Kaibab National Forest

Supplement to the

Comprehensive Evaluation Report

April 2010

This Supplement to the Comprehensive Evaluation Report (CER), along with the Kaibab National Forest Comprehensive Evaluation Report (2009) conforms to the 1982 Planning Rule provision requirements for the Analysis of the Management Situation (AMS). A management review considering this additional information was conducted on March 9, 2010. The needs for change focus topics identified in the initial CER remain valid.

_____/s/ Michael R. Williams_____ _____4/16/10_____

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Kaibab National Forest CER Supplement

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Introduction

The Kaibab National Forest (KNF) plan revision process conforms to the 1982 Planning Rule provisions, including those for conducting an Analysis of the Management Situation (AMS). The AMS procedures require the KNF to develop and/or verify benchmarks for setting the decision space for alternatives, analyze existing conditions and trends, make projections of future demand, and identify public issues and management concerns in order to determine the need to change current plan direction. The KNF Comprehensive Evaluation Report (CER) released in February 2009, prior to the enjoinment of the 2008 planning rule, accomplishes much of this objective. Language and concepts specific to the enjoined 2008 rule, such as Species-of-Concern/Species-of-Interest, that are found within the CER will not be carried forward into plan development and Environmental Impact Statement (EIS) evaluation of the plan; however, concepts that still apply under the 1982 rule provisions, such as coarse filter/fine filter analyses, will be carried forward. Most of the material developed for the KNF's CER meets AMS requirements and there is no need to redo or reformat that material. The information below supplements the CER so that it fully conforms to the remainder of the AMS requirements. This supplement, along with the CER document, provides the basis for revision of the existing forest plan.

Benchmark Analysis

The 1982 Planning Rule Procedures required an analysis of the management situation (AMS) to determine the ability of the planning area covered by the forest plan to supply goods and services in response to society's demands. The primary purpose of the analysis was to provide a basis for formulating a range of reasonable alternatives. The initial step in the AMS was to conduct *benchmark analyses*. Benchmark analyses define the range within which alternatives are to be developed and analyzed by identifying the maximums and minimums that each alternative should fall within (the feasible decision space). The KNF constructed benchmarks during development of our original plan (KNF 1987, EIS Appendix B). Monetary benchmarks were generated for those resources having an established market or assigned value. Biophysical benchmarks were developed to ascertain maximum production potentials for various goods and services.

Consistent with the original concepts of forest planning and the 1982 Planning Rule, much of the guidance in the existing plan is tactical and prescriptive, focused on outputs and how to do projects rather than on outcomes that should be attained. In the revised plan, outputs such as cubic feet of timber will not be targets, but are instead products that would result from forest restoration and maintenance activities.

During the need for change evaluation for revising the current forest plan, all benchmarks previously developed were reviewed and found to reasonably define the expected decision space. This review is documented in Appendix A. The range of alternatives developed during revision should fall within the maximums and minimums established by the original benchmarks. No adjustments to existing benchmarks and no new benchmarks are needed at this time. If, in the process of alternative development, it is discovered that an alternative falls outside the range of an existing benchmark, then the affected benchmark will need to be re-evaluated and re-established as necessary.

Projections of Demand Summary

This section provides a summary of demand projections for recreation, grazing, minerals, and timber on the KNF. The analyses of projections of demand are required under the 1982 planning rule provisions. These summaries are based on the report prepared by economists Joshua Wilson and Henry Eichman, TEAMS Planning Enterprise Unit (November 18, 2009), titled Recreation, Grazing, Minerals and Timber Demand: Analysis of the Management Situation. Projected future demand for forest resource-use was estimated using existing secondary data from federal, state, and forest-specific sources.

Considerable uncertainty exists in the projections of demographic and economic conditions, especially over longer periods of time for which projections are made. Shifts in policy, changes in management direction, and technological advances that improve the efficiency of harvesting methods and provide new uses for small diameter trees could all serve to alter the supply and demand situation for timber. Long-term drought coupled with increasing temperatures could have significant impacts on the availability of forage. These and other factors could influence projections of population growth in the hot and arid Southwest. While projections of demand for the Kaibab National Forest provide information about the general trajectories, it is necessary to keep in mind their utility is in providing context, not predictions.

The demand for outdoor recreation is projected to grow indefinitely so long as long as populations are increasing and the KNF should expect an increase in demand for all recreation activities during the current planning period. Non-consumptive wildlife and developed recreation, especially water-based recreation, will grow the most and may exceed the Forest's ability to meet demand. Capacity of general forest areas and designated wilderness is expected to experience slower demand growth during the next planning cycle.

The share of total demand for grazing within the market area (as measured by cattle inventory) declined by 40 percent in Coconino County (20,000 head) between 1975 and 2002 while declining by 63 and 48 percent within Mohave and Yavapai counties, respectively (25,000 and 36,000 head) between 1975 and 2003. While the share of total inventory within the market area that grazes on the KNF is likely small, it may be more important for smaller areas within the market area. Overall, the number of grazing permits on the KNF and authorized use has decreased over time. This decrease was, in large part, a reflection of reductions in use to bring

livestock numbers into balance with range conditions. These actions have resulted in improved range condition over the past 20 years (USDA 2008). Permitted use has stabilized and expected to remain relatively constant for the foreseeable future.

The KNF has significant areas with potential for common variety mineral development. Most current mining is of this type (e.g. sandstone, cinders). Extraction of construction related materials has been unsettled in recent years. Demand is influenced by local construction industries and economic conditions. As markets rebound, KNF managers may face an increase in the demand for construction related materials. There are minimal deposits of locatable minerals, however, as nearby mines become depleted, mining interest may increase on the Forest. Future exploration and development of uranium is the subject of a proposed administrative withdrawal and Congressional House Bill (HR 644).

It is estimated that current annual demand for timber on the KNF represents only 0.05 to 0.15 percent of inventory in the State. Annual removal of sawtimber on the KNF was 2.2 million cf in 2007. Between 1994 and 2007 the maximum, midpoint and minimum consumption were 2.2 million, 1.2 million, and 495,000 cf, respectively (Wilson and Eichman 2009). The Plan Revision Team conducted an analysis using Forest Inventory and Analysis data to determine net growth of ponderosa pine growing stock on available timberlands. Additionally, we reviewed the results from an inventory study done on the Forest in 1990. Growth rates vary significantly over time subject to varying periods of drought and wet conditions. Annual net growth estimates ranged from 16.8 to 27.8 million cf/yr. Annual net growth of ponderosa pine growing stock on available timberlands exceeds removals by 8 to 50 times. Although there are initial signs of emerging small-scale operations, the development of a competitive market for the wood fiber removed remains elusive. Without active forest restoration, forest conditions will continue to become more dense and more at risk for uncharacteristic disturbances. Unless a viable wood industry is established, restoration work is expected to be quite limited and only accomplished with subsidies.

Management Indicator Species

Management Indicator Species (MIS) are species selected during the forest planning process to allow evaluation of the differences between alternatives in the revised plan's EIS. There may be a need to change the MIS identified in the current plan to reflect changes in management direction made during plan revision during the evaluation of alternatives and, ultimately, within the revised Forest Plan. MIS selected for the final revised plan will be based on the proposed management in the selected alternative.

Lands Not Suitable for Timber Production

The definition of timber production is the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. Timber production does not include production of fuelwood. A

review of NFS lands within the planning area was conducted and a tentative determination of lands not suited for timber production was made. See Appendix B for details.

Review of Need for Change

The need to change the existing Forest Plan and topics to focus on during revision identified in the previous CER document were reconsidered in light of the above supplementary information. With the addition of the need to revaluate and potentially make changes to management indicator species, the needs for change focus topics identified in the CER remain valid.

APPENDIX A

Benchmark Review Documentation

During the development of the AMS document for the original forest plan, benchmark runs were generated using a linear programming model (FORPLAN) to define the maximum level of timber and forage the Forest was capable of producing. Additionally, monetary benchmark analyses were conducted to estimate the mix of outputs that would maximize present net value (PNV) for those goods and services having market or assigned values[1]. Outputs and activities that were included in the benchmark analyses for purposes of comparison and tradeoff evaluation were:

Net Merchantable Timber (MCF)

Net Sawtimber and Roundwood (MBF)

Pinyon-Juniper Fuelwood (MMBF)

Water Yield (MAcFt)

Dispersed Recreation (MRVD)

Wildlife (MWFUD)

Wilderness Recreation (MRVD)

Developed Recreation (MRVD)

Permitted Grazing Use (MAUM)

A review of the benchmarks and the associated minimum and maximum output levels is presented below. Benchmarks have been grouped by topic (outputs, economics). As a result, they are not all in the order they were presented in the original 1987 AMS analysis.

Benchmark #1: – *Minimum Level*

The "minimum level" defines the least cost program for keeping the Forest in public ownership. This benchmark provides for the protection of life, health, and safety of the users of the Forest. The minimum level benchmark was determined outside of the FORPLAN model.

The value for each of the outputs described above in the minimum level benchmark was set at zero (0). A value of zero is certainly appropriate for outputs that depend on management activities such as timber, developed recreation, and livestock grazing. However, some forms of

[1] The principle law guiding planning on the National Forests is the Resource Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976. The first RPA Program assessment was completed in 1985. Central to this process was the establishment of economic values for resource outputs (*RPA values*) for the purpose of comparing plan alternatives on a consistent present net value basis. Non-market *assigned* values were estimated for resource outputs such as water yield and recreation (e.g. hunting, fishing, dispersed and developed). These values were used to develop long range plans at the Regional and Forest level. See Table 2 for values included in the 1987 Plan EIS.

dispersed recreation would occur, such as wilderness use, fishing and hunting. The levels at which these activities would occur is not predictable. All of the fishing activity on the Forest occurs at constructed waters with developed facilities. As these facilities degrade, fishing activity may decrease. Reduced trail maintenance could result in a reduced the number of persons hiking. Reduced livestock grazing could make additional forage available for other ungulates - such as elk - that could result in increased populations. However, ungulate numbers could be reduced if the constructed stock tanks, currently widely distributed across the forest, become less functional without maintenance.

Any proposed plan alternative would produce the outputs described above at numbers greater than the minimum level. Thus, all alternatives would be within the minimum and maximum values.

Benchmark #2: -- *Basic Model Validation Run*

As earlier discussed, the previous planning effort was tactical and prescriptive, focused on outputs that were estimated in the resource allocation and scheduling model, FORPLAN. The current Plan is strategic in nature and focuses on desired outcomes. We are not using FORPLAN, now known as SPECTRUM, for Plan development therefore this benchmark is no longer applicable.

Benchmark #3: -- *Maximize Period 1 Timber Production*

The timber production level in Period 1 under this benchmark was 22.9 million cu ft/yr (approximately 115 million bd ft/yr). The highest volume removed on the KNF in the last 30 years was 17.25 million cu ft (approximately 86 million bd ft) in 1987 (see Figure 1). As discussed under the demand for timber section, sawtimber removal on the KNF in 2007 was 2.2 million cu ft (approximately 11 million bd ft).

All alternatives would be less than this maximum level benchmark.

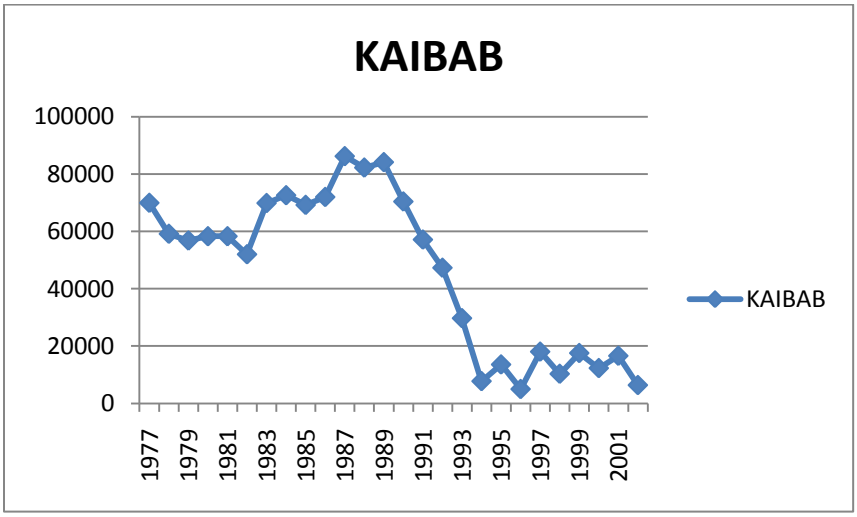

Figure 1. Volume cut KNF, 1977-2003.

Benchmark #9: -- *Maximize Grazing Capacity*

This benchmark maximizes grazing capacity over the entire planning horizon. This benchmark estimated grazing capacity in the first decade (1987-1996) at 80,000 AUMs/yr and up to 90,000 AUMs/yr in the 3rd decade (2007-2016). As shown in the demand analysis, the number of grazing permits on the KNF and authorized use has decreased over time to bring livestock numbers into balance with range conditions. In 2009, permitted use on the KNF was 65,174 AUMs. Permitted use has stabilized and expected to remain relatively constant for the foreseeable future. All alternatives would be lower than the maximum level benchmark.

Table 1. Changes in Permitted AUMS from 1971 to 2004.

District	Number of Allotments	Rescission Act Allotment	Permitted AUMS 1971	Permitted AUMS 1988	Permitted AUMS 2004	NEPA Decisions Completed in Period
Williams	28	17	62,915	43,845	38,540	18
North Kaibab	8	6	15,520	14,715	11,410	6
Tusayan	4	4	30,530	27,770	12,720	4
Forest Total	40	27	108,965	86,330	62,670	28

Benchmarks #4 and #6: -- *Maximize PNV with Assigned values and Maximize PNV with Market Values*

These were economic benchmarks required under the 1982 Planning Rule provisions. The market and assigned (non-market) values used for these benchmarks are shown in Table 2.

Increases in harvesting costs coupled with significant reductions in acres thinned and timber revenues would all serve to reduce present net value (PNV). This would also result in reductions in water yield, especially in the short run (3-10 years). Conversely, there have been increases in recreation. All alternatives should fall within the maximum and minimum levels of the economic benchmarks.

Benchmark #5: -- *Evaluation of the Nondeclining Yield (NDY) Constraint*

Nondeclining yield was another economic benchmark. The result, in terms of PNV, was compared to Benchmark #4 to evaluate the opportunity cost (change in PNV) of the NDY constraint. This benchmark was a function of a 120 year rotation of even-aged, regulated forest management. This benchmark is therefore no longer applicable. However, the desired conditions in the revised forest plan will be used to identify a nondeclining yield for suitable timber lands.

Table 2. Benefit values for outputs used in the 1987 forest plan analysis.

Output	Unit of Measure	Benefit Value
Net Sawtimber (inches in diameter)		
9 - 12	MBF	$56.29
14 - 16	MBF	$84.84
18 - 20	MBF	$94 33
22 and larger	MBF	$108.00
Net Products WMSCHD	MBF	$9.00
Net Products TUSYAN AND NOKAIB	MBF	$0
Wilderness Recreation		
Standard Service Level (STD)	RVD	$13.75
Less Than Standard Service Level (LSTD)	RVD	$7.29
Developed Recreation		
Standard Service Level	RVD	$9.47
Less Than Standard Service Level	RVD	$5.02
Dispersed Recreation		
Semi-Primitive Non-Motorized Standard	RVD	$13.59
Semi-Primitive Non-Motorized Less Than Standard	RVD	$7.20
Semi-Primitive Motorized Standard	RVD	$12.59
Semi-Primative Motorized Less Than Standard	RVD	$6 67
Roaded and Natural Appearing Standard	RVD	$10.41
Roaded and Natural Appearing Less Than Standard	RVD	$5.52
Highway Use	RVD	$5.52
Water Yield	ACRE-FOOT	$43.50
Mineral Material	TON	$0 28
Uranium Production	BBTU	$3 34
Grazing Capacity	AUM	$10.34
All Fuelwood	MBF	$7.75
Wildlife Recreation Use		
Big Game	WFUD	$30.00
Small Game	WFUD	$18 00
Non-game	WFUD	$25.00
Fishing	WFUD	$13 00
Burros	ANIMAL	$197.91

Benchmark #7: *-- Low Budget Benchmark*

The low budget benchmark was used to define the feasible and legal decision space. It was intended to represent the lowest intensity of management that could realistically be implemented.

This benchmark produced outputs much lower than all other benchmarks except for the *Minimum Level* benchmark which produced zero (0). However, the level of timber production in this benchmark (10,000 cu ft/yr) is greater than what the Kaibab NF has produced since 1994 (Figure 1 above)**.** Obviously, it was not the minimum. It is our belief that these minimums were established based on timber "*contractual obligations"* (Kaibab National Forest AMS 1986, p.65) in place at the time the Plan/EIS was prepared. Also, at the time the original Plan was written, it was Forest Service policy to make every effort to support (sustain?) the local timber-dependent industry. Thus, we assume the minimum timber output established in this benchmark was a function of this policy and contracts in effect at the time.

Benchmark #8: *-- Current Management*

This is the "no action" alternative and has been addressed in the CER and resulting needs for change.

APPENDIX B

Lands (acres) identified as suitable/not suitable for timber are shown in Table 3.

Table 3. Timber Suitability.

Timber Suitability Category	Acres
All NFS Lands within Plan Area	**1,536,916**
Non-forest Lands[1]	924,423
Withdrawn Lands	58,436
Irreversible Resource Damage	832
Adequate Restocking not Assured	78,023
Lands Tentatively Suitable for Timber Production	**475,202**
Current Forest Plan[2]	
Lands Not Appropriate for Timber Production	
Lands where Management Area Prescriptions preclude Timber Production	4,605
Lands where management requirements (219.27) cannot be met	20,717
Lands not cost efficient in meeting Forest objectives, including timber production	139
Lands Suitable for Timber Production	**449,741**
Lands Not-Suitable for Timber Production	**1,087,175**

[1] - Includes forested lands that are not capable of producing industrial wood, such as pinyon-juniper woodlands.

[2] - The area displayed in this section is expected to vary by alternative in the Plan revision analysis.