Forest Plan
Monitoring and Evaluation Report
FISCAL YEAR 2008
July 2009

Kootenai National Forest

United States Department Of Agriculture

Forest Service
Kootenai National Forest

United States Department of Agriculture **Forest Service** **Kootenai N.F.** **31374 U.S. Highway 2 W. Libby, MT 59923**

File Code: 1920

Date:

Dear Forest Planning Participant:

Over the last twenty-one years, our Monitoring and Evaluation program has shown that land management occurs in complex and changing situations and our results will not always be totally predictable, definitive, or certain. Many things, including natural events that cannot be predicted, affect management results.

Enclosed is the Kootenai's Forest Plan Monitoring Report for Fiscal Year (FY) 2008. This report includes information pertaining to four monitoring items as well as Forest Plan amendment information, to date. Notification of this report's availability to the public has been made on the Kootenai's Quarterly Schedule of the Proposed Action (SOPA). This report can be found at the following website: http://www.fs.fed.us/r1/kootenai/projects/planning/documents/forest_plan/monitoring/index.shtml.

If you have any questions regarding this Report, please contact Kathy Rodriguez at the Forest Supervisor's Office in Libby at 406-283-7659.

Sincerely,

PAUL BRADFORD
Forest Supervisor
Kootenai National Forest

FY 2008

Forest Plan Monitoring Report

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LIST OF ACRONYMS

BMU	Bear Management Unit
BORZ	Bears Outside the Recovery Zone
BY	Bear Year (April 1 to November 15 (IGBC))
CYE	Cabinet Yaak Ecosystem
EA	Environmental Assessment
EIS	Environmental Impact Statement
FIA	Forest Inventory and Analysis
FP	Forest Plan
FSM	Forest Service Manual
FY	Fiscal Year
GIS	Geographic Information System
HE	Habitat Effectiveness
KNF	Kootenai National Forest
LAU	Lynx Analysis Units
MA	Management Area
MDFWP	Montana Department of Fish, Wildlife and Parks
NCDE	Northern Continental Divide Ecosystem
NEPA	National Environmental Protection Agency
OMRD	Open Motorized Route Density
ORD	Open Road Density
ORV	Off-road Vehicle
T&E	Threatened and Endangered
TMRD	Total Motorized Route Density
TRD	Total Road Density
USFWS	United Stated Fish and Wildlife Service

INTRODUCTION

The Kootenai Forest Plan was approved on September 14, 1987. It established management direction that became effective on October 1, 1987 (Fiscal Year (FY) 1988). This direction was the result of a comprehensive analysis of land capabilities, public issues, and environmental effects along with a balancing of legal requirements.

We have now completed over twenty years of implementing the Forest Plan. Information from our monitoring reports and other assessments has been useful in preparing for revision of our Forest Plan. The Kootenai and Idaho Panhandle developed an Analysis of the Management Situation (AMS) in March of 2003. This AMS served as our five year monitoring summary and presented valuable monitoring and evaluation information which was used to assist us in identifying changes for Forest Plan revision.

Over the last twenty-plus years our Monitoring and Evaluation program has shown that land management occurs in complex and changing situations and our results will not always be totally predictable, definitive, or certain. Many things, including natural events that cannot be predicted, affect management results.

WILDLIFE & FISHERIES: Old Growth Habitat; Monitoring Item C-5

ACTION OR EFFECT TO BE MEASURED:	Old growth habitat amount and condition.
MONITORING OBJECTIVE:	Maintain habitat capable of supporting viable populations of old growth-dependent species (10 percent old growth in each drainage).
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Reduction below 10% in a drainage which was previously over minimum or any reduction in a drainage previously under minimum.

Purpose: This monitoring item was established to help ensure that an adequate amount of old growth habitat is designated on the Forest. The Forest Plan requires that this item be reported every two years. This item was last published in September of 2007. The expected accuracy and reliability of the information is moderate to high.

Background: The Forest Plan (Volume 1, page II-22) specifies that at any time 10% of the KNF land base below 5,500 feet elevation would be managed as old growth habitat. The old growth would be spread evenly through most major drainages, and would represent the major forest types in each of the drainages.

Kootenai Supplement (Supplement 85, 1991) to Forest Service Manual 2400 describes the validation process to be conducted on a compartment basis before the Forest conducts management activities that could affect old growth habitat. Validation, as defined in the Manual, is "on-the-ground verification." One of the requirements is that a minimum of 10% of each third order drainage or compartment (or combination of 3rd order drainages or compartments) be designated as old growth habitat. If 10% old growth does not exist within a compartment, designate the best available, soon to be future old growth to bring the total up to 10%, or designate additional old growth from an adjacent area to make up the difference.

Mature stands identified as old growth replacement are stands which will provide for old growth habitat in the future as they age and gain the desired attributes. See the Forest Plan Glossary and Appendix 17 of the Plan for more detail on the description of old growth attributes, including desired distribution patterns.

Inventory and Mapping: The KNF has two separate and independent sources of information for old growth. These are:

1) Forest Inventory and Analysis (FIA) data used to calculate KNF Forest-wide old growth percentages. FIA old growth results for the KNF were available for the first time in 2006.

2) Geographic Information System (GIS) layer of stands designated or undesignated as effective old growth or replacement old growth.

1) Old Growth Estimates from FIA Data

The National Forest Inventory and Analysis (FIA) program provides a congressionally mandated, statistically-based, continuous inventory of the forest resources of the United States. The FIA inventory design is based on the standardized national FIA grid of inventory plots that covers all

forested portions of the United States (all ownerships). FIA protocols specify sample plot location within this systematic grid. Both sample plot location and data collection standards are strictly controlled by FIA protocols. The sample design and data collection methods are scientifically designed, publicly disclosed, and repeatable. Data collection protocols are publicly available on the internet (http://www.fia.fs.fed.us/). There are also stringent quality control standards and procedures, carried out by FIA personnel of the Rocky Mountain Research Station. All of this is designed to assure that there is no bias in sample design, plot location, trees selected for measurement, or the measurements themselves.

The FIA provides a statistically sound representative sample designed to provide unbiased estimates of forest conditions at large and medium scales. This inventory design is appropriate for making estimates of old growth percentages at the scale of a national forest, or large areas of forest land. (More detail on the statistical foundation of using FIA data to assess old growth on national forests is found in: *Application of Forest Inventory and Analysis (FIA) Data to Estimate the Amount of Old Growth Forest and Snag Density in the Northern Region of the National Forest System by Raymond L. Czaplewski, Ph.D.* November 5, 2004 [available from Northern Region, US Forest Service]).

FIA estimates for old growth cannot be used to determine whether or not the Forest is meeting the Forest Plan standard for old growth. The FIA estimate is for all forest lands (not only lands <5500 feet in elevation) and does not include lands managed as replacement old growth. The estimate from FIA is helpful, however, in comparing to the old growth GIS layer used by the Forest for managing old growth.

The FIA data used to estimate old growth on the KNF was collected from 1993 to 1995. To account for disturbance since the inventory, those FIA plots having any disturbance (e.g., wildfire) since the date of inventory and up to the year 2003 were coded as not meeting the old growth definition. This may underestimate the amount of old growth, since not all disturbances would necessarily result in a reduction to old growth. FIA data was originally established to be re-inventoried every 10 years. Starting in 2002, the program has re-measured 10% of plots every year, with 50% of the forest re-measured at this time.

2) Stand-level map of old growth

The KNF continues to use a Geographic Information System (GIS) layer to identify stands that are effective or replacement old growth to meet Forest Plan standards. The stand-level old growth layer provides for distribution of old growth across the Ranger Districts and landscape, and serves as a basis for project planning. The acres associated with the old growth layer indicate whether or not Forest Plan standards are being met.

The Forest has been validating portions of its lands for old growth over the past 20 years (1989-2007), with the exception of the year 2000 (due to extensive wildfire on the Forest). In 2002, in response to litigation, the Forest conducted a forest-wide validation and inventory of old growth, using various survey methods. FIA data for estimating the amount of old growth forest-wide was not available at this time. The mapping of old growth included all of those lands previously validated as old growth, as well as other National Forest lands. This inventory was conducted, in part, to verify that the Forest had an adequate amount of well-distributed old growth habitat to meet the Forest Plan standard (i.e., 10% of the National Forest lands below 5500 feet in elevation), as well as the condition of the old growth (whether it was considered effective or replacement).

Figure C-5-1 displays effective and replacement old growth forest-wide. Figure C-5-2 displays lands designated or undesignated for old growth management forest-wide.

Results: The results from the FIA estimate of old growth are documented in the attached report, "Estimates of Old Growth for the Northern Region and National Forests" by Bush et al, dated May

16, 2007. This report indicates the estimated percent age of old growth (effective) on all forested lands on the Kootenai National Forest is 9.0% with a 90% confidence interval of 7.2% to 10.9%.

Acres from the stand level map are summarized forest-wide in Table C-5-1, displaying the total amount of old growth, whether the old growth is considered to be effective or replacement, and if the old growth has been designated or remains undesignated. There are approximately 1,870,000 acres of National Forest lands below 5500 feet in elevation. As of September, 2007 the stand level inventory indicates a total of 298,699 (16%) of National Forest lands below 5500 feet in elevation are either effective or replacement old growth. Approximately 10.7% (199,865 acres) of those lands were determined to be effective old growth and an additional 5.3% (98,834 acres) identified as replacement old growth.

Comparison: For existing old growth, the two separate tools for inventorying and monitoring old growth show similar results. The FIA data estimates old growth forest wide at 9.0% of the forest with a 90% confidence interval of 7.2% to 10.9%. The acres of effective (existing) old growth in the stand-level GIS layer total to 10.7% of forested lands less than 5500 feet in elevation. Although the FIA data shows less old growth at the mean (9.0%) than the stand level map (10.7%), the stand level map results are within the 90% confidence interval for FIA. As stated earlier, these data sources are measures for different land bases. The FIA percentage is forest-wide, while the stand level data is for lands <5500 feet in elevation. Another reason for the difference may be attributed to the age of the FIA data and the assumption that disturbed plots (e.g., FIA plots with any type of wildfire since inventory) do not meet old growth criteria, resulting in a conservative estimate from FIA.

Evaluation: The monitoring and evaluation of old growth habitat continues to indicate that the Forest is meeting its Forest Plan requirement for managing 10% of the forest as old growth habitat well distributed across KNF lands below 5,500 feet elevation.

Recommended Actions: Old growth validation (on-the-ground verification) and designation needs to continue as described in FSM 2400. Priority should be to:

1) Complete validation as soon as practical for areas that have been partially validated and then on areas not validated; and
2) Designate existing old growth in areas not validated.

Project level analyses will continue to use the stand-level GIS layer in their project level assessments.

Oldgrowth updated February 2008
10/1/2008

Forestwide Old Growth Below 5500' Elevation

		Designated old growth (designated as an old growth MA)*				Undesignated old growth (not in an old growth MA)*			TOTAL EFFECTIVE old growth (designated and undesignated)*		TOTAL REPLACEMENT old growth (designated & undesignated)*	Grand Total ALL TYPES old growth*		FS Acres DESIGNATED as an old growth Management Area*	
District	FS ACRES (total FS acres under 5500' minus lakes and highways)	designated and effective (plot, walk, vrec)	designated and effective (pi)	designated and replacement	desig unknown (original FP - categorized as pi)	undesignated and effective (plot, walk, vrec)	undesignated and effective (pi)	undesignated and replacement	TOTAL acres effective og	Percent of FS Acres in effective og		Acres of all old growth	Percent of FS Acres as all types old growth	Acres designated as old growth MA	Percent of FS Acres as old growth MA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
D1	245,629	22,815	338	4,652	275	14,710	796	6,634	38,370	15.62%	11,286	49,656	20.2%	28,080	11.4%
D3	183,772	17,793	2,362	1,252	1,461	17,049	1,764	0	38,194	20.78%	1,252	39,446	21.5%	22,868	12.4%
D4	504,317	38,128	2,372	16,036	1,469	4,101	3,924	3,491	46,888	9.30%	19,527	66,415	13.2%	58,005	11.5%
D5	557,323	45,730	2,507	23,778	355	3,153	2,730	6,236	52,238	9.37%	30,014	82,252	14.8%	72,370	13.0%
D7	378,181	5,072	2,257	16,945	15,939	1,643	10,860	19,868	24,149	6.39%	36,813	60,962	16.1%	40,213	10.6%
Forest Total	1,869,222	129,538	9,836	62,663	19,499	40,656	20,074	36,229	199,839	10.69%	98,892	298,731	16.0%	221,536	11.9%

** All old growth acreages and percents shown in this table include only those stands below 5500' elevation. Not shown are over 19,000 acres of old growth that has been identified above 5500' elevation.*

(1) Total FS Acres minus those acres over 5500' elevation, lakes and highways
(2) Designated Effective Old Growth stands - designated as a Management Area (MA) - inventoried by plot, walk-through or visual recon data
(3) Designated Effective Old Growth stands - designated as an MA - inventoried by photo interpreted data - only 60% of this acreage is calculated as effective old growth (reference FP Appendix 17, pg.17-3)
(4) Designated Replacement Old Growth stands - designated as an MA
(5) Designated unknown: Old Growth designated in the original Forest Plan as an MA, not inventoried yet to determine effectiveness - only 60% of this acreage is calculated as effective old growth (reference FP Appendix 17, pg.17-3)
(6) Undesignated Effective old growth - not in an old growth MA - inventoried by plot, walk-through or visual recon data
(7) Undesignated Effective old growth - not in an old growth MA - inventoried by photo interpreted data - only 60% of this acreage is calculated as effective old growth (reference FP Appendix 17, pg.17-3)
(8) Undesignated Replacement stands
(9) TOTAL acres of effective old growth includes column (2) + column (6) and 60% of column (3), (5) and (7) (these columns reflect stands inventoried by photo interpretation: Reference FP Appendix 17, pg 17-3)
(10) PERCENT of Forest Service acres that are effective old growth = TOTAL old growth (column 9) divided by total FS acres (column 1)
(11) Total Replacement old growth acres = column (4) + column (8)
(12) TOTAL all acres of old growth below 5500' = total effective old growth (column 9) + total replacement old growth (column 11)
(13) Percent of Forest Service acres that are effective or replacement old growth below 5500' = Total all acres old growth (column 12) divided by total FS acres (column 1)
(14) Acres and Percent of FS acres Designated as an old growth Management Area (MA). Includes effective and replacement old growth. Does not include designated old growth over 5500'.

Table C-5-1. Stand Level Old Growth Summary

Figure C-5-1. Old Growth by Type

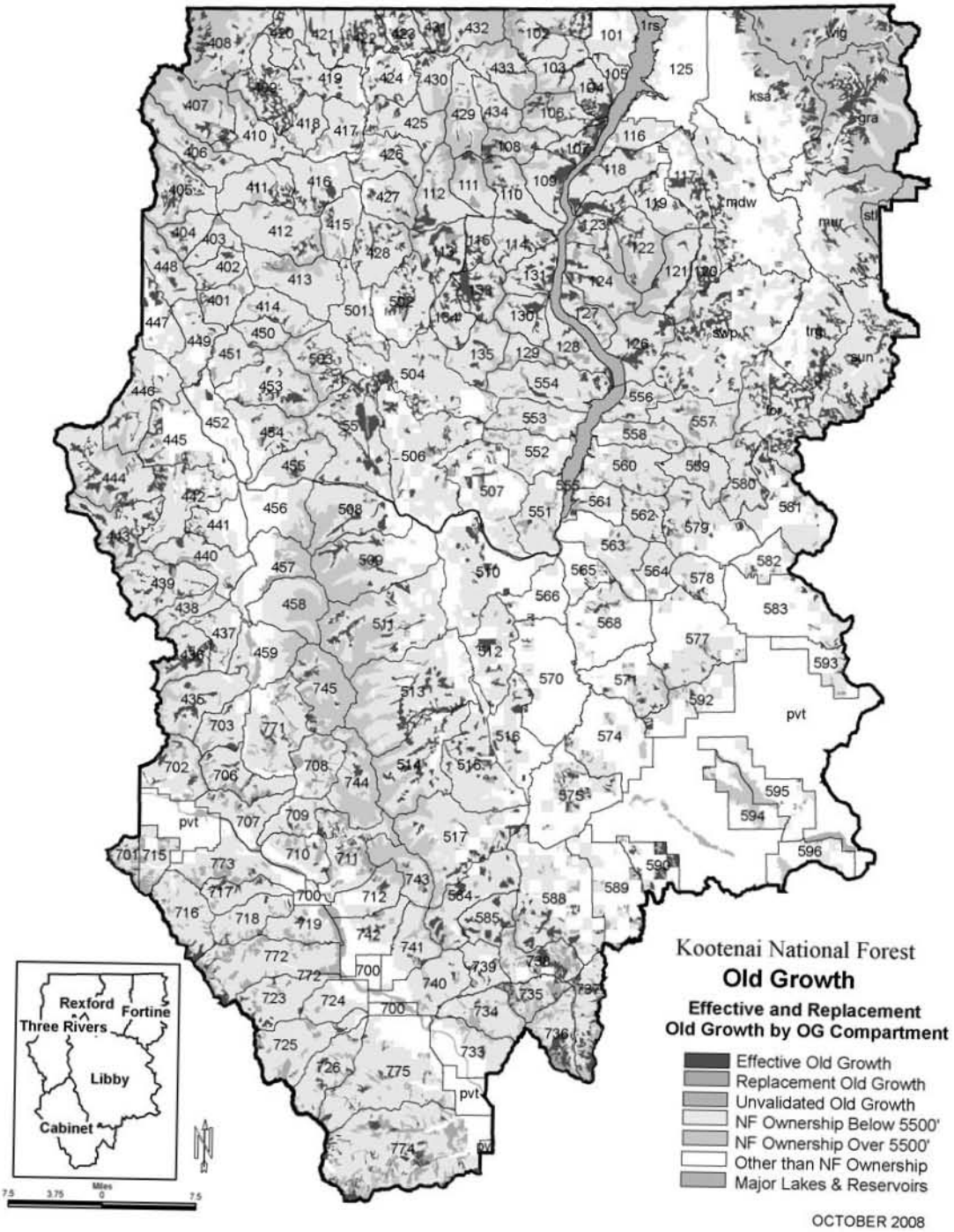
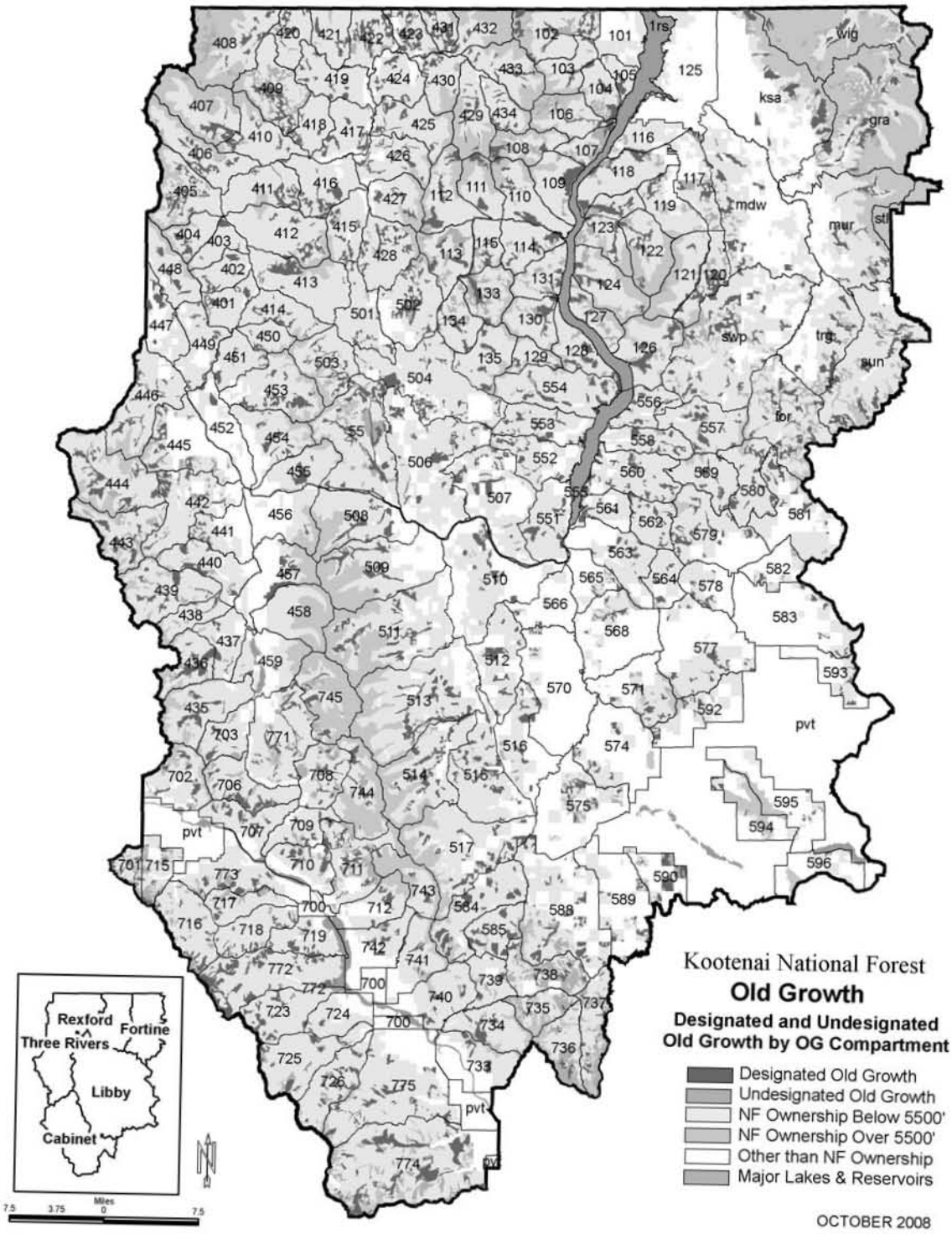


Figure C-5-2. Designated and Undesignated Old Growth



WILDLIFE & FISHERIES: Threatened & Endangered Species Habitat; Monitoring Item C-7

ACTION OR EFFECT TO BE MEASURED:	Provide habitat adequate to ensure KNF contribution to the recovery of Threatened and Endangered (T&E) Species including: Lynx, Gray Wolf, Grizzly Bear, Bull Trout and White Sturgeon.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	Any downward population trend. Any forest-wide decrease in habitat quantity or quality. Failure to meet recovery plan goals for the KNF.

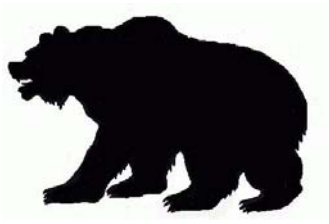
Purpose: This monitoring item was established to help ensure that the KNF contributes to the recovery of listed threatened and endangered species. The Forest Plan requires that this item be reported annually. This item was last published in 2007. The expected precision and reliability of the information is high and moderate, respectively.

Evaluation:

Gray Wolf – the gray wolf was removed from the list of threatened and endangered species in May 2009. The gray wolf recovery plan and the Montana Gray wolf management plan provide guidance for gray wolf management. At the end of 2008, there were 11 packs on the forest and two border packs with a minimum of 60 wolves. Five of the packs met the criteria for a breeding pair (an adult male and female with two surviving pups on December 31). Upon delisting, the gray wolf is included on the Regional Forester's list of R1 sensitive species. This is the last time gray wolf monitoring will be reported as part of the Kootenai Forest Plan Monitoring Report item C-7. It will continue to be reported under item C-8.

The Wolf Recovery Plan (USFWS 1987) provides guidance for the recovery of the gray wolf. The KNF is part of the Northwest Montana Wolf Recovery Area. The recovery goal for this area is ten wolf packs, which has been met for seven consecutive years (2002-2008) (USFWS 2009). Wolves from each of the known packs spend at least a portion of their time on the KNF and the remainder on other National Forests, State, or private lands. Information on individual wolf packs on the KNF is included in the Montana Gray Wolf Conservation and Management 2008 Annual Report (Sime et. al. 2009) http://www.fwp.gov/wildthings/wolf.

Habitat and Population Trend: Wolf numbers using the KNF continue to increase, reflecting continuing suitable habitat conditions. Wolf habitat conditions did not change significantly in 2008, compared to previous years. Big game populations are providing adequate prey resources for continued use by gray wolves.



Grizzly Bear – The KNF contains portions of two grizzly bear recovery zones: the Cabinet-Yaak Ecosystem (CYE) and the Northern Continental Divide Ecosystem (NCDE). About 72 percent of the CYE is located on the western portion of the Forest and about four percent of the NCDE is located in the extreme northeast corner of the Forest. Each of these ecosystems is further subdivided into smaller areas for analysis and monitoring, known as bear management units (BMUs).

The Forest's primary efforts in grizzly bear recovery are in habitat management, cooperating in grizzly bear studies in the Yaak River and Cabinet Mountain areas, and working with local citizens and interest groups to achieve understanding and consensus on grizzly bear management issues.

Recovery goals for each recovery zone are based on the Grizzly Bear Recovery Plan (USFWS 1993). Three main criteria are used to evaluate grizzly bear recovery:

1) the number of unduplicated sightings of females with cubs averaged over a six-year period;
2) the distribution of females with cubs, yearlings, or two-year-olds measured as the number of BMUs occupied over a six-year period; and
3) the level of known human-caused mortality measured as a percentage of the estimated population average for the past three years.

Sightings of females with cubs-of-the-year, distribution of females with young and human-caused female mortalities do not yet meet recovery goals for the CYE. With the exception of human caused female mortalities recovery goals are met in the NCDE.

The following is a discussion of the forests contribution toward meeting the recovery plan goals.

Unduplicated Sightings of Females with Cubs: In 2008, there were two credible sightings of unduplicated female grizzly bears with cubs-of-the-year in the Kootenai portion of the CYE (personal communication: Kasworm July 2009), and one in the KNF portion of the NCDE.

Distribution of Females with Young: Two of the 17 BMUs on the Kootenai portion of the CYE were occupied by females with young in 2008. The total number of different BMUs occupied over the entire recovery zone during the past six years was twelve, compared to the Recovery Plan goal of eighteen (personal communication: Wayne Kasworm, July 2009). The one BMU in the Kootenai's portion of the NCDE was occupied by a female with young during the year.

Mortality: There were two human caused mortalities in the CYE; one in the U.S. (sex unknown) and one just north of the border in British Columbia (personal communication: Kasworm, July 2009). Neither mortality was in the Kootenai portion of the CYE. There were no mortalities in the Kootenai portion of the NCDE.

Table C-7-1. Grizzly Bear Females with Cubs, Distribution of Females with Young, and Human-Caused Mortalities

Bear Year (BY)	NCDE (KNF Portion only)			CYE (KNF portions only)		
	# Females with Cubs of the year	#BMUs Occupied by Females with Young	# Human Caused Mortalities	# Females with Cubs of the year	# BMUs Occupied by Females with Young*	# Human Caused female Mortalities
2003	0	0	1	2	7	0
2004	4	1	1	1	5	0
2005	2	1	0	1	3	2
2006	0	1	1	1	3	0
2007	2	1	1	4	8	1
2008	1	1	0	2	2	0
Six-year Average	1.5	0.8	0.7	1.8	4.7	0.5

* Note: 12 different BMUs were known to be used by females with young over the past 6 years

With the District court decision (12/13/2006) to set aside the Forest Plan Access amendment, habitat criteria for linear open road density and percent habitat effectiveness once again are reported. The linear open road density criterion is $\leq$ 0.75 miles per square mile for each BMU. Fifteen of the 17 BMUs on the KNF meet this criterion. The habitat effectiveness criterion is $\geq$ 70 percent. Twelve of the 17 BMUs on the KNF meet this criterion.

Applying best science (Wakkinen and Kasworm 1997) has established additional access management consideration in assessing grizzly bear habitat in the CYE. Identified monitoring parameters include Open Motorized Route Density (OMRD)1, Total Motorized Route Density (TMRD)2 and core.

Tables C-7-2A, B, and C display Core (see Figure C7-1), OMRD, and TMRD values by BMU for bear years (BY) 2000 through 2008. Changes in core, OMRD and TMRD in FY08 are the result of management activities, activities on private land, and field verified corrections in road status from bear year 2006.

Table C-7-2A. Bear Year (BY) (4/1 thru 11/30) Percent Core for the CYE by BMU

BMU	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %	BY 05 %	BY 06 %	BY 07 %	BY08 %
1 Cedar	83	83	83	83	84	85	85	83	83
2 Snowshoe	78	77	77	78	78	77	76	76	76
3 Spar	58	61	62	62	63	63	62	60	60
4 Bull	63	63	62	62	63	63	63	62	63
5 Saint Paul	62	62	63	60	60	59	60	58	59
6 Wanless	53	55	55	54	56	54	54	53	54
7 Silver Butte/Fisher	66	66	66	66	66	67	67	62	63
8 Vermilion	57	56	56	56	56	56	56	54	55
9 Callahan	56	57	57	59	60	59	58	58	59
10 Pulpit	48	49	49	52	52	51	51	52	52
11 Roderick	55	54	54	53	53	53	52	52	54
12 Newton	56	57	57	56	56	56	56	56	57
13 Keno	59	62	62	61	61	61	59	59	59
14 NW Peak	56	56	56	57	57	56	55	55	56
15 Garver	48	47	50	50	48 *	46	45	46	54
16 E Fk Yaak	45	45	45	49	55	54	53	53	54
17 Big Creek	49	50	50	50	50	49	54	55	59
Average (not weighted)	58	59	59	59	60	59	59	58	60

Highlighted value does not meet the $\geq$ average 55% level identified by research (Wakkinen & Kasworm 1997).
* In BMU 15, percent core change is the result of an error correction in BY03. Correction was made after on-the-ground validation of road status.

1 OMRD = Calculation made with the moving windows technique that includes open roads, other roads not meeting gated or impassible criteria, and open motorized trails. Density is displayed as a percentage of the analysis area in a defined density category (IGBC 1998)
2 TMRD = Calculation made with the moving windows technique that includes open roads, restricted roads, roads not meeting all impassible criteria, and open motorized trails. Density is displayed as a percentage of the analysis area in a defined density category. Example: 20 percent great than 2.0 miles of road per square mile of habitat (IGBC 1998).

Table C-7-2A cont. Bear Year (BY) Percent Core for the NCDE by BMU

BMU	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %	BY 05 %	BY 06 %	BY 07 %	BY 08 %
Murphy Lake NC-1	70	70	72	72	72	72	72	72	72

Table C-7-2B. Bear Year (BY) OMRD Conditions (% BMU > 1 mi/mi^2) for the CYE by BMU

BMU	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %	BY 05 %	BY 06 %	BY 07 %	BY 08 %
1 Cedar	12	12	12	12	13	14	12	12	14
2 Snowshoe	17	17	17	17	17	19	20	19	19
3 Spar	24	26	27	24	25	26	27	27	27
4 Bull	36	36	36	36	37	37	36	37	37
5 Saint Paul	27	27	26	27	26	27	27	28	28
6 Wanless	34	34	33	37	33	35	35	32	30
7 Silver Butte/Fisher	23	23	23	23	23	24	23	25	27
8 Vermilion	32	32	32	32	32	32	32	33	33
9 Callahan	32	32	32	26	26	28	28	27	27
10 Pulpit	45	41	41	41	41	42	41	44	44
11 Roderick	29	29	31	30	29	28	28	28	28
12 Newton	45	43	43	41	41	42	42	42	42
13 Keno	34	33	28	33	33	34	34	34	34
14 NW Peak	28	35	28	27	28	28	28	28	28
15 Garver	31	31	31	31	29	33	30	30	29
16 E Fk Yaak	31	28	29	28	31	28	28	29	31
17 Big Creek	32	32	31	31	31	29	31	30	30
Average	28	30	31	31	31	30	30	30	30

Highlighted value does not meet the $\leq$ average 33% level identified by research (Wakkinen & Kasworm 1997).

Table C-7-2B cont. Bear Year (BY) OMRD Conditions (% BMU > 1 mi/mi^2) for the NCDE by BMU

BMU	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %	BY 05 %	BY 06 %	BY 07 %	BY 08 %
Murphy Lake NC-1	20	20	19	19	20	20	20	20	20

Table C-7-2C. Bear Year (BY) TMRD Conditions (% BMU > 2 mi/mi^2) for the CYE by BMU

BMU	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %	BY 05 %	BY 06 %	BY 07 %	BY 08 %
1 Cedar	11	11	10	11	10	8	8	9	9
2 Snowshoe	14	14	14	14	14	14	15	16	15
3 Spar	30	27	26	26	24	24	24	27	27
4 Bull	26	26	26	26	26	26	26	26	26
5 Saint Paul	21	21	21	21	21	24	23	23	24
6 Wanless	33	32	32	32	31	31	33	33	33
7 Silver Butte/Fisher	20	20	20	20	21	20	21	23	23
8 Vermilion	21	23	23	23	23	23	23	24	22
9 Callahan	28	27	27	26	26	26	26	26	26
10 Pulpit	34	32	32	30	31	29	28	28	28
11 Roderick	27	28	28	28	29	29	28	29	28
12 Newton	31	29	30	31	31	31	30	31	30
13 Keno	24	24	24	24	23	24	25	25	25
14 NW Peak	26	26	26	25	26	26	26	26	26
15 Garver	32	32	30	29	29	34	33	32	25
16 E Fk Yaak	38	38	38	30	25	26	26	27	27
17 Big Creek	27	26	26	25	25	25	20	18	15
Average	26	26	24	25	24	25	23	25	26

Highlighted value does not meet the ≤ average 26% level identified by research (Wakkinen & Kasworm 1997).

Table C-7-2C cont. Bear Year (BY) TMRD Conditions (% BMU > 2 mi/mi^2) for the NCDE by BMU

BMU	BY 00 %	BY 01 %	BY 02 %	BY 03 %	BY 04 %	BY 05 %	BY 06 %	BY 07 %	BY 08 %
Murphy Lake NC-1	12	12	6	6	6	6	6	6	6

Bears outside the Recovery Zone (BORZ). In addition to the monitoring items inside the recovery zone, criteria for areas outside the recovery zones that are occupied by grizzly bear are also monitored to assure compliance with ESA. The criteria for bears outside the recovery zone (BORZ) polygons are:

- no increases in linear open road density above baseline conditions
- no permanent increases in linear total road densities above baseline conditions.

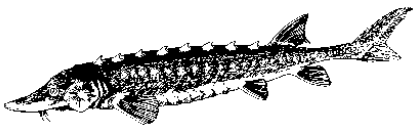
Table C-7-3 shows the baseline conditions established as of 2003 and corrected in 2005 and reports this year's status.

Table C-7-3. Linear Open and Total Road Densities (miles/mile^2) by BORZ Polygon

BORZ Polygon	Baseline Linear Open Road Density (ORD)	FY04	FY05	FY08	Baseline Linear Total Road Density (TRD)	FY04	FY05	FY08
Cabinet Face	2.2	2.2	2.2	2.2	3.9	3.9	3.9	3.9
Clark Fork	0.9	0.9	0.9	0.9	2.6	2.6	2.6	2.6
Tobacco	2.0	1.8	2.0	2.0	3.0	3.3	3.0	3.0
Troy	1.2	1.1	1.1	1.9	2.6	2.5	2.5	2.9
West Kootenai	1.3	1.3	1.3	1.3	3.0	3.0	3.0	3.0
Fisher	1.0	1.0	1.0	1.0	2.7	2.7	2.7	2.7
Libby	1.9	1.9	1.9	1.9	3.4	3.4	3.4	3.4

Summary: For the Kootenai portion of the CYE: Sightings of female grizzly bears with cubs of the year in FY08 were down from FY07. Females with young occupied fewer BMUs than in the previous year. There were no human caused female grizzly mortalities in 2008. Overall, open route densities remained the same and total route densities increased during the year. The amount of total core area in grizzly habitat increased from last year. The grizzly bear population trend in the CYE has about a 94% probability that it is declining (Kasworm et.al. 2007).

Lynx – The Canada lynx was listed as threatened in March, 2000. The KNF currently manages for lynx habitat using the Northern Rockies Lynx Management Direction (McAllister et. al. 2007). The Forest delineated 47 Lynx Analysis Units (LAUs) which approximate a lynx home range size. At the end of 2008 three of the 47 lynx analysis units had more than 30% of the lynx habitat in the stand initiation structural stage. All LAUs had ≤ 15% changed to unsuitable condition in the last 10 years and none of the LAUs had more than 1 adjacent LAU that exceeded the 30% in the stand initiation stage. Management for lynx of the forest meets the Northern Rockies Lynx Management Direction.



White Sturgeon -- The US Fish and Wildlife Service (FWS) Recovery Plan for the Kootenai River white sturgeon was signed on September 30, 1999. The short-term goals of the Plan are to re-establish natural reproduction and prevent extinction of the species. Long-term goals include providing suitable habitat conditions and restoring a natural age-class structure and an effective population size. This stock of fish will be considered for down listing to threatened status after 10 years only if natural reproduction occurs in three different years; the estimated population is stable or increasing; enough captive-reared juveniles are added to the population for 10 consecutive years that 24 to 120 juveniles survive to maturity; and a long-term Kootenai River flow strategy is implemented that ensures natural reproduction. Delisting of this population is estimated to take at least 25 years following the approval of the Recovery Plan.

Recovery of white sturgeon is managed by Idaho Fish and Game, Kootenai Tribe of Idaho, and Montana Department of Fish, Wildlife and Parks. The Recovery Plan for the white sturgeon outlines a comprehensive set of actions needed to begin the recovery process. The Plan does not identify actions or objectives that directly affect management of the Kootenai National Forest. However, under the Endangered Species Act (Section 7(a)(1)), the Forest is obligated to use its authorities to aid in the recovery process and to consult with the USFWS on all proposed or authorized activities. All proposed projects and activities evaluated by the Forest in FY 08 were found to have No Effect on the species.

In 2006, the USFWS issued a biological opinion regarding the Army Corps of Engineers' and the Bonneville Power Administration's proposed operation of Libby Dam and its effect on the Kootenai River white sturgeon and its critical habitat (USFWS 2006). Although the proposed action includes provisions for augmenting flows, creating appropriate water depths, and for increasing the amount of rocky substrate within a portion of sturgeon breeding habitat, these actions are experimental, the schedule for their implementation is not well defined, and their effects on the sturgeon are uncertain. The final

opinion includes findings that the proposed action will jeopardize the continued existence of the Kootenai River white sturgeon and adversely modify its critical habitat.

Ongoing population research on the white sturgeon has indicated that from nine to 20 spawning events occur annually in the Kootenai River and many viable embryos are produced (Paragamian and Wakkinen 2002). Most of the post-Libby Dam spawning events have been documented in areas where substrate conditions appear to be unsuitable for egg incubation and larval rearing (Paragamian et al. 2001). No larvae and very few wild juveniles have been collected despite years of intensive sampling (Rust and Wakkinen 2005). Releases of hatchery reared juveniles (as young as nine months of age at release) consistently exhibit successful growth, and second year survival rates exceed 90% (Ireland et al. 2002). Between 1992 and 2004, the Kootenai River sturgeon population has been augmented with nearly 47,000 juveniles (age 1 and 2) from the Kootenai Tribe of Idaho Conservation Aquaculture Facility and the Kootenai Sturgeon Hatchery. The most recent population estimate in 2006, from the Idaho Department of Fish and Game indicates there are approximately 450 adult sturgeons in the population (Paragamian et al. 2005).

Bull trout -- The Kootenai National Forest continues to consult with the USFWS on all proposed activities under Section 7(a)(2) of the Endangered Species Act. The Forest also works closely with the five other western Montana National Forests, Bureau of Land Management and the USFWS to implement Programmatic Biological Assessments and maintain consistency for consultation standards.

There were three projects submitted for formal consultation with the USFWS in FY 2008. The determination of the biological assessments in all cases was: May Affect, Likely to Adversely Affect bull trout. The projects included one placer mining permit, a timber harvest project that included stream restoration, a channel stabilization associated with an existing bridge and a mine adit development. The work submitted for formal consultation included instream suction dredging in known bull trout rearing habitat Libby Creek; a timber harvest in Marten Creek located in the Clark Fork drainage which has stream channel and riparian vegetation restoration components; and a channel stabilization/restoration associated with a bridge on Granite Creek.

The forest also implemented Phase III of the Pipe Creek Bull Trout Habitat Enhancement Project. This work has been done in partnership with the USFWS and MFWP over the past 8 years in an effort to increase the number of bull trout in Pipe Creek. This project removed a debris jam which was a migration barrier and created six large pools for security and rearing habitat. This year Pipe Creek had four redds

The Forest continues to work closely with Montana Department of Fish Wildlife and Parks, Idaho Department of Fish and Game, Avista, and the USFWS to determine distribution and abundance of bull trout within the boundaries of the Kootenai National Forest. This includes yearly surveys to identify the number of redds and spawning adults in several streams across the Forest. Table C-7-4 below shows the number of bull trout redds surveyed in 2008. Redd numbers in Keeler Creek, Grave Creek, O'Brien Creek and the US portion of the Wigwam River were up, the remainder of the streams showed a general decrease in redd numbers. Pipe Creek had no redds.

Table 7-4. Bull trout redd survey summary for all index tributaries in the Kootenai & Clark Fork River Basins MT, 2008.

Stream	No. of Redds	Miles Surveyed
Kootenai river Tribs		
Grave Creek Includes (Clarence) and (Blue Sky) Creeks	207 (27) (10)	9
Quartz Creek Includes (West Fork)	46 (32)	10.0
O'Brien Creek	**79**	**5.3**
Pipe Creek	4	8.0
Bear	14	4.25
Keeler Includes (North Fork) and (South Fork)	62 (28) (8)	8.9
Wigwam Includes Bighorn, Desolation, Lodgepole (U.S.)	1843 (10)	22
Other B.C.	347 (137) (137) (73)	15

Includes (Skookumchuk) (White) (Blackfoot)		
West Fisher (USFS and FWP)	6	6
Callahan Creek (MFWP)	15 (14) (1)	5
(North) and (South Callahan) not mainstem		na
Clark Fork River Tribs		na
Bull River	0	na
South Fork Bull River	4	na
East Fork Bull River	4	na
Rock Creek	1	na
Swamp Creek	4	na
Marten Creek	0	na
Vermilion River	15	na
Graves Creek	10	na
Prospect Creek	8	na

Recommended Actions: Based upon the best available information, populations of all threatened or endangered terrestrial species, except grizzly bear, on the Kootenai are stable or increasing. The bald eagle was removed from the threatened and endangered list in August 2007. All of the threatened and endangered species' habitats being monitored appear to be maintaining or improving. Information shows that the Kootenai National Forest is progressing toward providing adequate habitat for threatened and endangered species recovery. Based on review of this item, specific changes to Forest Plan direction are not needed at this time. It is recommended that the Forest continue to implement recovery actions and actively seek to improve habitat conditions for listed species populations. It is further recommended that the Forest increase information and education efforts related to grizzly bears, especially food attractants. It is also recommended that the Forest increase cooperative efforts with county officials to place bear resistant dumpsters to reduce grizzly bear mortality risks due to food attractants.

Lastly, it is recommended that the Forest continue to implement recovery actions under section 10(a)(1)(A) and actively seek to improve connectivity of bull trout populations.

SOIL AND WATER: Soil Productivity; Monitoring Item F-4

ACTION OR EFFECT TO BE MEASURED:	Determine the changes in site quality due to surface displacement and soil compaction.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	A 15 % decrease in site productivity.

Purpose: This monitoring item was established to help ensure that the basic soil resource is not compromised in the production of other resources such as timber harvesting, grazing, etc. The Plan requires this item to be reported every five years. The expected accuracy and reliability of the information are moderate.

Background: Soil resource management has the goal of maintaining or improving long-term soil productivity and soil hydrologic function. Soils can be physically damaged by displacement, compaction, and puddling from the wheels of vehicles, the hooves of cattle, the weight of a dragged log, the equipment dragging the log, etc. These factors result in the reduction of pore space, which reduces the ability of water to move into and through the soil. The soil is especially vulnerable during wet weather and wet soil conditions. Pore space reduction means more overland flow which can result in surface erosion and/or mass soil movement. The soil can also be physically and chemically damaged by heat during any intense burning, such as from wildfires, broadcast burning during site preparation, or by the burning of mechanically-bunched slash piles. Soils that are damaged from all the above conditions incur adverse affects on their hydrologic function and/or sustain actual losses in soil productivity.

Region 1 has a policy that allows up to 15 percent detrimental disturbance (FSH 2509.18, 5/1/94; updated 1999 FSM 2500 – Watershed and Air Management, R-1 Supplement No. 2500-99-1, Chap 2550 – Soil Management). The Kootenai Forest uses the 15 percent detrimental disturbance as a measure to track the impact on site productivity. If 15 percent of an area is significantly disturbed, then we can say that it has probably incurred a decrease in long-term site productivity.

Field monitoring prior to 2007 was done within activity areas using **line transect** and **walk-through** methods (patterned after Howes et al. 1983). The *line transect* was performed perpendicular to the direction of the ground-disturbing activity and involved from one to five transects within each activity area. Each step along the transect represented a monitoring point. Both quantitative and qualitative descriptions were provided. The *walk-through* method involved walking through the unit and providing a qualitative description of the soil impacts. Each transect represented the various activities that occurred within that portion of the activity area. The monitoring was representative of the variety of timber harvesting techniques that occurred on the Kootenai NF. The activities represented are skyline/cable logging, forwarder logging, tractor logging (rubber tired skidders and tracked vehicles) and horse logging. Both summer and winter operational periods are included in the ground-based activities. Fuel reduction/site preparation activities have occurred in some of the units.

In 2007, under regional Forester direction, the Kootenai along with other forests in Region 1 began using the draft Northern Region Soil Disturbance Monitoring Protocol (2007). This methodology is similar to what has been used on the Kootenai for the last 19 years; however, the two data sets are not statistically comparable, so for the purposes of Forest Plan Monitoring Report the respective results for the two methodologies are reported separately. The new methodology requires determining soil disturbance at one of four levels along a random transect. The transect is monumented for future use and a minimum of 30 points are randomly collected equidistant within the activity area along a randomly selected transect. The goal of such data collection process is to obtain a representative estimate of the amount and types of management-caused disturbance. When sampling is chosen randomly and "large enough," it can be considered representative of the activity area, as a whole.

The following forest level soil monitoring questions are part of the Region 1 monitoring strategy:

- What are conditions and trends of soil quality for the project area? How do these conditions compare to desired conditions and objectives and is there a need to change the Plan or management actions?
    - Measurement: Acres in detrimental soil conditions reported as a percentage of total treatment area acres (forested).
- How are management actions maintaining soil quality?
    - Measurement: 1) Implementation of protective measures, e.g. design criteria, mitigation measures-verifying that we did what we said we would do (compliance with Plan and EMS) 2) Effectiveness of the protective measures.

Results: Table **F-4-4** summarizes the amount and type of harvest monitoring completed between 1988-2006. Surveys have been completed on 462 (231 transects and 231 walk-throughs) timber harvest units scattered across the forest between 1988 and 2006. These areas represent the current logging methods including the types of equipment being used for mechanical falling, skidding, yarding, and slash piling. The areas reviewed ranged in size from two to 226 acres. Surveys have been completed by two methods: transect and walk-through. Table **F-4-5** summarizes the amount and type of harvest monitoring completed for 2007-2008. Monitoring surveys have been completed on 43 (43 transects and 0 walk-throughs') timber harvest units scattered across the forest in that time frame. Similar to 1988-2006 the areas monitored represent the current logging methods including the types of equipment being used for mechanical falling, skidding, yarding, and slash piling. The areas reviewed ranged in size from 5 to 186 acres. Surveys have been completed using the Northern Region Soil Disturbance Monitoring Protocol

The 1992 report showed that 49% of the 501 transected-acres surveyed to that point were above the Forest Plan variability limits of 15% detrimental disturbance. Since then, 12,696 acres have been surveyed and less than .03% (29 acres) was above the Forest Plan limits. Similarly, in the last five year reporting period there were four units that exceeded the 15% detrimental disturbance (see Table F-4-3a). Table **F-4-3b** shows the acres determined to exceed the 15% detrimental disturbance criteria. For the five year period (2004-2008) 3,381 acres out of a total 31,499 acres harvested (regeneration or intermediate harvest) were surveyed or 11% of the activity areas monitored. Table **F-4-1** displays the types of timber sales monitored from 1988-2008. Table **F-4-2** displays the number of units by harvest types monitored from 1988-2008. Areas where cable logging methods were used show little or no detrimental disturbance. The use of forwarders and winter logging, also, result in very low to low detrimental disturbance. Areas where tractors were used or where very moist soils were present resulted in a higher level of detrimental disturbance, however, were still within the desired levels. In general, the amount of heavily disturbed area increased directly with the number of machinery operations, the amount of area impacted, and/or the amount of moisture in the soil.

Evaluation:

1988-1992 Results: A total of 102 units (20 transects and 82 walk-throughs) were monitored during this time period. Only walk-through monitoring occurred during the first four years of this five year period. The 1992 Monitoring Report indicated that 49% of the line-transected surveyed acres, to that point, were beyond the Forest Plan variability limits. Twenty units on 10 sales were monitored. Eight units comprised of 245 acres contained more than 15% detrimental compaction. They ranged from 19 to 27%. The influence of past activities was observed in one of the units. Unit One of the Good Creek P.C. Sale only had 10% detrimental impact from the current activities. However, due to past harvest activity in the early sixties another nine percent occurred at that time. Since the previous activity built excavated trails horizontally across the terrain and the current activities were generally accomplished vertically on the landscape, the combination of the two activity periods created 19% detrimental impact.

Table F-4-1 Types of Timber Sales Monitored by year

Sale Types	88	89	90	91	92	93	94	95	96	97	98
Regular	2	2	1	3	10	9	3	7	8	5	12
Pest Control	2	3	1	2	4	3	0	0	8	7	7
Fire Salvage	0	5	10	9	0	4	0	0	4	11	3
Sale Types	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	
Regular	4	3	3	20	5	5	6	10	11	13	
Pest Control	14	2	1	2	1	0	0	0	1	0	
Fire Salvage	0	0	0	1	9	0	0	1	4	0	

Table F-4-2 Number of Units by Harvest Type by year

Sale Types	88	89	90	91	92	93	94	95	96	97	98
Regular	5	6	1	7	17	19	6	15	13	9	20
Pest Control	5	5	1	2	9	5	0	0	15	14	14
Fire Salvage	0	9	19	16	0	10	0	0	11	21	4
Sale Types	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	
Regular	7	4	7	47	10	11	19	25	20	13	
Pest Control	25	2	2	2	2	0	0	0	2	0	
Fire Salvage	0	0	0	1	18	0	0	1	8	0	

Some of the reasons for the activity areas beyond the Forest Plan variability limit of 15% detrimental disturbance were: the inclusion of small areas of steep terrain within areas of more gentle terrain which resulted in improper equipment being used on steep topography, some operations where dozer piling was still required in the contract., and level of experience of the sale administrator(s) and/or logging operator(s).

1993-1997 Results: One hundred thirty-eight units within 69 sales were monitored during this five year period. Sixty-six units were line transects and 72 were walk-throughs. Of the 66 units, only 21 acres (one percent of measured acres) were beyond the Forest Plan variability limits. The 66 units contained a total of 2022 acres. This very major reduction in acreage over the 15 percent level is mainly a result of far fewer acres that were "dozer piled". Other reasons include more winter logging, more broadcast burning, and more use of forwarder logging equipment. During this same period walk-throughs were conducted on 72 units containing a total of 2,656 acres. The line transects represent approximately seven percent of the total harvested acres, while the walk-throughs represent about nine percent. The total of 2,499 acres surveyed from 1992-1997 represent about seven percent of the annual harvest acres. If the areas measured are representative of the entire Forest, about 11 percent of logging and site preparation activities may be beyond the variability limit of the Forest Plan. This number, however, is very misleading since only one percent of the harvest activities during 1993-1997 were detrimentally impactive.

1998-2002 Results: One hundred thirty-six units within 72 sales were monitored during this five year period. Of the 74 line-transected units (2,417 acres) none were determined to be beyond the 15 percent detrimental disturbance level. During this same period walk-throughs were conducted on 62 units containing a total of 2,314 acres. The walk-throughs and line transects represent approximately 11 percent of the harvested acres. One thing noted in the year 2002 was the increase in the “6-10” and “11-15” categories (**Tables F-4-3a and F-4-3b**). Part of the explanation was the number of units (11) that contained past activities.

2003-2006 Results: One hundred eleven units within 58 sales were monitored during this five year period. Of the 81 line-transected units (1,931 acres) two were determined to be beyond the 15 percent detrimental disturbance level. The two units that exceeded the 15% criteria were measured in 2005 and 2006. The total affected area was 9 acres out of 52 total acres for the two units. As noted in the year 2002

there continued to be an increase in the "6-10" and "11-15" categories which is attributable to units that contained past activities (**Tables F-4-3a and F-4-3b**).

2007-2008 Results: This data was collected using a different methodology than the previous 19 years and although similar is not comparable. For 2007, 30 units from 16 sales were monitored for soil disturbance. Two of the 30 units exceeded the 15% detrimental disturbance criteria. The total area for the units was 21 acres, of which roughly seven acres had detrimental disturbance. Both units were required winter logging. The impacts were caused by logging activities that occurred when the ground was not frozen. In 2008 13 units from 5 sales were randomly selected and monitored for soil disturbance using the new Region 1 Soil Monitoring protocol which the Kootenai National Forest had adopted. None of the units reviewed exceeded an overall 15% detrimental soil disturbance value. The total area reviewed was 751 acres (**Tables F-4-5**). As noted in the field the general trend where sampled points within units fall into a detrimental category are where past temporary roads, skid trails, and landings were constructed.

Table F-4-3a Units by Soil Disturbance Category (Line Transect)

Disturbance Categories in Percent	88	89	90	91	92	93	94	95	96	97	98
< 6	0	0	0	0	0	5	3	8	12	17	17
6-10	0	0	0	0	6	4	0	1	6	5	9
11-15	0	0	0	0	6	5	.5	0	0	0	0
15 +	0	0	0	0	8	1	.5	0	0	0	0
Totals	0	0	0	0	20	15	4	9	18	22	26
Disturbance Categories in Percent	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	
< 6	10	0	1	6	8	4	12	11	17	8	
6-10	4	0	2	14	7	5	4	9	6	5	
11-15	3	0	0	8	0	2	2	5	5	0	
15 +	0	0	0	0	0	0	1	1	2	0	
Totals	17	0	3	28	15	11	19	26	30	13	

Table F-4-3b Acres by Detrimental Soil Disturbance Category (Line Transect)

Disturbance Categories in Percent	88	89	90	91	92	93	94	95	96	97	98
< 6	0	0	0	0	0	170	32	160	377	637	558
6-10	0	0	0	0	134	68	0	29	230	129	259
11-15	0	0	0	0	122	131	14	0	0	0	0
15 +	0	0	0	0	245	8	13	0	0	0	0
Totals	0	0	0	0	501	377	59	189	607	766	817
Disturbance Categories in Percent	**99**	**00**	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	
< 6	170	0	38	80	362	40	297	315	1108	156	
6-10	147	0	246	688	285	65	43	312	145	301	
11-15	58	0	0	173	23	9	21	102	33	0	
15 +	0	0	0	0	0	0	24	28	88	0	
Totals	375	0	284	941	670	114	385	757	1374	751	

Recommendations:

Performance for this monitoring is consistent with Forest Plan direction. Of the 94 units sampled in the five year period only four were determined to exceed 15% detrimental disturbance. The reason for this

exceedance, in all cases, was associated with required winter logging occurring when conditions were not as prescribed. This level of impact can be avoided through diligent sale administration and increased operator awareness. This monitoring item is determined to be within the recommended range stated in the Forest Plan with four exceptions.

Ideally, the soil quality standards that would be used for measuring soil damage would be soil structure and soil productivity. Because these soil qualities are difficult to measure, other soil qualities are substituted. These surrogates are soil compaction, rutting, soil displacement, surface erosion, severely-burned soil, and soil mass movement. The Northern Region Soil Monitoring (draft 02-09) requirements as of 2008 and into the future are to include sampling of temporary road segments and landings constructed for harvest activity to be monitored. Pre-existing temporary roads and landings fall outside of the category needing to be monitored due to recent harvest activities. Most burn piles still fall outside of the detrimental category. Finally, a large number of additional units were reviewed for soil disturbance as well during this time frame but fall outside of the "random selection" category and can therefore not be included in the tables presented in this section.

Table F-4-4. Kootenai NF Soil Monitoring Summary

Year	Total No. of Sales	Total No. of Units	Total Acres	No. of Tran-sected Sales	No. of Tran-sected Units	No. of Transects	No. of Moni-toring Points	No. of Walk-through Sales	No of Walk-through Units
1988	4	10	316	0	0	0	0	4	10
1989	10	20	533	0	0	0	0	10	20
1990	12	21	718	0	0	0	0	12	21
1991	14	25	833	0	0	0	0	14	25
1992	14	26	637	10	20	68	6800	4	6
1993	16	34	935	6	14	31	7407	10	20
1994	3	6	115	2	4	8	1963	1	2
1995	7	15	343	4	9	18	4394	3	6
1996	20	39	1609	9	17	40	14004	11	22
1997	23	44	1676	13	22	47	15819	10	22
1998	22	38	1574	14	26	62	20520	8	12
1999	18	32	657	11	17	33	6918	7	15
2000	5	6	337	0	0	0	0	5	6
2001	4	9	520	1	3	12	4706	3	6
2002	23	51	1643	13	28	77	21037	10	23
2003	15	30	675	6	15	42	22183	9	15
2004	5	6	114	5	11	11	362	0	0
2005	11	19	385	11	19	19	372	0	0
2006	11	26	757	11	26	26	608	0	0
Totals	**237**	**457**	**14,377**	**116**	**231**	**494**	**126,721**	**121**	**231**

Table F-4-5 - Kootenai NF Soil Monitoring Summary using R1 Montoring Protocol.

Year	Total No. of Sales	Total No. of Units	Total Acres	No. of Tran-sected Sales	No. of Tran-sected Units	No. of Moni-toring Points	No. of Walk-through Sales	No of Walk-through Units
2007*	16	30	1,374	16	30	1,306	0	0
2008*	5	13	751	5	13	669	0	0
Totals	**16**	**30**	**1,374**	**16**	**30**	**1,306**	**0**	**0**

*Region 1 adopted a new soil monitoring protocol

FACILITIES: Road Access Management; Monitoring Item L-1

ACTION OR EFFECT TO BE MEASURED:	The miles of road closed.
VARIABILITY WHICH WOULD INITIATE FURTHER EVALUATION:	+/- 20% of the proportion of open to closed roads, as described in the Forest Plan, by the end of the first decade

Purpose: To see if the road closure objectives of the Forest Plan are being achieved. The Plan requires that this item be reported every five years. The expected accuracy and reliability of the information is high.

Background: Just prior to the time the Plan was approved in September, 1987, about 27% of the National Forest System roads had either yearlong or seasonal prohibitions in effect (Forest Plan FEIS, page IV-51). The Plan projected that in order to provide the issue resolution desired, about 57% of the roads would eventually need some form of prohibition. This would be about double the miles of road with prohibitions at the time the Plan was approved. The assumption was that the number of new roads needed to harvest timber would increase significantly, and that they would all have prohibitions in effect when the timber sales were completed -- the net result being an increase in the number of miles of road with prohibitions but the number of miles of roads without prohibitions would remain the same. The need for additional prohibitions was to protect dispersed recreation values, provide for wildlife security in big game winter and summer range, reduce road maintenance costs, and provide for grizzly bear recovery. Because of the significant increase in the amount of miles of road under prohibitions needed (from 27% to 57%), it was assumed that it would take about 10 years to accomplish. This is about an 11% increase each year to reach the planned level.

Evaluation: By FY 97, the objective of having prohibitions on approximately 57% of the Forest's roads (Forest Plan p. II-10) was achieved. By 2002, the percentage of existing roads with either yearlong or seasonal prohibitions reached 63%. In 2004, the percentage stabilized at 63% and continues to be stable through 2007. It has increased to 64% in 2008. Table L-1-1 shows the progression. The roads with prohibitions are both yearlong and seasonal prohibitions. The percentage of roads with prohibitions is 7 percent greater than estimated, and the total amount roads without prohibitions are 1,674 miles less than was estimated in the 1987 Forest Plan. This is partly a result of the fact that new road construction was less than anticipated due to reductions in the timber sale program. Prohibitions have been placed on roads that previously had no prohibitions (which were not anticipated to have prohibitions in the Forest Plan) and on newly constructed roads. The reasons for these unanticipated prohibitions include additional wildlife habitat security measures, to decrease potential sedimentation, and to improve hydrological conditions. Table L-1-1 shows the total miles of road increasing by 494 miles between 1997 and 2002 (a 7% increase). Only 13.8 miles are from actual new road construction. The balance is a result of a more thorough accounting of previously un-inventoried roads.

The trend over the last four years is that the number of roads where motor vehicle use is prohibited, either yearlong or seasonally, has risen slightly (approximately 90 miles). This shows that the Forest has exceeded the necessary level of access management (as determined in 1987) to achieve wildlife and watershed objectives.

Recommended Actions: Continue to monitor the mileage of roads with prohibitions and the reasons for the prohibitions.

Table L-1-1. Forest Roads Access Restrictions

FY	Total Miles of Road	Total Miles of Road with Prohibitions*	% of Total Roads with Prohibitions	Total Miles of Road without Prohibitions	Difference in Miles of Road without Prohibitions from FY 87
87	6,200	1,669	27%	4,530	0
92	7,149	3,784	53%	3,365	(1,165)
97	7,460	4,275	57%	3,185	(1,345)
02	7,954	4,982	63%	2,934	(1,596)
04	7,916	4,971	63%	2,945	(1,585)
06	7,908	4,968	63%	2,940	(1,590)
07	7,888	4,983	63%	2,905	(1,645)
08	7,886	5,030	64%	2,856	(1,674)

* National Forest System roads only, where motor vehicle use is prohibited either yearlong or seasonally.

AMENDMENTS: Project-specific Amendments: 1992 to 2009

The following table displays a list of approved project-specific Forest Plan amendments on the Kootenai National Forest.

FY	District	Decision Date	Project Name	Standard Amended	Description	Years in Effect
1992	Rexford	7-May-92	Flat Creek	MA 15, TS #5	Placement of units adjacent to existing uncertified units	10 yrs
1992	Three Rivers	9-Jun-92	Arbo Creek	MA 12 ORD. Exceed water yield. MA 12 cover/forage rations, allow timber salvage in MA 2	Water yield created by existing situation	ORD increase-life of sale; MA2 salvage - life of sale; cover/forage rations 10-15 years
1992	Three Rivers	9-Jun-92	4th of July	MA12 ORD, MA12 cover/forage ratios, MA2 timber salvage	Water yield created by existing situation	ORD increase-life of sale; MA2 salvage - life of sale; cover/forage rations 10-15 years
1993	Fortine	12-Jul-93	Meadow View	MA 12, FS #3	ORD of 1.0 during sale; 0.75 after	2 yrs
1993	Libby	2-Jul-93	Weigel Creek	MA 12, FS #3	ORD of 1.9; 0.6 after	2 yrs
1993	Libby	14-Dec-93	Purcell	MA 12 FS #3; MA 14 FS #4 in comp 504; MA 15/16/17/18 WS #2 in comp 503	ORD increase during project activities	2 yrs
1993	Libby	14-Jun-93	Thomas/Gulch Rainy Blue	MA 12, FS #3	ORD of 3.3 (max) during Dec-Aug; 0.6 after	2 yrs
1993	Rexford	23-Jul-93	Compartment 10	MA 12, FS #3	Exceed ORD until 1994	2 yrs
1993	Rexford	25-Apr-93	Dodge Creek Heli	MA 12, FS #3	Exceed ORD until 1994	2 yrs
1993	Rexford	20-Oct-93	Compartment 26	MA 12 WS #7, TS #2	Not meeting hiding cover requirements due to harvest of dead LPP	10-15 yrs
1994	Cabinet	19-Oct-93	Gray Woodchuck	MA 12, FS #3	ORD 1.85 during sale; .75 after	3 yrs
1994	Libby	29-Apr-94	Tepee Salvage	MA 12, FS #3	ORD max 2.3 in Comp 33; 1.5 in Comp 43; ORD after sale 0.7 in Comp 33, 0 in Comp 43	2 yrs
1995	Libby	26-Apr-95	Dry Fork Salvage	MA 12, FS #3	ORD 2.1 during sale; 0.75 after	1 yr
1995	Libby	11-May-95	Road 4904K; Mushroom harvest	MA 12, FS #3	ORD 1.5 during picking	1 yr
1995	Libby	1-Jun-95	Canyon Salvage	MA 15, WS #2	ORD 3.8 during sale; 3.0 after	1 yr
1995	Libby	27-Jun-95	Cripple Horse Salvage	MA 12, FS #3	ORD 2.1 during sale; 0.7 after	1 yr
1995	Libby	27-Jun-95	Brush Creek Salvage	MA 12, FS #3	ORD 1.4 during sale; 0.75 after	1 yr
1995	Libby	18-Aug-95	Peace Alexander Salvage	MA 12, FS #3	ORD up to 2.5 during sale; 0.75 after	1 yr
1995	Rexford	27-Jul-95	Webb	MA 12, FS #3	ORD 1.12 during sale; 0,44	2 yrs

FY	District	Decision Date	Project Name	Standard Amended	Description	Years in Effect
					after	
1995	Rexford	5-Jan-95	Compartment 4	MA 12 TS #2 and WS #7	Harvest w/in movement corridors	10-15 yrs
1995	Rexford	5-Jan-95	Compartment 26	MA 12, FS #3	ORD 1.3 during sale; 0.75 after	2 yrs
1996	Fortine	6-Feb-96	South End Allotments	MA 24, Range #1	Allow grazing in MA 24	10 yrs
1996	Libby	10-Jan-96	Little Wolf	MA 12, FS #3	ORD max 2.3 in Comp 33; 1.5 in Comp 43; ORD after sale 0.7 in Comp 33, 0 in Comp 43	2 yrs
1996	Rexford	1-Oct-95	North Fork Salvage	MA 12, TS #7; MA 14 TS #5b	Harvest w/in movement corridors	10-15 yrs
1996	Rexford	26-Apr-96	Pinkham Allotments	MA 24, Range #1	Allow grazing in MA 24	10 yrs
1996	Rexford	24-Sep-96	Huckleberry Salvage	MA 12, TS #2, WS #7; MA 12 FS #3	Harvest w/in movement corridors. Existing ORD 0.65; during sale = 1.03, after sale = 0.65	10-15 yrs (movement corridors); 2 yrs (ORD)
1996	Three Rivers	6-Oct-95	South Fork Salvage	MA14, RS #1	Not meet partial retention	15 yrs
1996	Three Rivers/Libby	23-Apr-96	Skyline Ridge/China Basin	ORD in BMU 10	ORD of 1.2 in BMU 10; ORD of 1.71 in BAA 4-10-1	3-4 yrs
1997	Libby	21-Oct-96	Warland Salvage	MA 12 TS #2 & WS #7, MA 12 FS #3	Harvest w/in movement corridors. Existing ORD 2.6; during sale = 2.05, after sale = 0.66	10-15 years; 2 years
1997	Libby	23-Oct-96	Bristow Salvage	MA 12 TS #2 & WS #7, MA 12 FS #3	Harvest w/in movement corridors. Existing ORD 1.27; during sale = 1.27, after sale = 0.74	10-15 years; 2 years
1997	Libby	26-Nov-96	Weigel Salvage	MA 12 TS #2 & WS #7	Harvest w/in movement corridors	10-15 years
1997	Libby	19-Jun-97	Cripple Horse Timber Sale	MA 12 TS #2 & WS #7	Harvest w/in movement corridor	10-15 years
1997	Libby	19-Jun-97	Cripple Horse Timber Sale	MA 12, FS #3	Comp 609 Existing ORD 1.4, during sale 2.2, after sale 1.4 (this is allowed for under amendment #8). Comp 610 existing ORD 0.9, during sale 2.2, after sale 0.0	2 yrs
1997	Rexford	18-Nov-96	Burro Face Salvage	MA 12 TS #2 & WS #7; MA 12, FS #3	Harvest w/in movement corridors. Existing ORD 1.01, during sale 1.49, after sale 0.75	10-15 years; 3 years
1997	Rexford	6-Jun-97	McSutton Salvage	MA 12 TS #2 & WS #7, MA 15 TS #5, MA12 FS #3	Harvest w/in movement corridors. Harvest adjacent to units not recovered. Existing ORD 0.81, during sale 1.53, after sale 0.75	10-15 years; 2-4 years; 3 years
1998	Cabinet	26-Jun-98	Beaver Creek Ecosystem Mgmt Project	MA 13, TS #3	Allow harvest in old growth	3-5 years
1998	Cabinet	26-Jun-98	Beaver Creek Ecosystem Mgmt Project	MA 10, WS #3	Suspend snag requirements	3-5 years
1998	Libby	23-Jan-98	Alexander Salvage Timber Sale	MA 12, FS #3	Comp 601, overlaps with amendments for Peace Alexander. Will allow ORD	2 yrs

FY	District	Decision Date	Project Name	Standard Amended	Description	Years in Effect
					to go to 2.0, after sale 0.63	
1998	Libby	9-Mar-98	Sheep Range Timber Sale	MA 10, WS #3	Suspend snag requirements	2-3 yrs
1998	Libby	9-Jun-98	Grubb Salvage Timber Sale	MA 12, FS #3	Comp 643, existing ORD 0.0, during project 1.53, after 0.0	1-2 yrs
1998	Libby	9-Jun-98	Grubb Salvage Timber Sale	MA 12, TS #2	Removal of hiding cover	10-15 years
1998	Libby	17-Jun-98	North Fork Jackson Salvage Timber Sale	MA 12, TS #2, WS #7;	Harvest w/in movement corridors	10-15 years
1998	Libby	17-Jun-98	North Fork Jackson Salvage Timber Sale	MA 12 FS #3	Comp 602. Existing ORD 0.75, during sale 1.5, after sale 0.75	1 years
1998	Three Rivers	16-Jun-98	Wood Rat Timber Sale	MA 10, WS #3	Suspend snag requirements	2-3 yrs
1999	Libby	11-Mar-99	Deer Marl Salvage Timber Sale	MA 12, TS #2	Removal of hiding cover	10-15 years
1999	Libby	23-Jun-99	Dry Pocks Timber Sale	MA 12, FS #3	Comp 579, existing ORD 0.0, during project 1.0, after 0.0	3 years
1999	Rexford	23-Jan-98	Parsnip Lodgepole Pine Salvage Timber Sale	MA 16, TS #4	suspend requirement that existing cutting units will not be enlarged until they are certified as regenerated and recovered	10-15 years
1999	Rexford	16-Jun-99	Pinkham timber sale	MA 12, TS #2 & WS #7	harvest within movement corridors adjacent to un-recovered openings	10-15 years
1999	Rexford	16-Jun-99	Pinkham timber sale	MA 12, FS #3	Comp. 18 and 21. Existing ORD is 1.51 and will increase to 1.81 during activity	3-5 years
1999	Three Rivers	18-Jun-99	Clay Beaver Timber Sale	MA 12, TS #2 & WS #7	harvest within movement corridors adjacent to un-recovered openings	10-15 years
1999	Three Rivers	15-Mar-99	Pine Timber Sale	MA 10, WS #3	Suspend snag requirements	2-3 years
2000	Libby	8-Jun-00	Syrup Salvage	MA 12. FS #2	Removal of hiding cover	10 yrs
2000	Libby	16-Jun-00	Syrup Salvage	MA 12, FS #3	Comp 578, existing ORD 0.34, during 2.1, after 0.34	3 years
2000	Libby	22-Jun-00	McSwede Timber Sale	MA 16, MA 11	Short term reduction in VQO for both MAs	20-25 years for each
2001	Libby	1-Oct-00	Alexander Timber Sale	MA 12, FS #3	Comp 551, existing ORD 0.33, During 2.0, after 0.33	3 years
2001	Libby	1-Oct-00	Alexander Timber Sale	MA 10, WS #3	Suspend snag requirements	3-5 years
2001	Three Rivers	10-Apr-01	Spar and Lake Forest Health Project	MA 10, WS #3	Suspend snag requirements	3-5 years
2001	Three Rivers	1-May-01	Troy Beetle	MA 10, WS #3	Suspend snag requirements	2-3 years
2002	Cabinet	17-Jun-02	White Pine	MA 13, TS #3	Timber salvage in MA 13	2-3 years
2002	Cabinet	17-Jun-02	White Pine	MA 12, FS #3	Temporary increase in ORD from 0.71 to 2.23	5 years

FY	District	Decision Date	Project Name	Standard Amended	Description	Years in Effect
2002	Cabinet	14-Jun-02	White Pine	MA 10, WS #3	Suspend snag requirements	2-3 years
2002	Rexford	5-Oct-01	Pink Stone fire recovery	MA 12, FS #3	ORD to increase to 2.70 during activities	2-5 years
2002	Rexford	5-Oct-01	Pink Stone fire recovery	MA 12, TS #2, WS #7	harvest within movement corridors adjacent to un-recovered openings	10-15 years
2002	Rexford	14-Dec-01	Gold/Boulder/Sullivan	MA 13, TS #2 and #3	Timber salvage in MA 13	2 years
2002	Rexford	14-Dec-01	Gold/Boulder/Sullivan	MA 12, TS #2, WS #7	harvest within movement corridors adjacent to un-recovered openings	10-15 years
2002	Rexford	14-Dec-01	Gold/Boulder/Sullivan	MA 12, FS #3	ORD increase to 1.52 during project activities	5-7 years
2003	Rexford	11-Oct-02	Young J	MA 12, FS #3	ORD increase to 1.19 during activities	2 years
2004	Cabinet	1-Sep-04	Dead Beaver	MA 10, WS #3	Suspend snag requirements	1 year
2004	Libby	2-Jun-04	Pipestone	MA 12, FS #3	ORD increase in 3 compartments during activities. Post project ORD at or below existing levels for 5 compartments	3-5 years
2004	Libby	2-Jun-04	Pipestone	MA 17, RS #4	Harvest will not meet partial retention VQO	20 years
2004	Libby	16-Jun-04	South McSwede	MA 12, FS #3	Comp 539 existing and during project ORD of 3.88, post-project ORD of 2.44. Comp 540 existing and during project ORD of 1.20, post project ORD of 1.20	3-5 years
2004	Libby	16-Jun-04	Bristow	MA 12, FS #3	For sub-planning unit, ORD increase from existing 1.0 to 1.5 during. Post-project ORD will be 0.78	3.5 years
2004	Rexford	28-Jul-04	Lower Big Creek	MA 12, TS #2; WS #7	harvest within movement corridors adjacent to un-recovered openings	15 years
2005	Libby	15-Jun-05	Riverview (Alder, Cow)	MA 12, FS #3	ORD of 1.30 during activities, post project ORD of 0.96. Existing ORD = 2.0	5 years
2005	Libby	15-Jun-05	Cow Creek	MA 10, WS #3	Suspend snag requirements	5 years
2005	Rexford	14-May-05	McSutten	MA 12, FS #3	ORD increase to 1.0 during activity	10 years
2005	Rexford	14-May-05	McSutten	MA 12, TS #2; WS #7	harvest within movement corridors adjacent to un-recovered openings	10-15 years
2005	Three Rivers	14-Jun-05	Northeast Yaak	MA 13, TS #3	Timber salvage in MA 13	3-5 years
2006	Libby	18-Apr-06	Smoked Fish	MA 10, WS #3	Suspend snag requirements	5 years
2007	Cabinet	8-Jun-07	West Elk Interface Protection	MA 10, WS #3, TS #3	Suspend snag requirements. Harvest for fuel reduction objectives	3-4 years
2007	Libby	26-Jul-07	Kootenai River North	MA 10, FS #3	Suspend snag requirements	5 years
2008	Cabinet	2-May-08	Marten Creek Project	MA 10, WS #3	Suspend snag requirements	3-4 years
2008	Libby	28-Apr-08	Brush Creek Fire Salvage	MA 12, FS #3	Existing ORD of 0.84 to increase during project activities to 1.28. Post-project ORD reduced to 0.69	3 years
2008	Libby	30-Jul-08	BPA Libby-Troy Transmission	MA 10, WS #3	suspend snag requirements	50 years

FY	District	Decision Date	Project Name	Standard Amended	Description	Years in Effect
			Line			
2008	Libby	30-Jul-08	BPA Libby-Troy Transmission Line	MA 17, RS #4	Harvest will not meet partial retention VQO	50 years
2008	Rexford	25-Apr-08	Young Dodge	MA 12, FS #3	Management at the existing ORD of 0.81 during, and following of project activities	3-6 years
2008	Rexford	25-Apr-08	Young Dodge	MA 12, TS #2; WS #7	harvest within movement corridors adjacent to un-recovered openings	10-15 years
2009	Libby	8-Jun-09	Miller West Fisher	MA 12, FS #3	Existing ORD of 1.30 to increase during project activities to 2.13. Post-project ORD returns to 1.30	1-2 years

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