ARAPAHO AND ROOSEVELT NATIONAL FORESTS
And
PAWNEE NATIONAL GRASSLAND

FOREST/GRASSLAND LEVEL ROADS ANALYSIS REPORT

October 2003

Table of Contents

Introduction 1

Executive Summary 1

Products of the Analysis 4

Scope of the Analysis 5

Existing Condition 5

Forest Level Roads Analysis Process 7

Value Assessment Criteria 10

Risk Assessment Criteria 12

Analysis Results 16

Conclusion 20

Tables:
1a: Forests: Risk and Value Analysis Results 2
1b: Grassland: Risk and Value Analysis Results 2
1c: Forests and Grassland Combined: Risk and Value Analysis Results 3
2: Scope of the Analysis 5
3: Arapaho/Roosevelt/Pawnee Road Atlas 6
4: Risk and Value Analysis Results 16
5: Roads with High Value for Other Purposes 17
6a: Forests: High Risk Road Miles by Risk Category 18
6b: Grassland: High Risk Road Miles by Risk Category 18
6c: Forests and Grassland Combined: High Risk Road Miles by Risk Category 18

Appendices:
A: Value and Risk Assessment Table Separated by Ranger District
B: Analytical Procedures for Determining Road Value and Risk
C: Ecological, Social and Economic Considerations
D: Interdisciplinary Team
E: Transportation Definitions
F: Location Map
G: References

Introduction

This forest- grassland-level Roads Analysis addresses all two-wheel drive vehicle roads, which are classified either maintenance level (ML) 3, 4, and 5. Maintenance level 1 and most ML 2 roads (closed and high clearance vehicle roads, respectively) as well as unclassified roads will not be addressed in this analysis but at the watershed- and project-scale roads analysis. An interdisciplinary team analyzed roads in 2003 using the procedure in FS-643 Roads Analysis: *Informing Decisions About Managing the National Forest Transportation System*.

The objective of roads analysis in the Forest Service (FS) is to provide line officers with critical information to manage road systems that are safe and responsive to public needs, are affordable and efficiently managed, are adequate for management activities, have minimal negative ecological effects on the land, and are in balance with available funding.

This analysis is a screening-level assessment that provides general guidance. Details of risk and the associated mitigations are site specific. Specific risks and effects will be field verified and analyzed at watershed- or project-scale analysis.

Executive Summary

This analysis provides information that will help the Arapaho and Roosevelt National Forests and Pawnee National Grassland (ARP or Forests and Grassland) to more efficiently and effectively manage the transportation system within existing and anticipated funding levels. Recommendations are made that will improve maintenance of high value roads, reduce road maintenance program costs, reduce adverse ecological road-related effects, and focus cooperative efforts with County and State transportation departments.

The roads analyzed are important for primary access to the multiple uses of the Arapaho and Roosevelt National Forests and Pawnee National Grassland. 444 miles of roads under Forest Service jurisdiction were analyzed.

For this two-wheel drive vehicle (ML 3, 4, 5) roads analysis the ARP was broken down into two areas: the forested lands; Arapaho and Roosevelt National Forests (AR), and the grassland; Pawnee National Grassland (PNG). Each road on the AR was screened and rated either “high” or “low” for its effect (risk) to watershed condition, wildlife, cultural resources, and wilderness (approx. 25% of the two forests are in designated wilderness). For the PNG each road was screened for its effect (risk) to watershed

condition, wildlife, cultural resources, and range (rangeland is one of the PNG's primary resources). Each road on the AR was categorized as "high" or "low" value for access to recreation, resources, hazardous fuels treatment, and wildfire protection. Each road on the PNG was categorized as "high" or "low" value for access to recreation, grazing lands, and oil and gas existing/potential fields. The risk and value assessments provide information to focus transportation analysis and other planning efforts, and will guide the need for gathering of field data on affected resources and road condition and use.

Table 1a: Forests: Risk and Value Analysis Results (miles reported are under Forest Service jurisdiction)

High Value/High Risk **207 miles or 53 percent of 392 total miles**	**Low Value/High Risk** **1 mile or .2 percent of 392 total miles**
High Value/Low Risk **180 miles or 46 percent of 392 total miles**	**Low Value/Low Risk** **4 miles or 1 percent of 392 total miles**

Table 1b: Grassland: Risk and Value Analysis Results (miles reported are under Forest Service jurisdiction)

High Value/High Risk **21 miles or 40.5 percent of 52 total miles**	**Low Value/High Risk** **0 miles or 0 percent of 52 total miles**
High Value/Low Risk **30 miles or 58 percent of 52 total miles**	**Low Value/Low Risk** **.75 miles or 1.5 percent of 52 total miles**

Table 1c: Forests and Grassland Combined: Risk and Value Analysis Results (miles reported are under Forest Service jurisdiction)

High Value/High Risk **228 miles or 51.4 percent of 444 total miles**	**Low Value/High Risk** **1 mile or .2 percent of 444 total miles**
High Value/Low Risk **210 miles or 47.3 percent of 444 total miles**	**Low Value/Low Risk** **4.75 miles or 1.1 percent of 444 total miles**

From Table 1c, of the 444 miles of Forest Service two-wheel drive vehicle roads analyzed, almost 99% (438 miles) of the roads have "High Value". These roads because they are highly valued for access for recreation, resources (timber, range, and water), hazardous fuels areas, wildfire firefighting, and/or etc., are the "main transportation system" for the Arapaho and Roosevelt National Forests and Pawnee National Grassland.

Of the 444 miles analyzed about 52% (229 miles) of these roads miles present a high risk (either singly or in combination) for wildlife, watersheds, cultural resources, or wilderness (for the two Forests)/range (for the Grassland). The assessment of these high-risk roads will guide efforts for mitigation such as increasing the maintenance level. For instance, a road presenting a high risk to the watershed may be improved from native surface, maintenance level 3, to a higher ML of 4 or 5 with a hardened surface thus delivering less sediment into the nearby creek.

Only 1% (5.75 miles) of the roads analyzed have a low value. This was not a surprising result. At the onset of this roads analysis it was postulated that since the analysis only included two-wheel drive vehicle roads, very few of these roads would not be part of the "main transportation system". Roads, which have a low value for access whether by the public; Forest Service, State or County personnel; or permittees for special uses (e.g., access to recreation residences, to reservoirs and irrigation ditches, etc.) are roads that should not be maintained at public expense. Therefore,

these low-value roads should be removed from the "main transportation system". They should either be transferred or an easement issued to another road-managing agency or private user or should be physically removed as a road if it is shown to be unneeded by all users. From this analysis there is not much need to do this since less than five miles of road sections are not highly valued.

The risk and value assessment done for this analysis provides information to guide watershed analysis or project analysis. This report provides analytical procedures and information on ecological, social, and economic conditions to guide the smaller scale roads analysis. These watershed- and project-level roads analysis will look at the four-wheel drive vehicle roads (ML 2), currently closed roads (ML 1), and unclassified roads. These roads are most in need of roads analysis since they potentially have the highest risks to resources and their value for access needs to be assessed.

Products of the Analysis

- A report for line officers and the public that documents the information and analysis used to identify opportunities and set priorities for the future National Forests/Grassland road system.
- A map (in ARP's spatial database) displaying the main road system for the entire Forests/Grassland and the risks and opportunities for each road or road segment (in Appendix A).
- Other maps and tables necessary to display specific priorities and recommended changes in the road system.

Scope of the Analysis:

The Forest Supervisor defined the scope of the Forests/Grassland level roads analysis.

Table 2: Scope of the Analysis

Geographic Scale	Forests- and Grassland-wide
Roads	Roads on existing inventory in the following categories: National Forest System roads, maintenance level 3,4, 5, public and private roads, maintenance level 3, 4 and 5 on ARP.
Analysis period	20 year outlook on needs, effects and implications
Specialist Information	Forest/grassland level analysis will be done using existing information and the judgment of the technical specialists including Ranger District personnel. The analysis will proceed without information that cannot be obtained within the analysis period, acknowledging what uncertainties remain.
Internal review	Forest Service Regional Office Transportation Engineers, Forest Supervisor, District Rangers and Staff, Group Leaders, and Interdisciplinary Team (IDT)

Existing Condition

The ARP road atlas, maintained in the Infrastructure (INFRA) database, includes 5027 miles of classified roads (Forest Service, County, State, Federal, and private jurisdiction) and 878 miles of unclassified roads. Approximately 74 miles of ARP roads have been decommissioned since the beginning of 1998. The roads which are usually decommissioned are the ML 1 (closed) and the ML 2 (high clearance or 4-wheel drive vehicle)

Table 3: Arapaho/Roosevelt/Pawnee Road Atlas (as of September 2003)

MAINTENANCE LEVEL	MILES IN ANALYSIS (MILES IN ARP INVENTORY)*						
	FS	County	State	U.S. Hwy	Interstate Hwy	Private	Total
unclassified**	878	0	0	0	0	0	878
unknown***	22	82	88	111	0	0	303
1	645	12	0	0	0	29	686
2	1816	73	0	0	0	22	1911
3	449	212	0	0	0	5	666
4	86	841	45	18	0	0	990
5	19	96	203	95	55	3	471
Total	3915	1316	336	224	55	59	5905

*the inventory includes roads, which "go through", "are adjacent to" and "serve" Nat'l Forest/Grassland lands, therefore, these totals will be much greater than the total roads which were analyzed in this analysis.
**unclassified roads were identified as "ways" in the 1997 Revised Forest Plan
***unknown roads are lacking correction in the database so until corrected cannot be categorized

Forest Plan Road Information

The 1997 Revision of the Land and Resource Management Plan for the Arapaho and Roosevelt National Forests and Pawnee National Grassland (Forest Plan) provides direction for roads management. One of the management emphasis areas is travel (Forest Plan, p. 3). The recommendations in this roads analysis complement this Forest Plan direction, and provide information for future Forests/Grassland level management planning. Refer to the Forest Plan, Chapter 1 for specific goals, objectives, standards and guidelines relating to roads management on the Forests and Grassland.

Road Operation/Maintenance Funding and Costs

Road operation and maintenance funding for all maintenance levels on the ARP ranges from about $1,000,000 to $1,300,00 per year. This amount also includes travel management, overhead costs, rights-of-way acquisition, and minor road construction and reconstruction.

Road condition surveys conducted from 1999 to 2003 documented the work and associated costs needed to maintain roads to the industry standards for safety and assigned traffic service level. Those surveys reveal:

Deferred Maintenance:	$ 9,182,000 - FS roads, all maintenance levels (1-5)
	$ 4,002,000 – FS roads maintenance level 3, 4, 5
Annual maintenance needs:	$1,720,000 – FS roads, all maintenance levels (1-4)
	$ 802,000 – FS roads maintenance level 3, 4, 5

Cooperative maintenance agreements between the counties and the Forest Service help to address our combined road maintenance needs. 350 miles of Forest Service jurisdiction roads are included in cooperative maintenance Schedule A agreements with the nine counties that the ARP resides in.

ARP Forest Level Roads Analysis Process

Risks and Benefits of Roads

Roads on the ARP provide access for many uses. Their presence has effects on the natural and cultural resources of the National Forests and Grassland. See Appendix C for a more detailed discussion of the ecological, social and economic considerations associated with roads on the Arapaho and Roosevelt National Forests and the Pawnee National Grassland.

Value and Risk Assessment:

The forested lands of the Arapaho and Roosevelt National Forests occupy the foothills and the high elevation mountain country, whereas, the grasslands of the Pawnee National Grasslands occupy the short-grass prairie at lower elevation. Because the forest and grass ecosystems are vastly different in many aspects such as watershed functioning, wildfire risk, resource needs, and road-related issues the analysis was divided into these two types which in a general sense was translated into our two geographic analysis divisions – National Forest and National Grassland.

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To begin the analysis process all geographic information system (GIS) and Forest Service INFRA database for roads were used to produce a preliminary inventory of the maintenance level 3, 4, and 5 roads. With this initial inventory displays both on maps and on spreadsheets (road-by-road segments), the most knowledgeable people about the ARP road system, the Ranger District personnel, were huddled for a 1 to

2 day meeting at each of the district offices to do the initial evaluation of each road segment. Various criteria were developed (much more than finally reported in this analysis), a multitude of notes were taken, and errors in the database were corrected during these extensive meetings.

The Interdisciplinary Team (IDT) of Forest Service resource specialists selected a method of analysis that would assess the value and the risk associated with each road on the Forests and Grassland. The following values and risks were identified by the IDT. These are defined on pages 10-13. These values and risks also represent, in broad terms, the "issues" associated with the ARP main transportation system. The analysis was developed separately for the two National Forests (Arapaho and Roosevelt) and the National Grassland (Pawnee). The percentages listed reflect the IDT's determination of the level of importance of each factor to the overall value or risk of the road. The final results of this analysis are reported in Appendix A, Value/Risk Assessment Table. A further discussion of the team's analytical procedures can be found in Appendix B.

National Forests

Values: The following are the value assessment criteria and were developed because roads are valued because they provide access to or for:

25% - Recreation
25% - Hazardous Fuels
25% - Resources (timber, range)
25% - Administrative Use/Resource Protection (access to administrative sites, for wildfire/flooding response, etc.)

Risks: The following are the risk assessment criteria. The presence or conditions of roads cause risks associated with:

40% - Watershed Condition
30% - Wildlife
20% - Cultural Resources
10% - Wilderness

National Grassland

Values: The following are the value assessment criteria and were developed because roads are valued because they provide access to or for:

33.3% - Recreation
33.3% - Rangeland Management
33.3% - Developed Oil and Gas Wells and Related Infrastructure

Risks: The following are the risk assessment criteria. The presence or conditions of roads cause risks associated with:

35% - Wildlife
35% - Cultural Resources
20% - Watershed Condition
10% - Grazing (cattle disturbance)

Each road was assigned an overall risk rating of either High (substantial risk of that road on the identified resource(s)) or Low (no or little risk due to the road). Cultural resources, wilderness, and grazing risks did not by themselves drive the rating assignment, because the risks to these resources are usually indirect. These three risk criteria, by themselves, needed at least one other risk factor for the road to receive and overall rating of High. Watershed Condition and Wildlife risk assessment criteria, because these resources have well-documented direct effects could drive the overall risk rating to High if just one of these two risk criteria of all the risk criteria had a High rating. This importance of Watershed Condition or Wildlife to the overall rating for risk is also reflected in the higher percentage assigned to them by the IDT.

Each road received a High or Low overall value rating depending on the access needs for the public/Forest Service personnel/other entities. For the value rating if any of the value assessment criteria was rated High, the overall rating was assigned a High. This is reflected in their assigned equal percentages.

A final screening for the overall value rating for each road was done by determining which roads have a high need for other purposes such as access to private homes (in intermix lands of public/private ownership), high need for special uses permitted access (reservoirs, grazing allotment permits, recreation residences, etc.). If the road received a low overall value rating before this screening, but there was a high need for other purposes than general public and Forest Service access, then the road's overall value rating was changed to High. In this report, these roads are listed separately on page 18 because they may present an opportunity to modify ownership or maintenance level.

Finally, each road received a combined overall value and overall risk rating. The Overall Value and Overall Risk ratings (shown road by road in Appendix A)

populated Table 1a, 1b, 1c on pages 2 and 3. These tables are the end point of this roads analysis because the High Value roads are the "main transportation system" for the Arapaho and Roosevelt National Forests and Pawnee National Grassland. The roads with Low Value allow some decision space about their future use or jurisdiction. The High Risk roads imply work needed to reduce these risks caused by the road to the various risk assessment criteria.

VALUE ASSESSMENT CRITERIA

RECREATION: Access to dispersed recreation areas, trailheads, campgrounds, picnic grounds, touring routes, etc.

High – Access to recreation uses that require access by two-wheel drive vehicle. Examples are developed sites in the urban, rural or roaded natural Recreational Opportunity Spectrum (ROS) class, main touring routes, main routes to many (10 or more identified) dispersed recreation sites.

Low – High clearance vehicle access is adequate for use and management of the recreation resource. Examples are trailheads in roaded natural or semi-primitive motorized ROS class, and access to 9 or fewer dispersed camp areas.

HAZARDOUS FUELS: Access to areas for primary, immediate hazardous fuels reduction as determined through the Front Range Fuel Treatment Partnership.

High – Roads that are the primary access to several planned or potential hazardous fuels treatment areas. Targeted areas are urban/forest intermixed lands, domestic water supplies, and threatened, and endangered wildlife/plant species

Low – Roads that do not provide access to targeted areas for immediate hazardous fuels treatments

RESOURCES: Access to vegetative treatment areas, wood product management and harvest, and access to range resources.

High – Roads that are the primary access to several planned or potential vegetative management projects, or large amounts of high-value commercial wood resources. These roads will be used many times for vegetative management in the 20-year analysis period. These roads' improved condition reduces haul time/cost or improves safety significantly.

Or

Roads that are the primary access to permitted grazing allotments where a maintenance level 3 road is needed to safely accommodate cattle trucks or larger trailers on a regular and recurring basis.

Low - Roads that do not provide access to high value wood resources, or where consistent or recurring access by low clearance hauling vehicles is not needed.

Or

Roads that do not provide access to permitted grazing allotments or roads where high clearance vehicle access is adequate for resource use and management.

ADMINISTRATIVE USE/RESOURCE PROTECTION: Access to Forest Service administrative facilities and special use facilities and access for fire suppression, evacuation routes and emergency medical response.

High – Roads that have Forest Service related facilities that require access by two-wheel drive vehicle. Examples are Ranger District main offices, remote work stations or locations that offer public information services, locations with crew quarters, facilities, and special-use facilities that require access by the general public. Roads that provide alternate emergency egress from populated areas. Roads that provides access to areas at high risk of wildfire, with high resources or human values, which makes response time critical.

Low - A road accessing no facilities, facilities not open to the public, and facilities where high clearance vehicle access is adequate. Examples are roads to lookouts, some special-use sites or FS communication sites. Roads to areas that are not populated or where access by high clearance vehicle will be adequate for fire suppression.

RANGELAND MANAGEMENT: Access to range resources such as grazing allotments, stock tanks, and windmills.

High – Roads that are the primary access to permitted grazing allotments where a road of maintenance level 3 (at a minimum) is needed to safely accommodate cattle trucks or larger trailers on a regular and recurring basis.

Low - Roads that do not provide access to permitted grazing allotments or roads where high clearance vehicle access is adequate for resource use and management.

DEVELOPED OIL AND GAS WELLS AND RELATED INFRASTRUCTURE:
Access to existing oil and gas wells, production facilities, tank batteries and related infrastructure.

High – Roads that provide primary access to existing oil and gas wells, production facilities, etc. where a road of maintenance level 3 (at a minimum) is needed to safely accommodate workover rigs, oil tank trucks, and maintenance vehicles on a regular and recurring basis.

Low - Roads that do not provide access to existing oil and gas fields or roads where high clearance vehicle access is adequate.

RISK ASSESSMENT CRITERIA

WATERSHED CONDITION (water, soils, fisheries): Roads are often one of the most significant impacts to soils and aquatic communities in Forest watersheds. The risk of each road was assessed by considering inherent watershed sensitivity and aquatic habitat value, road-stream crossings, road proximity to streams, soil stability, and any known problems associated with the road. See Appendix B for a more detailed description of the analysis methods.

High – Road or portions of the road estimated to have high risk of adverse effects to water, soils, or aquatic habitats.

Low – Road or portions of the road estimated to have low or no risk of adverse effects to water, soils, or aquatic habitats.

WILDLIFE AND RARE PLANTS: Impacts from road development, use, maintenance, construction and reconstruction will have varying degrees of risks (i.e. effects) depending on the distance from important wildlife habitats. To determine the risk of roads to wildlife, ten criteria were analyzed and rated for risk. See Appendix B for details of these criteria and the analysis.

High – Road segments estimated to have potentially negative effects, or threats of future negative effects, to certain important animals, plants, communities, and habitats.

Low – Road segments estimated to have little or no negative effect, now or in the future, to certain important animals, plants, communities, and habitats.

CULTURAL RESOURCES: A broad analysis was conducted to determine if existing main system roads crossed through known cultural sites or known high-density areas. If roads traverse sites of high-density areas, then they were determined to be high risk. High-risk roads will require more detailed analysis at the project level to determine specific impacts and determine adequate mitigation of these effects. Risk assessments for roads analysis are guided by the following questions:

- Has the road been surveyed for cultural resources?
- Does the road impact any cultural resources?
- Is the road located in a high, moderate, or low site probability area?

High - The road has been surveyed for cultural resources and identified sites are impacted by the road, or the road has not been surveyed but is located in an area with high or moderate site density.

Low - The road has been surveyed for cultural resources and no sites are impacted by the road, or the road has not been surveyed but is located in a low site density area.

WILDERNESS: Roads especially well maintained or paved roads can encourage more recreation use of Wilderness, which can cause conflicts between human uses and wilderness values. The roads being evaluated in this analysis are the two-wheel drive vehicle roads, maintenance level 3, 4, and 5. These are the easier roads to drive on the Forest providing people, who may not be able or may not choose to choose to drive a four-wheel drive road, access to Wilderness they might not have been able to access. Effects of these roads relate to how close a road is to Wilderness access such as a trailhead or how close the road is to a Wilderness boundary causing noise or light (vehicle headlights) impacts on Wilderness

High – The road is 0.25 miles or less to a Wilderness boundary

Low – The road is greater than 0.25 miles to a Wilderness boundary

GRAZING (CATTLE DISTURBANCE): Roads promote increased human activity, which decreases range and water utilization of cattle

High – The road is 650 feet or less to cattle water affecting cattle distribution in the allotment.

Low – The road is greater than 650 feet to cattle water

GENERAL RECOMMENDATIONS FOR VALUE/RISK CATAGORIES:

The Interdisciplinary Team makes these recommendations for the roads analyzed. Refer to Table 4 on page 16.

HIGH VALUE/HIGH RISK

These roads are the "main transportation system" for the Arapaho and Roosevelt National Forests and Pawnee National Grassland and are approximately 51% of the total roads analyzed. Recommend continued Forest Service or cooperative agency maintenance for two-wheel drive vehicle access.

High value and risk indicate these are the ***highest*** priority for investment of time and funds to mitigate or eliminate risk and accommodate uses.

Recommend mitigation of risk. Mitigation depends upon the specific risks and may include, but is not limited to: additional maintenance effort, reconstruction, relocation, seasonal maintenance restriction, and seasonal road closure.

HIGH VALUE/LOW RISK

These roads are the "main transportation system" for the Forests and Grassland and are approximately 47% of the total roads analyzed. Recommend continued Forest Service or coop agency maintenance for two-wheel drive vehicle access.

Low risk indicates low priority for investment of time and funds to mitigate risk.

LOW VALUE/HIGH RISK

Two-wheel drive vehicle access for enjoyment or use of National Forests and Grassland resources is not needed on these low value roads. These roads only constitute 0.2% of the roads analyzed.

Short-term (~1 month to 1 year) improvement of these roads may be needed for improved access to project areas during project activities.

Recommend mitigation of risk. High risk indicates these roads are second priority (behind the high value/high risk roads) for investment of time and funds to mitigate or eliminate risk. Mitigation depends upon the specific risks and may include additional maintenance efforts, reconstruction, relocation, seasonal maintenance restrictions, and road closure.

Recommend reducing maintenance costs by reducing maintenance level of Forest Service jurisdiction roads to high clearance (ML 2), or administratively closed (ML 1).

Coordinate with county government or private landowners to determine maintenance responsibility on roads needing two-wheel drive vehicle access to private lands. On roads where the primary use is access to communities, request public roads agencies (county, towns, state government) to assume road operational jurisdiction. On roads where exclusive need is access to private land, issue a special-use permit for the road. On roads or road segments not open to the public, and not required for access to private land, close or decommission the road. Obtain additional information if needed to determine level and type of use.

LOW VALUE/LOW RISK

Two-wheel drive vehicle access for enjoyment or use of National Forests and Grassland resources is not needed. Only 1% of the roads analyzed fall into this category

Short term (~1 month to 1 year) improvement of these roads may be needed for improved access to project areas during project activities.

Recommend reducing maintenance costs by reducing maintenance level of FS jurisdiction roads to high clearance (ML 2), or administratively closed (ML 1).

Coordinate with county government or private landowners to determine maintenance responsibility on roads needing two-wheel drive vehicle access to private lands. On roads where the primary use is access to communities, request public roads agencies (county, towns, state government) to assume road operational jurisdiction. On roads where exclusive need is access to private land, issue a special use permit for the road. On roads or road segments not open to the public, and not required for access to private land, close or decommission the road. Obtain additional information if needed to determine level and type of use.

Analysis Results

Table 4: Forests and Grassland Combined: Risk and Value Analysis Results (miles reported are under Forest Service jurisdiction)

High Value/High Risk **228 miles or 51.4 percent of 444 total miles**	**Low Value/High Risk** **1 mile or .2 percent of 444 total miles**
High Value/Low Risk **210 miles or 47.3 percent of 444 total miles**	**Low Value/Low Risk** **4.75 miles or 1.1 percent of 444 total miles**

Value Rating Adjusted Due to High Need for Other Purposes

A final screening for the overall value rating for each road was done by determining which roads have a high need for other purposes such as access to private homes (in intermix lands of public/private ownership), high need for special uses permitted access (reservoirs, grazing allotment permits, recreation residences, etc.). If the road received a low overall value rating before this screening, but there was a high need for other purposes than general public and Forest Service access, then the road's overall value rating was changed to High. Table 5 lists the roads in this analysis which were adjusted to high. These roads may present opportunities for jurisdiction adjustments, easements agreements, or ownership transfer.

Table 5: Roads With High Value for Other Purposes

Ranger District	Road Number	Road Name	Notes Gathered from District Meetings
Boulder	273.1	Bar K Ranch Subdivision	Possible transfer of jurisdiction to county
Boulder	280.1B	Moorehead Gulch Spur	Road goes to private land with no FS authorization
Boulder	385.1	Old Highway 72	Gates now on the road at both ends
Boulder	508.1	Stapp Lakes	No notes
Boulder	521.1	Olive Lake	Has gate at hwy. FS jurisdiction in question. Not open to the public.
Boulder	521.1A	Olive Lake Spurs	May currently be under a road easement
Boulder	521.1E	Olive Lake Spur	No notes
Clear Creek	182.2	Empire – SH	Under Schedule A agreement with County
Clear Creek	184.1A	Herman Gulch SH Group W	Recreation residences
Clear Creek	247.1	Hefferman Gulch	Homeowners may have easement
Clear Creek	252.1	Arapaho Springs CG	Repeater site with decommissioned campgrd
Sulphur	857.4	Meadow Creek Dam Road	No notes

Mitigating Risk

The risk assessment resulted in the following:

Table 6a: Forests: High Risk Road Miles by Risk Category

Risk Category	High Risk Road Miles	Percent of Roads Analyzed (392 Total Miles)
Watershed Condition	35	9
Wildlife	179	46
Cultural resources	173	44
Wilderness	50	13

Table 6b: Grassland: High Risk Road Miles by Risk Category

Risk Category	High Risk Road Miles	Percent of Roads Analyzed (52 Total Miles)
Watershed Condition	17	33
Wildlife	13	25
Cultural resources	50	96
Grazing (Cattle disturb.)	19	37

Table 6c: Forests and Grassland Combined: High Risk Road Miles by Risk Category

Risk Category	High Risk Road Miles	Percent of Roads Analyzed (444 Total Miles)
Watershed Condition	52	12
Wildlife	192	43
Cultural resources	223	50
Wilderness	50	11
Grazing (Cattle disturb.)	19	4

Recall from the earlier discussion on page 9 that cultural resources, wilderness, and grazing risks did not by themselves drive the high risk rating assignment, because the risks to these resources are usually indirect. Watershed Condition and Wildlife risk assessment criteria, because these resources have well-documented direct effects could drive the overall risk rating to High if just one of these two risk criteria of all the risk criteria had a High rating. This importance of Watershed Condition or Wildlife to the overall rating for risk is also reflected in the higher percentage assigned to them by the IDT.

Risk assessments for this analysis were based on information contained in the Forest's Geographic Information System. The assessment provides a screening level indication of the likelihood a risk is present. This indication is a useful tool in guiding issue development and planning additional data collection. Field analysis will be required to determine specific effects and the most appropriate mitigation measures for each road or road segment.

Ecological, Social, and Economic Considerations

Appendix C provides information on ecological, social and economic considerations that were addressed by the interdisciplinary team. This information provided the basis for the development of the risk and value assessment used in this analysis.

Additional Roads Analysis

Watershed Analysis: The ARP is currently implementing landscape, watershed, and project planning. Roads analysis should be integrated with these planning efforts. Some of the planning which has begun or is expected to begin within the year are:

Pawnee National Grassland Watershed Assessment
Pawnee National Grassland Travel Management – West Side
Caribou-West Magnolia Travel Management
James Creek Geographic Area
Deadman Geographic Area
North St. Vrain Geographic Area
Left Hand Canyon Travel Management
James Peak Landscape Assessment
Various Timber and Fuels projects

Conclusion

Future road management on the ARP should be guided by this Forest-level roads analysis. The recommendations that resulted from this analysis provides for more efficient and effective road operation and maintenance, reduced road-related environmental effects and safe, appropriate access for forest use and management.

Site-specific information on road effects and effective risk mitigation will be gathered during area or project planning

Appendices

Appendix A: Value and Risk Assessment Table

Appendix B: Analytical Procedures for Determining Road Value and Risk

Appendix C: Ecological, Social and Economic Considerations

Appendix D: Interdisciplinary Team

Appendix E: Transportation Definitions

Appendix F: Location Map

Appendix G: References