators were considered when assigning the Watershed Risk Rating: total road density within the watershed; road density within the RHCA; and watershed vulnerability.

Total road density within the watershed is expressed as miles of road per square mile of watershed area. Road density within the RHCA is expressed as miles of road per square mile of RHCA and is also calculated by watershed. Watershed vulnerability is a qualitative indicator expressed as moderate to high, low to high, or low to moderate based on the sensitivity of the watershed to experience landform and soil instability and accelerated erosion.

Road densities for each watershed and RHCA are divided into three classes based on information presented in the *Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin* (page 67). Road densities less than 0.7 miles per square mile are low; road densities between 0.7 and 1.7 miles per square miles are moderate; and road densities greater than 1.7 miles per square mile are high. In general, the probability of experiencing negative effects increases as the percentage of the watershed affected by management increases (USFS, February 1993). Roads contribute more sediment to streams than any other land management activity (Gibbons and Salo 1973, Meehan 1991, as cited in *An Assessment of Ecosystem Components in the Interior Columbia Basin* 1997, page 1022), and most management activities are dependent on roads.

Of the 61 watersheds on the Forest, five have high total road density within the watershed and 20 have high road density within the RHCA. Five watersheds have both a high total road density within the watershed and a high road density within the RHCA. Twenty-two watersheds have moderate total road density within the watershed and 24 have moderate road density within the RHCA. The remaining 34 watersheds have low total road density within the watershed; 17 have low road density within the RHCA (See Table 11).

The watershed vulnerability rating expresses the inherent sensitivity of the watershed based on geology, slope, landform and soil type. This rating is based on information collected for the Inland West Watershed Initiative and the Salmon National Forest Land Systems Inventory. Granite, quartzite, sedimentary and volcanic rocks are the major geologic types identified on the Forest. In general, watersheds with granitic, volcanic and sedimentary landtype geologies have moderate to high watershed vulnerability while watersheds with quartzite geology have low to moderate watershed vulnerability. The watershed vulnerability rating expresses a range of sensitivity for the entire watershed.

The Watershed Risk Rating derived from the three indicators and assigned to each main road and each watershed are displayed in Tables 10 and 11, respectively. Roads and watersheds with at least two high indicators received a High Watershed Risk Rating. Roads and watersheds with two moderate road density indicators and a moderate to high watershed vulnerability rating received a Moderately High Watershed

Risk Rating. Thirteen of the 61 watersheds have high Watershed Risk Rating; 13 have a moderately high Watershed Risk Rating, 34 have a moderate Watershed Risk Rating, and one was not rated because of insufficient watershed vulnerability data.

Appendix A, Maps:

Map 1, Main Roads

Map 2, Fifth Field Watersheds

Map 3, Upper Salmon River Drainage

Appendix B, Data Tables and Resource Ratings: