United States Department of Agriculture

Forest Service

Northern Region

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Monitoring Guide

2015 Revision Monitoring Plan

Kootenai National Forest

Contents

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Chapter 1— KNF Monitoring Program

Monitoring provides the feedback for the forest planning cycle by testing assumptions, tracking relevant conditions over time, measuring management effectiveness, and evaluating effects of management practices. Monitoring information should enable the Forest to determine if a change in plan components or other plan management guidance may be needed, forming a basis for continual improvement and adaptive management. Direction for the monitoring and evaluation of forest plans is found under the 1982 Planning Rule at 36 CFR 219.12(k) and under the 2012 Planning Rule at 36 CFR 219.12.

The plan monitoring program addresses the most critical components for informed management of the Forest's resources within the financial and technical capability of the agency. Every monitoring question links to one or more goals, desired conditions, objectives, standards, or guidelines. However, not every plan component has a corresponding monitoring question.

This monitoring program is not intended to depict all monitoring, inventorying, and data gathering activities undertaken on the Forest; nor is it intended to limit monitoring to just the questions and indicators listed in table 1. Consideration and coordination with broad-scale monitoring strategies, multi-party monitoring collaboration, and cooperation with state agencies where practicable will increase efficiencies and help track changing conditions beyond the Forest boundaries to improve the effectiveness of the plan monitoring program. In addition, project and activity monitoring may be used to gather information for the plan monitoring program if it will provide relevant information to inform adaptive management.

- The monitoring program sets out the plan monitoring questions and associated indicators. It is comprised of a monitoring guide and a biennial evaluation report.
- The monitoring guide provides detailed information on the monitoring questions, indicators, frequency and reliability, priority, data sources and storage, and cost.

An interdisciplinary team will develop a biennial Monitoring Evaluation Report which will summarize the results of completed monitoring, evaluate the data, consider relevant information from broad-scale or other monitoring efforts, and make recommendations to the responsible official. The monitoring evaluation report will indicate whether or not a change to the Forest Plan, management activities, or the monitoring program, or a new assessment, may be warranted based on the new information. The monitoring evaluation report is used to inform adaptive management of the plan area. The Monitoring Evaluation Report will be made available to the public.

Some kinds of monitoring indicators will require longer time frames for thorough evaluation of results, but a biennial review of what information has been collected will ensure timely evaluation to inform planning. The biennial monitoring evaluation does not need to evaluate all questions or indicators on a biennial basis but must focus on new data and results that provide new information regarding management effectiveness, progress towards meeting desired conditions or objectives, changing conditions, or validation (or invalidation) of assumptions.

Table 1 is the monitoring program. This table displays the monitoring questions, the reference to forest plan direction, the indicator(s) for answering the monitoring question, the frequency of measure, and the precision. Monitoring questions are used to evaluate whether management is moving toward, moving away from, or maintaining desired conditions. The references to forest plan direction provide a link between the monitoring question and the Forest Plan. The Forest Plan references may not include all relevant direction, but rather the primary direction that is addressed by the monitoring question. Indicators are the specific resource measures used in answering the monitoring questions. Frequency of measure is the timeframe for collecting data on each indicator. Precision is defined as Class A or B. For Class A, mostly quantitative methods are

widely accepted with repeatable results and statistical validity. Reliability, precision, and accuracy are very good. For Class B, mostly qualitative methods include project records, communications, or less formal measurements, like walk-thru exams or informal visitor surveys. Reliability, accuracy, and precision are good, but usually less than Class A. The associated evaluation process determines if the observed changes are consistent with the Forest Plan and the effectiveness of implementation. Evaluation reports will be produced biennially (as per 2012 Rule, 36 CFR 219.12(d)). Not all questions or indicators will be reported in the biennial Monitoring Evaluation Report.

Table 1. Monitoring Program

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
Physical and Biological				
Vegetation	**MON-VEG-01:** To what extent are management activities and natural disturbance processes trending toward desired conditions for vegetation composition, structure, and pattern, increasing resistance and resiliency to disturbance factors including climate change? This includes vegetation dominance type and size, old growth, down wood, snags, fire-killed forest, and insect and disease infested forest.	GOAL-01 – ECO INTEGRITY and RESILIENCY, FW-DC-Veg-01, FW-DC-VEG-02, FW-DC-VEG-03, FW-DC-VEG-05, FW-DC-VEG-07, FW-DC-VEG-08, FW-OBJ-VEG-01, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-03, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-GLD-VEG-06, FW-DC-WL-14, FW-DC-WL-13	**MON-VEG-01-01:** Acres treated to meet FW-OBJ-VEG-01 **MON-VEG-01-02:** Acres burned **MON-VEG-01-03:** Acres of forest by dominance type and size class compared to the desired condition **MON-VEG-01-04:** Acres meeting the old growth definition (see glossary) as determined by the FIA program **MON-VEG-01-05:** Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures **MON-VEG-01-06:** Acres of old growth treated **MON-VEG-01-07:** Snags per acre forestwide **MON-VEG-01-08:** Number of acres influenced by insects and disease	**Annual/Class A** **Annual/Class A** **Every 5 Years/Class A** **Every 5 Years/Class A** **Annual/Class A** **Annual/Class A** **Every 5 Years/Class A** **Every 5 Years/Class A**
Vegetation	**MON-VEG-02:** Have management activities met Plan objectives and trended towards desired conditions for noxious weeds?	FW-DC-VEG-10, FW-OBJ-VEG-02	**MON-VEG-02-01:** Acres of non-native invasive plants treated **MON-VEG-02-02:** Number of sites of new non-native invasive plant species and number of acres treated	**Annual/Class A** **Annual/Class A**
Fire	**MON-FIRE-01:** To what extent are management activities moving hazardous fuels towards desired conditions?	FW-DC-FIRE-02, FW-OBJ-FIRE-01, FW-DC-SES-04, GA-DC-FIRE-BUL-01, GA-DC-FIRE-CLK-01, GA-DC-FIRE-FSH-01, GA-DC-FIRE-KOO-01, GA-DC-FIRE-LIB-01, GA-DC-FIRE-TOB-01, GA-DC-FIRE-YAK-01	**MON-FIRE-01-01:** Acres of hazardous fuel treatments within the WUI, and in areas outside of the WUI	**Annual/Class A**

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
Fire	**MON-FIRE-02:** To what extent is unplanned fire used to trend vegetation towards desired conditions?	FW-DC-FIRE-03, FW-OBJ-FIRE-02	**MON-FIRE-02-01:** Number of unplanned, natural fire ignitions managed for the maintenance and/or restoration of fire-adapted ecosystems, and the number of unplanned, natural ignition managed with the primary goal of suppression	**Annual/Class A**
Watershed	**MON-WTR-01:** Are soil, water quality, and riparian and aquatic habitats protected and moving towards desired conditions?	FW-DC-WTR-02, FW-DC-WTR-04, FW-GDL-WTR-01, FW-GDL-WTR-03, FW-GDL-SOIL-05, FW-DC-RIP-03, and FW-DC-AQH-01	**MON-WTR-01-01:** Number of Best Management Practices (BMP) evaluations conducted and the percent of BMPS that were implemented correctly and the percent that were effective	**Annual/Class A**
Watershed	**MON-WTR-02:** To what extent are management activities moving watersheds towards desired conditions?	FW-DC-WTR-01, FW-DC-WTR-02, FW-DC-WTR-03, FW-DC-WTR-04, FW-OBJ-WTR-01, FW-OBJ-WTR-02, FW-STD-WTR-01, FW-GDL-WTR-01	**MON-WTR-02-01:** Acres (or miles) of restoration activities accomplished by 6th code watershed and acres (or miles) accomplished in 303d/TMDL watersheds **MON-WTR-02-02:** Percent of subwatersheds trended towards an improved condition	**Annual/Class A** **Every 5 Years/Class A**
Aquatic Habitat	**MON-AQH-01:** To what extent is the Forest meeting Forest Plan objectives and trending towards desired condition to reconnect fragmented stream habitat to increase population resilience to disturbance including climate change?	FW-DC-AQH-02, FW-DC-AQS-01, FW-DC-AQS-04, FW-DC-AQS-05, FW-OBJ-AQH-03	**MON-AQH-01-01:** Miles of reconnected stream habitat	**Annual/Class A**
Soils	**MON-SOIL-01:** To what extent has coarse woody debris been retained for long-term soil productivity and other ecosystem functions?	FW-DC-SOIL-01, FW-DC-SOIL-03, FW-DC-SOIL-04, FW-GDL-SOIL-02, FW-GDL-SOIL-03, FW-DC-VEG-08	**MON-SOIL-01-01:** Number of regeneration harvest units surveyed and percent meeting coarse woody debris criteria post- harvest	**Annual/Class A**

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
Soils	**MON-SOIL-02:** To what extent have vegetation management activities prevented irreversible damage to soil conditions?	FW-DC-SOIL-02, FW-DC-SOIL-03, FW-DC-SOIL-04; FW-DC-SOIL-05, FW-GDL-SOIL-01, FW-GDL-SOIL-04	**MON-SOIL-02-01:** Number of harvest units surveyed and percent that meet the Regional Soil Quality Standard, post-harvest (FSM, R1 Supplement No. 2500-99-1)	**Annual/Class A**
Riparian	**MON-RIP-01:** Have riparian and wetland areas been maintained or improved to provide for healthy streams and aquatic environments to increase resiliency to disturbance including climate change?	FW-OBJ-RIP-01	**MON-RIP-01-01:** Acres (or miles) of riparian habitat maintained or improved	**Annual/Class A**
Federally Listed Species	**MON-FLS-01:** To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?	FW-DC-WL-03, FW-DC-WL-05, FW-STD-WL-01, FW-STD-WL-02, FW-STD-WL-03, FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-05, FW-DC-VEG-08, FW-DC-VEG-11, FW-OBJ-VEG-01, FW-GDL-VEG-03, FW-DC-FIRE-03	**MON-FLS-01-01:** Grizzly Bear: progress towards achieving and maintaining standards for percent core area, OMRD, and TMRD within the Recovery Zones (see monitoring requirements for the Grizzly Bear Access Amendment in appendix B) **MON-FLS-01-02:** Canada lynx: changes in lynx habitat as a result of moving towards the desired conditions for vegetation through vegetation management, prescribed fire, or natural disturbance (see monitoring requirements for the NRLMD in appendix B) **MON-FLS-01-03:** Bull Trout population trends based on redd counts in known spawning reaches (see monitoring requirements for INFISH in appendix B)	**Annual/Class A** **Annual/Class A** **Annual/Class A**

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
MIS	**MON-MIS-01:** Are habitat trends for Management Indicator Species (MIS) consistent with the objectives?	FW-OBJ-WL-02, FW-OBJ-WL-03, FW-GDL-WL-10, FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-03, FW-DC-VEG-04, FW-DC-VEG-05, FW-DC-VEG-07, FW-DC-VEG-11, FW-OBJ-VEG-01, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-GDL-VEG-06, FW-DC-FIRE-03, FW-OBJ-AQH-02	**MON-MIS-01-01:** Elk: number of planning subunits providing >30% security and >50% security on NFS lands during the hunting season **MON-MIS-01-02:** Landbird assemblage (insectivores): a) number of acres where planned ignitions were used to maintain/improve habitat; b) percentage of natural unplanned ignitions managed for the maintenance or restoration or fire adapted ecosystems **MON-MIS-01-03:** Changes in KNF River Invertebrate Prediction and Classification System (Observed/Effect model) score	**Annual/Class A** **Annual/Class A** **Every 5 Years/Class A**
Wildlife	**MON-WDL-01:** Have management activities met Plan objectives and maintained or improved habitat to achieve desired terrestrial habitat conditions?	FW-OBJ-WL-01 FW-DC-VEG-01, FW-DC-VEG-02, FW-DC-VEG-03, FW-DC-VEG-04, FW-DC-VEG-05, FW-DC-VEG-07, FW-DC-VEG-08, FW-DC-VEG-11, FW-OBJ-VEG-01, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-03, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-GDL-VEG-06, FW-DC-FIRE-03	**MON-WDL-01-01:** Acres of terrestrial habitat restored or enhanced Also see results for **MON-VEG-01-01** through **MON-VEG-01-05, MON-VEG-02-02, MON-VEG-02-03**, and **MON-FIRE-02-02**	**Annual/Class A**
Human Uses and Designations of the Forest				
Access and Recreation	**MON-AR-01:** Have appropriate management actions been taken on recreation sites where opportunities have been identified, use is at or near capacity, or where there are resource concerns?	FW-DC-AR-01, FW-OBJ-AR-01, FW-OBJ-AR-02, MA6-DC-AR-01, MA7-DC-AR-01, MA7-DC-AR-5, GA-DC-AR-BULL-01, GA-DC-AR-CLK-01, GA-DC-AR-KOO-01, GA-DC-AR-LIB-01, GA-DC-AR-TOB-01, GA-DC-AR-YAK-01	**MON-AR-01-01:** Number and type of recreation sites **MON-AR-01-02:** Number of Persons at One Time (PAOT – capacity) **MON-AR-01-03:** Amount of deferred maintenance for developed recreation sites **MON-AR-01-04:** Number of recreation partnerships **MON-AR-01-05:** Changes in percent of Forest in each ROS setting	**Every 5 Years/Class A** **Every 5 Years/Class A** **Every 5 Years/Class A** **Every 5 Years/Class A** **Every 5 Years/Class A**

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
Access and Recreation	**MON-AR-02:** Have management activities trended towards desired conditions for a minimum transportation system that provides recreation opportunities, safe and efficient public and agency access, and are environmentally compatible?	FW-DC-AR-03, FW-DC-AR-04, FW-DC-AR-05, FW-DC-AR-07, FW-OBJ-AR-03, MA6-DC-AR-03, GA-DC-AR-BUL-01, GA-DC-AR-TOB-03	**MON-AR-02-01:** Miles of road open year-long **MON-AR-02-02:** Miles of road open seasonally **MON-AR-02-03:** Miles of roads maintained by maintenance level **MON-AR-02-04:** Miles of roads decommissioned **MON-AR-02-05:** Miles of roads put into intermittent storage	**Annual/Class A** **Annual/Class A** **Annual/Class B** **Annual/Class A** **Annual/Class A**
Access and Recreation	**MON-AR-03:** To what extent are motorized and non-motorized winter and summer trail recreation opportunities available for a variety of users?	FW-DC-AR-03, FW-DC-AR-04, FW-DC-AR-05, FW-OBJ-AR-04, FW-OBJ-AR-05, MA5a/b/c-DC-AR-03, MA6-DC-AR-03, MA7-DC-AR-03, GA-DC-AR-BUL-01, GA-DC-AR-CLK-01, GA-DC-AR-KOO-04, GA-DC-AR-LIB-01, GA-DC-AR-LIB-03, GA-DC-AR-LIB-04	**MON-AR-03-01:** Acres open to over-snow vehicle use **MON-AR-03-02:** Miles of managed over-snow vehicle trails **MON-AR-03-03:** Miles of managed cross-country ski trails **MON-AR-03-04:** Miles of trail designated for motor vehicle use year-long or seasonally **MON-AR-03-05:** Miles of trails maintained for varied managed uses (e.g., hiker, equestrian, mountain biking, OHV, motorcycle)	**Annual/Class A** **Annual/Class A** **Annual/Class A** **Annual/Class A** **Annual/Class B**
Access and Recreation	**MON-AR-04:** What are the trends in visitation forestwide, and are visitors satisfied with the facilities, access, services, and perception of their safety?	FW-DC-AR-01, FW-DC-AR-04, MA6-DC-AR-01, MA7-DC-AR-01, MA7-DC-AR-05	**MON-AR-04-01:** Visitor use and trends in use forestwide **MON-AR-04-012:** Percent Satisfaction Index (National Visitor Use Monitoring) for developed facilities, access, services and perception of safety	**Every 5 Years/Class A**

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
Wilderness	**MON-WLDN-01**: Have management activities met Forest Plan desired conditions and standards, and trended towards management area desired conditions for designated wilderness and Wilderness Study Areas?	MA1a-DC-AR-01, MA1a-DC-AR-04; FW-DC-AR-06	**MON-WLDN-01-01:** MON-WLDN-01-01: Designated Wilderness managed to standard **MON-WLDN-01-02:** Montana Wilderness Study Area wilderness character is not diminished beyond what existed in 1977	**Annual/Class A** **Annual/Class A**
Cultural Resources	**MON-CR-01:** To what extent is the Forest meeting Forest Plan objectives and trending towards desired condition to identify, evaluate, and nominate cultural resources for listing on the National Register of Historic Places?	FW-DC-CR-01, FW-OBJ-CR-01, FW-OBJ-CR-02	**MON-CR-01-01**: Number of properties identified **MON-CR-01-02:** Number of properties evaluated **MON-CR-01-03:** Number of properties nominated	**Annual/Class A** **Annual/Class A** **Annual/Class A**
Cultural Resources	**MON-CR-02:** To what extent are historic properties protected and public education and interpretation provided to move towards desired conditions?	FW-DC-CR-02, FW-OBJ-CR-04	**MON-CR-02-01:** Number of properties protected/preserved **MON-CR-02-02:** Number of newly interpreted or updated historic properties	**Annual/Class A** **Every 5 Years/Class A**
American Indian Rights and Interests	**MON-AI-01:** To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions for consultation with each Tribe?	FW-DC-AI-02, FW-OBJ-AI-03	**MON-AI-01-01:** Number of approved consultation protocols	**Annual/Class A**
American Indian Rights and Interests	**MON-AI-02:** To what extent has the agreement for access and acquisition of forest products for traditional cultural uses progressed in consultation with each Tribe?	FW-DC-A1-01, FW-OBJ-AI-01	**MON-AI-02-01:** Number of approved product use agreements	**Annual/Class A**
American Indian Rights and Interests	**MON-AI-03:** To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions for protecting traditional cultural areas?	FW-DC-AI-03, FW-OBJ-AI-02	**MON-AI-03-01:** Number of approved management plans for traditional cultural areas	**Annual/Class A**

Resource	Monitoring Question	Reference to Forest Plan Direction	Indicator(s)	Frequency of Measure/Precision
Production of Natural Resources				
Timber	**MON-TBR-01:** To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions to provide a mix of timber products in response to market demands?	FW-DC-TBR-01, FW-OBJ-TBR-01	**MON-TBR-01-01:** MMBF offered and MMBF sold annually	**Annual/Class A**
Timber	**MON-TBR-02:** To what extent is the Forest meeting NFMA requirements and desired conditions on size of harvest openings?	FW-DC-VEG-05, FW-STD-TBR-02 (Also 1982 Rule requirement [219.12(k)(5)(iii)])	**MON-TBR-02-01:** Number of even-aged regeneration harvest units exceeding 40 acres in size and category for exceeding	**Annual/Class A**
Timber	**MON-TBR- 03:** To what extent are regeneration units restocked to trend towards vegetation desired conditions?	FW-DC-VEG-04, FW-DC-VEG-11, FW-DC-TBR-02, FW-DC-TBR-03, FW-STD-TBR-03 (Rule requirement [219.12(k)(5)(i)])	**MON-TBR- 03-01:** Percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest	**Annual/Class A**
Minerals	**MON-MIN-01:** Are reclamation activities improving ecological and human health conditions?	FW-DC-MIN-01, FW-OBJ-MIN-01	**MON-MIN-01-01:** Number of reclaimed abandoned mine sites over a five-year period. Number reclaimed to reduce the risk to human health	**Every 5 Years/Class A**
Economic and Social Environment				
Social and Economic Systems	**MON-SOC-01:** To what extent is forest management contributing towards desired conditions for a stable and functioning local economy?	FW-DC-SES-02	**MON-SOC-01-01:** Number of jobs and thousands of dollars in labor income from KNF management and percent of total planning area1 jobs and income	**Every 5 Years/Class A**
Social and Economic Systems	**MON-SOC-02**: Is the cost of implementing the Forest Plan consistent with that predicted in the FEIS?	Rule requirement (219.12(k)(3))	**MON-SOC-02-01:** Forest annual budget	**Annual/Class A**

Chapter 2—Monitoring Guide

Resource: Vegetation

MON-VEG-01

1) Monitoring Question (MON-VEG-01): To what extent are management activities and natural disturbance processes trending toward desired conditions for vegetation composition, structure, and pattern, and increasing resistance and resiliency to disturbance factors including climate change? This includes vegetation dominance type and size class, old growth, down wood, snags, fire-killed forest, and insect and disease infested forest.

2) Forest Plan References:

- GOAL-VEG-01
- FW-DC-VEG-01
- FW-DC-VEG-02
- FW-DC-VEG-03
- FW-DC-VEG-04
- FW-DC-VEG-05
- FW-DC-VEG-06
- FW-DC-VEG-07
- FW-DC-VEG-08
- FW-DC-VEG-11
- FW-OBJ-VEG-01
- FW-STD-VEG-01
- FW-STD-VEG-02
- FW-GDL-VEG-01
- FW-GDL-VEG-03
- FW-GDL-VEG-04
- FW-GDL-VEG-05
- FW-GDL-VEG-06
- FW-DC-RIP-04
- GOAL-WL-01
- FW-DC-WL-10
- FW-DC-WL-12
- FW-DC-WL-13
- FW-DC-WL-14

3) Performance Indicator(s):

- **MON-VEG-01-01:** Acres treated towards achieving FW-OBJ-VEG-01;
- **MON-VEG-01-02:** Acres burned;
- **MON-VEG-01-03:** Acres of forest by dominance type and size class compared to the desired condition;
- **MON-VEG-01-04:** Acres meeting the old growth definition (see glossary of the Forest Plan) as determined by the FIA program;
- **MON-VEG-01-05:** Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures;
- **MON-VEG-01-06:** Acres of old growth treated;
- **MON-VEG-01-07:** Snags per acre forestwide; and
- **MON-VEG-01-08:** Number of acres influenced by insects and disease.

4) Forest Plan Rationale and Explanation: Multiple indicators were used to address this monitoring question due to the multi-faceted nature of the question.

- **MON-VEG-01-01:** The number of acres that are treated on the Forest towards achieving FW-OBJ-VEG-01 is a strong indication of how much active management is occurring to help trend the vegetation towards the desired conditions that are articulated for forest vegetation within the Forest Plan (e.g. GOAL-VEG-01 and FW-DC-VEG-01 through 05).
- **MON-VEG-01-02:**The number of acres that are burned on the Forest (both planned and unplanned) is an indicator of whether or not our desire (FW-DC-FIRE-03) is being met to have wildland fire play an increased role in helping to trend the vegetation conditions towards the desired conditions while serving important ecosystem functions.
- **MON-VEG-01-03:** The number of acres of forest vegetation by dominance type and size class relative to the desired conditions that are expressed in the Forest Plan is directly related to the monitoring question. This indicator will demonstrate to what extent management activities and natural processes are trending the forest vegetation towards desired species composition measured by dominance types (FW-DC-VEG-01) and structure as measured by size class (FW-DC-VEG-02) of the forest vegetation.
- **MON-VEG-01-04:** The FIA plot based old growth analysis provides a relatively inexpensive means to monitor old growth amounts across the Forest to determine if more old growth is developing over time as desired and articulated in the Forest Plan (FW-DC-VEG-03).
- **MON-VEG-01-05:** This monitoring indicator is necessary to spatially track old growth and recruitment potential old growth across the Forest. Unlike the FIA plot based old growth analysis (see MON-VEG-01-04), this stand level inventory and mapping procedure allows one to know where the old growth stands are spatially located on the Forest, and allows for the identification and tracking of recruitment potential old growth stands. For project planning at the site-specific scale, this information is very important and it also provides another tool in addition to the FIA plot based system in which to monitor how much and what kind of old growth exists across the Forest.
- **MON-VEG-01-06:** This monitoring indicator is needed to track how many acres of old growth stands were treated. FW-DC-VEG-03 includes the desired condition that old growth stands become more resistant and resilient towards disturbances and stressors such as wildfires, droughts, insects and disease, and potential climate change effects. Some examples of treatments that may be used in old growth stands for the purpose of trending stands towards the desired conditions are included in the FEIS.
- **MON-VEG-01-07:** The number and size of snags on the Forest is directly related to how well the Forest is moving towards FW-DC-VEG-07 and FW-DC-WL-13.
- **MON-VEG-01-08:** As indicated by the forestwide desired condition plan component FW-DC-VEG-06, the desire is that root disease fungi and certain forest insects have less of an impact in killing trees in the future. Therefore, this indicator will be used to measure how management activities and natural disturbances affect the prevalence of some key forest insects and diseases. Acres of key I&Ds would be tracked; such as mountain pine beetle (killing LP and WP), Douglas-fir bark beetle, fir engraver, spruce bark beetle, white pine blister rust, and armillaria and laminated root diseases.

5) Performance Indicator 1: Acres treated towards achieving FW-OBJ-VEG-01.

a) Description: Examples of the types of treatments that may be implemented toward achieving FW-OBJ-VEG-01 as well as additional information on the two quantitative objectives within that Plan component are described in chapter 2 of the Plan.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: The FACTS database contains the necessary information for this indicator. The types of treatments that are appropriate to include are activities such as timber harvest, planting, thinning, management of fire (including planned ignitions and the use of natural, unplanned ignitions), mechanical fuel treatments, re-vegetation with native species, blister rust pruning, integrated tree improvement activities, non-native invasive plant treatments, and other integrated pest management activities including forest health protection suppression and prevention activities. Existing protocols and standards exist for measuring these treatment acres.

d) Data Storage: FACTS database.

e) Spatial Unit: The actual area treated on the Forest.

f) Frequency of Measurement: Activities are entered into FACTS as they are accomplished and would be summarized on an annual basis.

g) Precision/Reliability: Class A.

h) Analysis Methods: Query FACTS for acres of appropriate treatment types that were accomplished.

i) Who (Cooperators): None.

j) Cost: S.O. GIS/database asst. (GS-11) 1 day = $343, Forest Silviculturist (GS-12) 1 day = $405 for a total of $748

k) References: None.

5) Performance Indicator 2: Acres burned.

a) Description: Acres that are burned by planned and unplanned ignitions would be reported. Planned ignitions are those set intentionally for management purposes. Unplanned ignitions are wildfires from an unplanned event such as lightning or accidental human-caused. For planned ignitions, the intent is to include the acres of broadcast burning and underburning as part of this indicator, rather than include burn activities such as grapplepile or handpile burning.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: The FACTS database contains the necessary information for tracking the amount of planned, prescribed burning that is conducted on the Forest. The National Fire and Aviation Management Web (FAMWEB) Application data warehouse (https://fam.nwcg.gov/fam-web/) contains the information and reports that can be run in order to report on the number of acres burned by unplanned ignitions. In addition, the

Fire Statistic System (FIRESTAT) and associated databases provide the protocols for data collection and input for wildfires.

d) Data Storage: See above.

e) Spatial Unit: The area burned on the Forest.

f) Frequency of Measurement: Activities are entered into FACTS and FIRESTAT on an annual basis.

g) Precision/Reliability: Class A.

h) Analysis Methods: Query FACTS for acres of appropriate treatment types that were accomplished and run a report for acres burned via unplanned ignitions (wildfires).

i) Who (Cooperators): None.

j) Cost: S.O. GIS/database asst. (GS-11) 0.5 days = $172, Forest FMO (GS-12) 0.5 days = $202 for a total of $374

k) References: None.

5) Performance Indicator 3: Acres of forest by dominance type and size class compared to the desired condition.

a) Description: Acres of forest by dominance types and size classes as shown in the forest plan. Dominance types describe the tree species composition within a stand. The existing dominant tree species or species groups are aggregated for the forest by biophysical setting. Size class defines the average diameter (DBH) of trees within a stand and are grouped into four categories or ranges of diameters; seedling/sapling (0-4.6 inch DBH), small (5.0-9.0 inch DBH), medium (10.0-14.9 inch DBH), and large (15.0+ inch DBH). Size class is also aggregated for the forest by biophysical setting.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: FIA plot data and the established regional protocols would be used to determine how much of the forested vegetation occurs within each dominance type group and a comparison would be made relative to the desired condition that is presented in the Forest Plan. A similar process would be conducted for the size classes. The FIA program has established data collection protocols and the regional office (Forest Inventory and Analysis group) has established analysis protocols.

d) Data Storage: FIA/FSVeg databases.

e) Spatial Unit: The forested area on the KNF.

f) Frequency of Measurement: Every 5 years (the FIA program re-measures plots on a 10-year cycle, with 10 percent of the total plots re-measured each year).

g) Precision/Reliability: Class A.

h) Analysis Methods: Query FACTS for acres of appropriate treatment types that were accomplished and run a report for acres burned via unplanned ignitions (wildfires).

i) Who (Cooperators): None.

j) Cost: R.O. Inventory & Analysis Group (GS-12) 3 days = $1,215, Forest Silviculturist (GS-12) 1 day = $405 for a total of $1,620

k) References: None.

5) Performance Indicator 4: Acres meeting the old growth definition (see glossary of the Forest Plan) as determined by the FIA program.

a) Description: The Forest uses Green et al. 1992 (errata corrected 12/11) for the definition and criteria for old growth and Region One has an established analysis protocol (see references below) using FIA plots to determine the acres of old growth on each National Forest in the Region. Old growth forests are considered ecosystems that are distinguished by old trees and related structural attributes. They encompass the later stages of stand development that typically differ from earlier stages in characteristics such as tree age, tree size, number of large trees per acre and basal area.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: FIA plot data and the established regional protocols would be used to determine how many acres (and percent of total) of forested vegetation meet or exceed the minimum criteria that are used to define old growth.

d) Data Storage: FIA/FSVeg databases.

e) Spatial Unit: The total forested area on the KNF as well as the various geographic areas (GAs) across the Forest.

f) Frequency of Measurement: Every 5 years (the FIA program re-measures plots on a 10-year cycle, with 10% percent of the total plots re-measured each year).

g) Precision/Reliability: Class A.

h) Analysis Methods: References that are cited below provide a description of protocols.

i) Who (Cooperators): None.

j) Cost: R.O. Inventory & Analysis Group (GS-12) 3 days = $1,215, Forest Silviculturist (GS-12) 1 day = $405 for a total of $1,620

k) References:

Bush, Renate. (2012). Applying Old Growth Algorithm to Data in FSVEG. Region 1 Vegetation Classification, Mapping, Inventory, and Analysis Report # 12-17 v1.1. Missoula, MT: USDA Forest Service, Region 1, Renewable Resource Management.

Bush, R. & Reyes, B. (2013a). Estimates of Old Growth on the Kootenai National Forest. Region 1 Vegetation Classification, Mapping, Inventory, and Analysis Report # 13-6 v1.0. Missoula, MT: USDA Forest Service, Region 1, Renewable Resource Management.

Czaplewski, R.L. (2004). 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. Unpublished report, on file with USDA Forest Service, Rocky Mountain Research Station, Fort Collins, CO. 13 p.

Green, P., Joy, J., Sirucek, D., Hann, W., Zack, A., & Naumann, B. (1992 errata corrected 12/11). Old growth forest types of the Northern Region. Missoula, MT: United States Department of Agriculture, Forest Service, Northern Region. 60 p.

5) Performance Indicator 5: Acres meeting the old growth definition (see glossary of the Forest Plan) as determined by the FIA program.

a) Description: Acres of old growth and acres of recruitment potential old growth, as determined by the Forests' stand inventory and mapping procedures. As mentioned above for performance indicator # 4, old growth is defined by Green et al. 1992. Recruitment potential old growth is defined in the glossary to the Forest Plan as well as in the glossary contained in the FEIS. The FEIS (Forest Vegetation section) contains an old growth section that provides more information on the Forests' stand inventory and mapping procedures.

b) Unit of Measure: Acres (acres of old growth and acres of recruitment potential old growth).

c) Standards/Steps for Data Collection: FSVeg (http://www.fs.fed.us/nrm/fsveg/index.shtml) and the common stand exam protocols are used for identifying old growth and recruitment potential old growth stands. Forestwide GIS coverage of old growth and recruitment potential old growth will be maintained based on field validation and project decisions. Along with the GIS coverage, there will be field survey data and stand designations stored in FACTS and FSVeg.

d) Data Storage: FSVeg database.

e) Spatial Unit: The total forested area on the Forest as well as the various geographic areas (GAs) across the Forest.

f) Frequency of Measurement: Stand exams are entered into FSVeg on an annual basis as they are accomplished.

g) Precision/Reliability: Class A.

h) Analysis Methods: FSVeg and Common Stand exam protocols along with Green et al. 1992 (errata corrected 12/11). Compare forestwide layer and data to earlier version(s) and summarize increased/decreased acres by old growth and recruitment potential old growth.

i) Who (Cooperators): None.

j) Cost: S.O. GIS/database asst. (GS-11) 1 day = $343, Forest Silviculturist (GS-12) 1 day = $405 for a total of $748

k) References:

Green, P., Joy, J., Sirucek, D., Hann, W., Zack, A., & Naumann, B. (1992 errata corrected 12/11). Old growth forest types of the Northern Region. Missoula, MT: United States Department of Agriculture, Forest Service, Northern Region. 60 p.

5) Performance Indicator 6: Acres of old growth treated.

a) Description: Acres of old growth treated by vegetation management, including planned ignitions (underburning) and mechanical means. Old growth stands may be treated with a management activity such as harvest, and/or burning. Some examples of treatments that may

be used in old growth stands for the purpose of trending stands towards the desired conditions are included in the FEIS.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: FSVeg and the FACTS databases contain the necessary information to reporting how many acres of old growth have been treated. The treatment would be recorded in FACTS and old growth stands are indicated as such in the Special Use code in FSVeg.

d) Data Storage: FSVeg & FACTS databases.

e) Spatial Unit: The actual acres of old growth treated on the Forest.

f) Frequency of Measurement: Treatments are entered into FACTS on an annual basis as they are accomplished.

g) Precision/Reliability: Class A.

h) Analysis Methods: A query of FACTS and FSVeg would provide the information.

i) Who (Cooperators): None.

j) Cost: S.O. GIS/database asst. (GS-11) 1 day = $343, Forest Silviculturist (GS-12) 1 day = $405 for a total of $748

k) References: None

5) Performance Indicator 7: Snags per acre forestwide.

a) Description: Snags per acre forestwide. This indicator will utilize FIA plot data and identify the number of snags/acre in two size classes (i.e., >15” and >20” DBH) that occur on the Forest, by biophysical setting and dominance group.

b) Unit of Measure: Number of snags.

c) Standards/Steps for Data Collection: FIA plot information will be used and established analysis protocol (Bollenbacher et al. 2009, Czaplewski, R.L. 2004) will be followed.

d) Data Storage: FSVeg/FIA databases.

e) Spatial Unit: Forestwide.

f) Frequency of Measurement: Every 5 years (the FIA program re-measures plots on a 10-year cycle, with 10 percent of the total plots re-measured each year).

g) Precision/Reliability: Class A.

h) Analysis Methods: Analysis protocol cited in item #7 above would be used to determine snag quantities by size class and dominance group. Those numbers would be compared to the numbers at the beginning of the forest plan implementation period to determine trends.

i) Who (Cooperators): None.

j) Cost: R.O. Inventory & Analysis Group (GS-12) 3 days = $1,215, Forest Silviculturist (GS-12) 1 day = $405 for a total of $1,620

k) References:
Bollenbacher, B., Bush, R. & R. Lundberg. (2009). Report 09-05 v1.3 titled “Estimates of Snag Densities For Western Montana Forests in the Northern Region”. Region One Vegetation Classification, Mapping, Inventory and Analysis Report.

Czaplewski, R.L. (2004). 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. USDA Forest Service; Research and Development Deputy Area; Rocky Mountain Research Station; Natural Resource Assessment, Ecology, and Management Science Research, Research Work Unit RMRS-4852; 2150 Centre Ave. Bldg. A., Fort Collins, CO 80526. http://fsweb.r1.fs.fed.us/forest/inv/fia_data/analysis.htm.

5) Performance Indicator 8: Number of acres influenced by insects and disease.

a) Description: Number of acres influenced by insects and disease. The Forest Health Protection division of the State and Private Forest branch of the Forest Service conducts annual Aerial Detection Surveys (ADS) of key forest insects and diseases. The Forest Health Protection summarizes the annual survey information by acres and causal agent by county.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: The Forest Health Protection has standards and established protocols for ADS (http://www.fs.fed.us/foresthealth/technology/ads_standards.shtml).

d) Data Storage: The Forest Health Protection stores maps and data of ADS on: http://www.fs.fed.us/foresthealth/technology/adsm.shtml. The Forest Health Protection staff is able to summarize acreage information by Forest and causal agent.

e) Spatial Unit: Forestwide.

f) Frequency of Measurement: The Forest Health Protection conducts surveys annually and prepares summaries of that data.

g) Precision/Reliability: Class A.

h) Analysis Methods: Analysis protocol cited in item #7 above would be used. The acreage numbers by key I&D species will be summarized by year. Those numbers will be used to track trends over time to determine if impacts from those agents are generally going down as desired.

i) Who (Cooperators): None.

j) Cost: Forest Health Protection Staff (aerial detection staff, pilot, and plane expense) =$5,000 (rough estimate)?? Forest Silviculturist (GS-12) 1 day = $405 for a total of $5,405

k) References: None

6) Responsibility: Forest silviculturist.

7) Authority: There are no legal requirements to use these indicators, although there are agency requirements to be accountable for assigned targets and some of these indicators are tied to components in the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: The following performance indicators would be reported on a biennial basis: 1, 2, 5 and 6. The following indicators would be reported on a 5-year frequency: 3, 4, 7 and 8.

10) How Evaluated:

- **Performance Indicator 1:** The number of acres that are treated to meet FW-OBJ-VEG-01 would be evaluated to determine how the Forest is progressing over time towards meeting the objectives noted in FW-OBJ-VEG-01. The desire is that over the life of the plan, at least the numbers of acres noted in FW-OBJ-VEG-01 are treated.
- **Performance Indicator 2:** As articulated in FW-DC-FIRE-03, the desire is to increase the number of acres that are burned on the Forest in recognition that fire plays critical ecological functions and that not enough burning has occurred on the Forest in the recent past. Acres burned (both planned and unplanned) should be depicted over time and the desire is to see a trend of increased acres burned. In addition to reporting acres that burned via planned and unplanned ignitions, a qualitative discussion should address the effectiveness of these burned areas in helping to trend the forest vegetation towards desired conditions.
- **Performance Indicator 3:** The number of acres of forested vegetation by dominance type and size class should be illustrated and compared to the desired amounts and the trends noted. The desire is that over time, the acres within each dominance type and the acres within each size class will trend towards the desired conditions articulated in the Plan. As was done in the Plan, the information should be displayed in two ways; for the Forest as a whole, and for each of the biophysical settings.
- **Performance Indicator 4:** Via the FIA protocol, the number of acres that meet the definition for old growth on the Forest as well as the number of acres meeting the old growth in each Geographic Area (GA) should be displayed. The goal is that the amount will increase over time at both the Forest and GA scales.
- **Performance Indicator 5:** Via the Forests' stand inventory and mapping procedures, the number of acres meeting the definition of old growth, and the number of acres that have been identified as recruitment potential old growth, would be displayed. The desire over time is to see the acres of both old growth and recruitment potential old growth to increase relative to existing amounts.
- **Performance Indicator 6:** In the Plan and FEIS there is an acknowledgement that some types of old growth require disturbances to maintain their structure, composition and function. Relative to current levels, the desire is to see more stands and acres treated of old growth (in appropriate circumstances) over time in order to maintain them.
- **Performance Indicator 7:** Using FIA plot data, the number of snags/acre in two size classes (i.e., >15" and >20" DBH) that occur on the Forest would be reported by biophysical setting and dominance group. Over time, the desire is to see the number of these larger snags per acre increase.

- **Performance Indicator 8:** Using Aerial Detention Surveys, the number of acres of insect and diseases would be reported for key agents. The desire is that over time, the acres being impacted by root disease fungi, bark beetles and defoliators will decrease.

11) Author: Dave Cobb

MON-VEG-02

1) Monitoring Question (MON-VEG-02): Have management activities met Plan objectives and trended towards desired conditions for noxious weeds?

2) Forest Plan References:

- GOAL-01
- FW-DC-VEG-10
- FW-OBJ-VEG-02
- Additional MA-specific direction (e.g., MA1a-GDL-VEG-01)

3) Performance Indicator(s):

- **MON-VEG-02-01:**Acres of non-native invasive plants treated; and
- **MON-VEG-02-02:** Number of sites of new non-native invasive plant species and number of acres treated.

4) Forest Plan Rationale and Explanation:

- **MON-VEG-02-01:** The acres of non-native invasive plants treated will indicate movement towards the objective to treat 15,000 – 30,000 acres over the first decade of the plan, which indirectly shows progress towards the desired condition to prevent and control the spread of weeds. Monitoring the number of sites of new non-native invasive plants and number acres treated will show movement towards the desired condition that newly invading, non-native invasive plant species are treated and populations are contained or eradicated. This will also indicate movement towards the objective that all sites of newly invading plant species are treated. There are two Plan components that are directly related to this monitoring indicator, FW-DC-VEG-10 and FW-OBJ-VEG-02. In addition, there are a number of other MA specific components that are related to this indicator (e.g., MA1a-GDL-VEG-01).
- **MON-VEG-02-02:** There are two plan components that are directly related to this monitoring indicator, FW-DC-VEG-10 and FW-OBJ-VEG-02. In addition, there are a number of other MA specific components that are related to this indicator (e.g., MA1a-GDL-VEG-01). The emphasis that is expressed in FW-DC-VEG-10 is towards the detection and treatment of newly invading species (versus the treatment of long-established species) as those species may be effectively contained or eradicated. This indicator focuses on new invaders and provides a measure that may be used to evaluate how well the Forest is progressing towards meeting two plan components (FW-DC-VEG-10 and FW-OBJ-VEG-02).

5) Performance Indicator 1: Acres of non-native invasive plants treated.

a) Description: The acres of non-native invasive plants that have been treated, including chemical application and biological control.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: FACTS for activity accomplishments (treated acres); TERRA for the inventory of non-native invasive plants.

d) Data Storage: FACTS, TERRA.

e) Spatial Unit: The treated area (polygon in database).

f) Frequency of Measurement: Treatments would be recorded when they occur and input at least annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Combine treatments in FACTS with TERRA shapefiles. Run the FACTS Invasive Performance Report to determine acres treated and efficacy. Query TERRA for new invasive sites and combine with FACTS treatments to determine new invasives treated.

i) Who (Cooperators): None.

j) Cost: Database specialist (GS-7) 1 day =$261 Forest Silviculturist (GS-12) 0.5 days = $202 for a total of $463

k) References: None

5) Performance Indicator 2: Number of sites of new non-native invasive plant species and number of acres treated.

a) Description: The number of individual sites where new, non-native invasive plant species have been found and the number of sites and number of acres of these new infestations that have been treated, including chemical application and biological control.

b) Unit of Measure: Number and acres.

c) Standards/Steps for Data Collection: FACTS for activity accomplishments (treated acres); TERRA for the inventory of non-native invasive plants.

d) Data Storage: FACTS, TERRA.

e) Spatial Unit: Individual infestation sites and treated area (polygon in database).

f) Frequency of Measurement: Treatments would be recorded when they occur and input at least annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Combine treatments in FACTS with TERRA shapefiles.

i) Who (Cooperators): None.

j) Cost: Database specialist (GS-7) 1 day =$261 Forest Silviculturist (GS-12) 0.5 days = $202 for a total of $463

k) References: None

6) Responsibility: Forest silviculturist.

7) Authority: There are no legal requirements to use these indicators, although there are agency requirements to be accountable for assigned targets and some of these indicators are tied to components in the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Review the trend of treatment acres and new infestations. Determine if treated acres are trending towards the forest plan objective: 15,000 – 30,000 acres over the first decade and treatment of all newly invasive sites. To evaluate movement towards the desired condition, include number of acres restored (based on efficacy). List the new invaders found on the forest each year and the number of sites. Calculate the percentage of new sites that are treated to determine if treatment is trending towards forest plan objective of treating all new invasive species sites. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired condition.

To determine the trend in new infestations and treatment of invasive plants, fill in the following list and tables:

Table 2. Newly non-native invasive plant species found on the Forest

Year	Species	Number of Sites	Total Acres
2014	INVAD1	3	30
2014	INVAD2	2	12

Table 3. Acres of Treatment for Non-native Invasive Plant Species by Species and Year

Fiscal Year	Species	New Invasive? (yes, no)	Acres Treated	Percent Effective	Acres Restored
2014	ARAB3	No	386	88	340
2014	INVAD1	Yes	30	90	27
2014	CYOF	No	150	85	128

Table 4. Total Acres of Treatment and Restoration by Year of Non-native Invasive Plant Species by Year

Fiscal Year	Acres Treated	Acres Restored
2014	566	495

Table 5. Total Acres of Treatment and Restoration by Year for Newly Non-native Invasive Plant Species

Fiscal Year	Acres Treated	Acres Restored
2014	530	27

The narrative would describe which newly invasive species are being found on the forest, describing trends for the years monitored. It would summarize the species that are being treated and total acres. The narrative would also describe overall efficacy of treatments and restoration of acres. The narrative would then make conclusions on the overall trend for weed treatments, achievement of forest plan objectives, and progress regarding movement towards desired condition.

11) Author: Dave Cobb

Resource: Fire

MON-FIRE-01

1) Monitoring Question (MON-FIRE-01): To what extent are management activities moving hazardous fuels towards desired conditions?

2) Forest Plan References:

- FW-DC-FIRE-01
- FW-DC-FIRE-02
- FW-OBJ-FIRE-01
- DW-DC-SES-04
- Additional MA-specific direction

3) Performance Indicator(s):

- **MON-FIRE-01-01:** Acres of hazardous fuel treatments within the WUI, and in areas outside of the WUI

4) Forest Plan Rationale and Explanation: Hazardous fuel treatments help ensure that the Forest meets the direction of providing for firefighter and public safety in all fire management activities (FW-DC-FIRE-01 and FW-DC-SES-04) and reducing hazardous fuels (FW-DC-FIRE-03). By reducing hazardous fuels in areas with values at risk, the fire behavior can be modified to increase the likelihood of low intensity surface fires and limit crown fire initiation and spread. This helps provide a safer fire environment for both firefighters and the public. It also reduces negative natural resource impacts. This indicator is meant to provide a measure in which to evaluate progress towards these desired conditions. The Forest Objective (FW-OBJ-FIRE-01) is to annually treat 5,000 to 15,000 acres.

5) Performance Indicator 1: Acres of hazardous fuel treatments within the WUI, and in areas outside of the WUI.

a) Description: Acres of hazardous fuel treatments, including mechanical vegetation treatments and planned and unplanned ignitions, broken down by inside or outside the WUI. This indicator does not include activity fuel treatment.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: FACTS database protocols.

d) Data Storage: FACTS.

e) Spatial Unit: Treated area.

f) Frequency of Measurement: Treatments would be recorded annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Query FACTS for activities of hazardous fuel treatment (key point).

i) Who (Cooperators): None

j) Cost: Forest AFMO (GS-11) 1.0 day=$343 for a total of $343

k) References: None

6) Responsibility: Forest AFMO.

7) Authority: There is no legal requirement to use these indicators, although there are agency requirements to be accountable for assigned targets and some of these indicators are tied to components in the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: See discussion in Forest Plan Rationale and Explanation section above.

11) Author: Dave Cobb

MON-FIRE-02

1) Monitoring Question (MON-FIRE-02): To what extent is unplanned fire used to trend vegetation towards desired conditions?

2) Forest Plan References:

- FW-DC-FIRE-03
- FW-OBJ-FIRE-02

3) Performance Indicator(s):

- **MON-FIRE-02-01:** Number of natural, unplanned fire ignitions managed for the maintenance and/or restoration of fire-adapted ecosystems, and the number of natural, unplanned ignitions managed with the primary goal of suppression

4) Forest Plan Rationale and Explanation: As indicated in FW-DC-FIRE-03 (pages 21 and 22 of Forest Plan), the desire is to increase the use of wildland fire across the Forest in recognition that it is needed to help trend the vegetation towards the desired conditions and serving other important ecosystem functions. While still suppressing undesirable wildfires, other fires will be allowed to play their natural role in ecosystem function and maintenance.

5) Performance Indicator 1: Number of natural, unplanned fire ignitions managed for the maintenance and/or restoration of fire-adapted ecosystems, and the number of natural, unplanned ignitions managed with the primary goal of suppression.

a) Description: This indicator tracks the number and acres of natural, unplanned fires by how they were managed (for resource benefit or for suppression).

b) Unit of Measure: Number of fire ignitions (and acres).

c) Standards/Steps for Data Collection: FIRESTAT and FACTS database protocols. The National Fire and Aviation Management Web (FAMWEB) Application data warehouse (https://fam.nwcg.gov/fam-web/) contains the information and reports that can be run. In addition, the Fire Statistic System (FIRESTAT) and associated databases provide the protocols for data collection and input for wildfires.

d) Data Storage: FIRESTAT and FACTS.

e) Spatial Unit: Individual fires at forest scale.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Query FIRESTAT/FACTS.

i) Who (Cooperators): None.

j) Cost: Forest AFMO (GS-11) 1.0 day=$343 for a total of $343

k) References: None

6) Responsibility: Forest AFMO and Dispatch Center Manager.

7) Authority: There is no legal requirement to use these indicators, although there are agency requirements to be accountable for assigned targets and some of these indicators are tied to components in the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: See discussion in Forest Plan Rationale and Explanation section above

11) Author: Dave Cobb

Resource: Watershed

MON-WTR-01

1) Monitoring Question (MON-WTR-01): Are soil, water quality, and riparian and aquatic habitats protected and moving towards desired conditions?

2) Forest Plan References:

- FW-DC-WTR-02
- FW-DC- WTR-04
- FW-DC-RIP-03
- FW-DC-AQH-01
- FW-GDL-WTR-01
- FW-GDL-WTR-03
- FW-GDL-SOIL-05

3) Performance Indicator(s):

- **MON-WTR-01-01**: Number of Best Management Practices (BMP) evaluations conducted; the percent of BMPs that were implemented correctly; and the percent of BMPs that were effective

4) Forest Plan Rationale and Explanation: Monitoring BMPs is necessary to validate that the agency is meeting the intent of the Clean Water Act and State water quality laws and regulations. This monitoring shows compliance and effort to reduce or mitigate effects from non-point sources of sediment. Best Management Practices are intended to help move soil and aquatic resources towards desired conditions in the Forest Plan. BMPs have been identified as the "primary method of protecting water quality and stream conditions during all land-disturbing activities," per MOU with the Montana DEQ and the Forest Service, Northern Region (2013).

5) Performance Indicator 1: Number of Best Management Practices (BMP) evaluations conducted; the percent of BMPs that were implemented correctly; and the percent of BMPs that were effective.

a) Description: This indicator tracks the number of BMP evaluations that occurred, evaluating both implementation and effectiveness of the individual practices in the field.

b) Unit of Measure: Number of BMPs and their Scores (1-5) on Standard KNF - BMP forms, evaluating individual practices for both implementation and effectiveness.

c) Standards/Steps for Data Collection: Projects are randomly selected from of pool of projects completed within the last 3 years. An Interdisciplinary Team is consisting of folks from the district and/or supervisors office to conduct the BMP audits. The review consists of an IDT walk through followed by a group discussion and completion of forms. KNF BMP form is used to document the findings.

d) Data Storage: KNF BMP Data table (spreadsheet). BMPs have been tracked in a similar way since 1991, with individual evaluations numbering over 54,000.

e) Spatial Unit: Project Area.

f) Frequency of Measurement: Annual data collection, assembly, and reporting.

g) Precision/Reliability: Class B.

h) Analysis Methods: Timber, engineering, and fuels activities are randomly selected from completed projects. Walk-through exams are then conducted with IDT and followed up with group completion of the BMP forms.

i) Who (Cooperators): Forest Hydrologist and district watershed personnel who work with their units to complete forms, schedule BMP field reviews, and coordinate BMP information transfer.

j) Cost: Annual cost will be approximately $8,000.

- GS-9/5 hydrologist at 16 days (4 days per district) cost $294/day = $4,704
- GS-12/5 hydrologist at 7 days cost $426/ day = $2,982
- Total = $7,686

k) References:
Memorandum of Understanding between the Montana Department of Environmental Quality and the USDA, Forest Service Northern Region. (Sep 18 2013).

6) Responsibility: Primarily Forest Hydrologist for coordination and reporting, district hydrologists will be responsible for reviews.

7) Authority: CWA, MOU with Montana DEQ.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Annual Report, analyzing and summarizing data collected that year with data from earlier years.

10) How Evaluated: It is anticipated that projects will be implemented correctly and effectively greater than 95 percent of the time and the results will validate or invalidate that assumption. It is also assumed that the Forest will have a greater than 95 percent success rate in trending soil and aquatic resources toward the desired conditions and objectives outlined in the Forest Plan. Use the table below to record analysis. Describe movement towards, away from, or neutral to desired condition. If movement is neutral or away from desired conditions, document why.

Table 6. Implementation of BMPs and their Effectiveness

Fiscal Year	# of Reviews	Percent of BMPs that were Implemented Correctly	Percent of BMPs that were Effective

11) Author: Kenny Kindel

MON-WTR-02

1) Monitoring Question (MON-WTR-02): To what extent are management activities moving watersheds towards desired conditions?

2) Forest Plan References:

- FW-DC-WTR-01
- FW-DC-WTR-02
- FW-DC-WTR-03
- FW-DC- WTR-04
- FW-OBJ- WTR-01
- FW-OBJ- WTR-02
- FW-STD-WTR-01
- FW-GDL-WTR-01

3) Performance Indicator(s):

- **MON-WTR-02-01**: Acres of restoration activities accomplished by all 6th code watersheds and acres accomplished in 303d/TMDL watersheds
- **MON-WTR-02-02**: Percent of subwatersheds trended towards an improved condition

4) Forest Plan Rationale and Explanation: The Forest Plan promotes watershed restoration with an emphasis in restoration of 303(d) watersheds where feasible. Tracking the amount of restoration activities will show the agencies intent and accountability to improve overall watershed condition across the entire planning are.

The Forest Plan has a strong emphasis in watershed restoration and tracking the relative amount of change across the landscape will be an indicator of the movement towards desired conditions.

5) Performance Indicator 1: Acres of restoration activities accomplished by all 6th code watersheds and acres accomplished in 303d/TMDL watersheds.

a) Description: This measure will identify watershed restoration activities (acres) accomplished in all watersheds and those watersheds specifically identified on the 303(d) list for Montana. Primary restoration activities include but are not limited to stream channel or riparian habitat restoration, road improvements, storage, and decommissioning, and upland restoration.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: Sum watershed acres restored each year from the appropriate database of record.

d) Data Storage: Watershed Program Files, Workplan, FACTS and NRIS data bases.

e) Spatial Unit: 6th Code watershed boundaries.

f) Frequency of Measurement: Annual.

g) Precision/Reliability: Class A.

h) Analysis Methods: Database of record information on watershed restoration activities will be combined with 303(d) listed stream and watershed coverages.

i) Who (Cooperators): Forest Hydrologist.

j) Cost: Annual cost of data collection and reporting will be about $2,000.

- GS-9/5 hydrologist at 4 days x $294/day = $1,176
- GS-12/5 hydrologist at 2 days x $426/day = $852
- Total = $2,028

k) References:
Memorandum of Understanding between the Montana Department of Environmental Quality and the USDA, Forest Service Northern Region. (Sep 18 2013).

5) Performance Indicator 2: Percent of subwatersheds trended towards an improved condition.

a) Description: This is an evaluation of the Watershed Characterization Spreadsheet and Salmonid Assessment Spreadsheet used in the EIS for Forest Plan revision and is anticipated to show overall improvement to the physical environment and native salmonids across the planning area.

b) Unit of Measure: Percent of subwatersheds across the planning area that have moved towards an improved physical and biological condition.

c) Standards/Steps for Data Collection: Rerun the metrics in the watershed characterization spreadsheet for the FEIS and update population information codes in the Salmonid Assessment Spreadsheet for the FEIS.

d) Data Storage: Data is stored in the spreadsheets noted above.

e) Spatial Unit: Forestwide.

f) Frequency of Measurement: Every 5 years.

g) Precision/Reliability: Class A.

h) Analysis Methods: Supporting documentation can be found in appendix D of the Forest Plan and specific methodology for running the GIS queries can be found in Appendix XX of ???.

i) Who (Cooperators): May need to coordinate with Montana Fish, Wildlife and Parks to evaluate status codes in the Salmonid Assessment Spreadsheet.

j) Cost: Estimated using an average cost to government of $405/day for a GS-12 employee for 5 days ($2,025 total cost), in order to compile information from forest GIS data and update salmonid population information.

k) References: None

6) Responsibility: Forest Hydrologist.

7) Authority: CWA, MOU, with Montana DEQ.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report:

- **Performance Indicator 1:** Annual Report, analyzing and summarizing data collected that year.
- **Performance Indicator 2:** Every 6 years.

10) How Evaluated:

Performance Indicator 1: Review the trend of watershed restoration activities. Determine if watershed restoration activities are trending towards the forest plan objective of 50 to 250 acres of watershed improvement, with an emphasis in 303d-listed watersheds or watersheds with approved TMDLs. To evaluate movement towards the desired conditions, discuss the trend in miles and acres restored. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired conditions.

To determine the trend in watershed condition, fill in the following tables:

Table 7. Watershed Restoration for All Watersheds

Fiscal Year	Miles of Stream Restored or Enhanced	Miles of Road Decommissioned	Acres of Watershed Improved

Table 8. Watershed Improvement for all 303d Listed Watersheds or Watersheds with Approved TMDLs

Fiscal Year	Miles of Stream Restored or Enhanced	Miles of Road Decommissioned	Acres of Watershed Improved

Performance Indicator 2: Every five years, rerun the metrics in the watershed characterization used in the Forest Plan FEIS. Fill in the following tables and compare the change in subwatersheds rated low, moderate, or high and any changes to the number of conserve or restoration watersheds.

Table 9. Watershed Condition Characterization

Watershed Characterization Spreadsheet Version (date)	Year	# of Subwatersheds Rated as Low	# of Subwatersheds Rated as Moderate	# of Subwatersheds Rated as High
V2.5 (Feb 2011)	2014	52	62	14

Table 10. Watershed Management

Salmonid Assessment Spreadsheet Version (date)	Year	# of Conservation Subwatersheds	# of Active Restoration Subwatersheds	# of Passive Restoration Subwatersheds
V7.0 (Jan 2013)	2014	51	39	9

The narrative would describe the overall attainment of the objectives (FW-OBJ-WTR-01 and FW-OBJ-WTR-02). The narrative would then make conclusions on the overall trend for watershed restoration, achievement of forest plan objectives, and progress regarding movement towards desired condition.

11) Author: Kenny Kindel

Resource: Aquatic Habitat

MON-AQH-01

1) Monitoring Question (MON-AQH-01): To what extent is the Forest meeting forest plan objectives and trending towards desired condition to reconnect fragmented stream habitat to increase population resilience to disturbance including climate change?

2) Forest Plan References:

- FW-DC-AQH-02
- FW-DC-AQS-01
- FW-DC-AQS-04
- FW-DC-AQS-05
- FW-OBJ-AQH-03

3) Performance Indicator(s):

- **MON-AQH-01-01:** Miles of reconnected stream habitat

4) Forest Plan Rationale and Explanation: Miles of reconnected habitat will provide inferences on meeting desired conditions and objectives for providing access for all life histories of aquatic species. Increased access to available habitat reduces the likelihood of extirpation of local populations by extreme stochastic events or genetic drift resulting in reduced viability.

5) Performance Indicator 1: Miles of reconnected stream habitat.

a) Description: Habitat is reconnected by removing barriers, enhancing existing barriers, or replacing existing structures with improved structures for restored connectivity.

b) Unit of Measure: Miles.

c) Standards/Steps for Data Collection: Record miles of reconnected habitats and number of structures removed, replaced, or enhanced.

d) Data Storage: Data will typically be recorded in the database of record which are currently INFRA and the Wildlife, Fish, and Rare Plants - Watershed Improvement Tracking (WFRP-WIT) database.

e) Spatial Unit: Forestwide.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Compare the miles of reconnected habitat to the objective FW-OBJ-AQH-01 and provide an analysis of trend towards meeting that objective of 30 to 55 miles of reconnected habitats, over the life of the Plan.

i) Who (Cooperators): None.

j) Cost: Estimated using an average cost to government of a GS-12 employee ($405) for one day to review and report WFRP-WIT data.

k) References: None

6) Authority: There are no legal requirements to record this data.

7) Monitoring Priority: Priority B - required by Forest Plan, but not required by law.

8) Frequency of Evaluation Report: Biennially.

9) Responsibility: Forest watershed and fisheries program manager.

10) How Evaluated: Review the trend miles of reconnected stream habitat. Provide an analysis of trend towards meeting the objective of 30 to 55 miles of reconnected habitats, over the life of the Plan. Evaluate if the objective is being achieved. If progress is more or less than the objectives, document why. Describe movement towards, away from, or neutral to desired conditions.

Table 11. Miles of Reconnected Stream Habitat by Fiscal Year

Fiscal Year	Number of Structures Removed, Replaced, or Enhanced	Miles of Reconnected Stream Habitat

11) Author: John W. Carlson

Resource: Soils

MON-SOIL-01

1) Monitoring Question (MON-SOIL-01): To what extent has coarse woody debris been retained for long-term soil productivity and other ecosystem functions?

2) Forest Plan References:

- FW-DC-SOIL-01
- FW-DC- SOIL-03
- FW-DC- SOIL-04
- FW-GDL-SOIL-02
- FW-GDL-SOIL-03
- FW-DC-VEG-08

3) Performance Indicator(s):

- **MON-SOIL-01-01:** Number of regeneration harvest units surveyed and percent meeting coarse woody debris criteria post-harvest

4) Forest Plan Rationale and Explanation: Coarse woody debris is an appropriate performance indicator because research has shown that sufficient amounts of it contribute important functions to soil productivity. These include the enhancement of nutrient cycling, maintaining carbon storage, and supporting soil microbial communities and biochemical processes. Soil monitoring will document compliance with Forest Plan and direction to provide for levels of coarse woody debris.

5) Performance Indicator 1: Number of regeneration harvest units surveyed and percent meeting coarse woody debris criteria post-harvest.

a) Description: Post-activity evaluations of timber sale units, evaluating quantities of downed coarse woody debris (3” diameter or greater) while completing Soilmon Surveys. This will include both recent as well as historic timber sale units (greater than 10 years old).

b) Unit of Measure: Tons/acre down wood; percentages of acres meeting downed wood numbers.

c) Standards/Steps for Data Collection: Tons/acre down wood will be measured at a unit specific basis. Measurements will be completed in correlation with soil compaction transects. The goal is to complete approximately 15-20 CWD transects per unit as defined by Graham et al. (1994).

d) Data Storage: KNF Soilmon DB and Regional Solo DB.

e) Spatial Unit: Activity areas where harvest is planned to occur or has occurred in the past.

f) Frequency of Measurement: Annual data collection.

g) Precision/Reliability: Class A.

h) Analysis Methods: The Coarse Woody Debris transect is a random, linear survey of 50’ in a randomly selected direction in order to tally the number of pieces of CWD (either solid or rotten) which are present in a 50’ transect. The line direction is performed in a randomly

selected direction from the transect; generally between 15-20 transects are completed within the unit being reviewed. The tons per acre can then be calculated using equations designed by Graham et al. (1994). An attempt is made to complete the CWD measurements on both post-harvest and pre-harvest timber sale units. Calculate the percentage of timber sale units evaluated that meet the recommended levels of CWD; provide description of rationale for units not meeting the recommended levels.

i) Who (Cooperators): Forest Soils Program Manager.

j) Cost: Annual cost will be approximately $9,240. (GS-11 Soil Scientist at $308.00/day for 30 days = $9240).

k) References:

Brown, J.K., Reinhardt, E.D., and Kramer, K.A. (2003). Coarse woody debris managing benefits and fire hazard in the recovering forest. Gen. Tech. Rep. RMRS-GTR-105, July 16 pp.

Graham, R.T., Harvey, A.E., Jurgenson, M.F., Jain, T.B., Tonn, J.R., and Page-Dumroese, D.S. (1994). Managing coarse woody debris in forests of the Rocky Mountains. USDA Forest Service Intermountain Research Station. Research paper INT-RP-477.

6) Authority: Forest Plan requires monitoring at the forest-scale.

7) Monitoring Priority: Priority B.

8) Frequency of Evaluation Report: Biennially.

9) Responsibility: Forest Soil Scientist.

10) How Evaluated: Review the trends of units meeting coarse woody debris requirements. Record the average number in tons/acre for each unit monitored. Record whether or not the unit average is within the recommended range, above the range, or below the range. Express this as a percentage of units that meet the recommendations, using the table below. By meeting the Plan direction for coarse woody debris, the activity units are trending positively toward the desired condition where soil organic matter and down woody debris support healthy mycorrhizal populations, prevent erosion, and soil productivity and hydrologic function are protected and enhanced. Tracking these may aid in identification of those practices that may need modification to improve coarse woody debris levels in activity units. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired condition.

Fill in the following table to describe trends.

Table 12. Percent of Harvest Units Meeting Coarse Woody Debris Requirements by Year

Fiscal Year	# of Units Monitored for CWD	# of Units Meeting Requirements	% of Units Meeting Requirements

11) Author: John Gier

MON-SOIL-02

1) Monitoring Question (MON-SOIL-02): To what extent have vegetation management activities prevented irreversible damage to soil conditions?

2) Forest Plan References:

- FW-DC-SOIL-02
- FW-DC- SOIL-03
- FW-DC- SOIL-04
- FW-DC- SOIL-05
- FW-GDL-SOIL-01
- FW-GDL-SOIL-04

3) Performance Indicator(s):

- **MON-SOIL-02-01:** Number of harvest units surveyed and percent that meet the Regional Soil Quality Standard, post-harvest (FSM, R1 Supplement No. 2500-99-1)

4) Forest Plan Rationale and Explanation: Detrimental soil disturbance is an appropriate performance measure because research has established a link between it and declining productivity when the threshold is exceeded. Minimizing soil disturbance is important for soil productivity because soil that remains in place retains organic matter and fine woody debris. These are both important for nutrient cycling, maintaining carbon storage, and supporting soil microbial communities and biochemical processes. Soil monitoring will document compliance with the Regional Soil Quality Standard and forest plan desired conditions to minimize detrimental disturbance.

5) Performance Indicator 1: Number of harvest units surveyed and percent that meet the Regional Soil Quality Standard, post-harvest (FSM, R1 Supplement No. 2500-99-1).

a) Description: Units will be surveyed post activity to determine if they meet Regional Soil Quality Standard for detrimental soil disturbance. Planned design features for each unit will be recorded, along with any effectiveness information. A percentage of units that met the standard will be reported. This will include both recent as well as historic timber sale units (greater than 10 years old).

b) Unit of Measure: Detrimental Soil Disturbance will be measured as a percent of the unit. Percentage of timber sale units that meet the Regional Soil Quality Standard.

c) Standards/Steps for Data Collection: The steps to monitoring for detrimental soil disturbance are clearly defined as part of the Regional Soil Quality Standard and in GTR-WO-82a and GTR-WO-82b, and will be followed for this application.

d) Data Storage: KNF Soilmon DB and Regional Solo DB.

e) Spatial Unit: Activity area in accordance with R1 Soil Monitoring Requirements.

f) Frequency of Measurement: Annual data collection, assembly and reporting.

g) Precision/Reliability: Class A.

h) Analysis Methods: The recommended approach for analysis is contained in GTR-WO-82b and will be used in this application. Calculate the percentage of timber sale units evaluated that meet the Regional Soil Quality Standard.

i) Who (Cooperators): Forest Soils Program Manager.

j) Cost: Annual cost will be approximately $9,240. (GS-11 Soil Scientist at $308.00/day for 30 days = $9240).

k) References:

Kuennen, L.J. (2011). Personal conversation with the KNF Soil Scientist regarding soil compaction in areas of secondary harvest activities.

Kuennen, L.J. (2007a). On-Going Soil Monitoring regarding harvest activities and related soil disturbance values (2000-2005) on the Kootenai National Forest, Appendix I USDA-FS, Kootenai National Forest.

Kuennen, L.J. (2007b). Average disturbance by activity for years 1988-2005, Appendix C, USDA-FS, Kootenai National Forest. White Paper. 2pp.

Forest Service Manual (FSM), R1 Supplement No. 2500-99-1.

GTR-WO-82a and GTR-WO-82b.

6) Authority: Project level monitoring of soil detrimental disturbance is required by the Regional Soil Quality Standard (FSM, R-1 Supplement No. 2500-99-1). The Forest Plan requires monitoring at the forest-scale.

7) Monitoring Priority: Priority B.

8) Frequency of Evaluation Report: Biennially.

9) Responsibility: Forest Hydrologist or Forest Soils Scientist.

10) How Evaluated: Review the trend of the percentage of units meeting regional soil quality standards. Calculate the percentage of units meeting R1 soil quality standards. By meeting the criteria, the activity units contribute to the desired conditions where soil impacts are minimized; soil productivity and hydrologic function are protected and enhanced. Tracking these will aid in identification of those practices that are consistently implemented with high success and those that may need modification to improve their effectiveness. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired condition.

Fill in the following table to describe trends.

Table 13. Harvest Units Monitored by Percent Disturbance Category

Fiscal Year	Number of Harvest Units by Soil Disturbance Category				Total Monitored
	<6 %	6-10%	11-15%	>15%	

11) Author: John Gier

Resource: Riparian

MON-RIP-01

1) Monitoring Question (MON-RIP-01): Have riparian and wetland areas been protected and/or improved to provide for healthy streams and aquatic environments to increase resiliency to disturbance including climate change?

2) Forest Plan References:

- FW-DC-RIP-01
- FW-DC- RIP-03
- FW-OBJ- RIP-01
- FW-STD-RIP-03
- FW-GDL-RIP-01
- FW-GDL-RIP-05

3) Performance Indicator(s):

- **MON-AQH-01-01:** Acres of riparian habitat maintained or improved

4) Forest Plan Rationale and Explanation: To meet desired conditions and objectives for Riparian Habitats and to be compliant with the Montana SMZ Law and INFISH.

5) Performance Indicator 1: Acres of riparian habitat maintained or improved.

a) Description: This monitoring item will document the protection of RHCAs. Field monitoring could be conducted during field reviews for BMPs adding only a half hour to each audit. Riparian improvements including but not limited to riparian planting, stream bank stabilization, and grazing enclosures would also count toward the acres maintained or improved.

b) Unit of Measure: Miles.

c) Standards/Steps for Data Collection: Data collection for acres restored/maintained would be recorded with yearly accomplishments in database of record.

d) Data Storage: RHCA restoration/maintenance would be recorded in watershed program files and Workplan accomplishments.

e) Spatial Unit: Project Area.

f) Frequency of Measurement: Annual data collection, assembly, and reporting.

g) Precision/Reliability: Class A.

h) Analysis Methods: See “How Evaluated” section.

i) Who (Cooperators): Forest Hydrologist and district Watershed personnel.

j) Cost: Annual cost will be approximately $2,000.

- GS-9/5 hydrologist at 4 days x $294/day = $1,176
- GS-12/5 hydrologist at 2 days x $426/day = $852
- Total = $2,028

k) References:
Montana Streamside Management Zone Law (77-5-301 to 307) and rules (26.6.601 to 610); The Inland Native Fish Strategy (USDA Forest Service, 1995).

6) Authority: CWA; INFISH; and Montana SMZ Law.

7) Monitoring Priority: Priority A.

8) Frequency of Evaluation Report: Annual Report, analyzing and summarizing data collected that year with data from earlier years.

9) Responsibility: Primarily Forest Hydrologist for coordination and reporting, but district Hydrologists will be responsible for reviews.

10) How Evaluated: Review the trend in maintenance or improvement of riparian habitat. Determine if activities are trending towards the forest plan objective of 10 to 50 acres of riparian habitat maintenance or improvement. To evaluate movement towards the desired conditions, discuss the trend in miles of habitat maintained or improved. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired conditions.

Table 14. Acres Riparian Habitat Maintained or Restored

Fiscal Year	Acres Riparian Habitat Maintained or Restored

11) Author: Kenny Kindel

Resource: Federally Listed Species

MON-FLS-01A

1) Monitoring Question (MON-FLS-01A): (Grizzly Bear) To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?

2) Forest Plan References:

- FW-DC-WL-03
- FW-DC-WL-05
- FW-STD-WL-02
- FW-STD-WL-03

3) Performance Indicator(s):

- **MON-FLS-01A: (**Grizzly Bear) Progress towards achieving and maintaining standards for percent core area, OMRD, and TMRD within the Recovery Zones (see monitoring requirements for the Grizzly Bear Access Amendment in appendix B of the Forest Plan)

4) Forest Plan Rationale and Explanation: In its biological opinion (2011) to the Grizzly Bear Access Amendment and the revised Plan (2013) the USFWS identified terms and conditions that the Forest must comply with in order for the take exemption in the Incidental Take Statement to be valid. These terms and conditions are considered non-discretionary. Contributing toward recovery of grizzly bears in both the Cabinet/Yaak and Northern Continental Divide recovery zones is incorporated into the desired condition of the Plan.

5) Performance Indicator 1: (Grizzly Bear) Progress towards achieving and maintaining standards for percent core area, OMRD, and TMRD within the Recovery Zones (see monitoring requirements for the Grizzly Bear Access Amendment in appendix B).

a) Description: For each BMU for that portion of the Cabinet Yaak (CYE) and the Northern Continental Divide (NCDE) recovery zones on the Forest:

- Core – Acres of core habitat expressed as a percentage of the total BMU;
- Total Motorized Route Density (TMRD) and Open Motorized Route Density (OMRD) – Miles of total and open motorized routes within a density category (2.0 and 1.0 miles per square mile respectively) expressed as a percentage of the total BMU; and
- Ongoing list detailing the locations, dates, duration, and circumstances for invoking the Grizzly Bear Access Amendment allowance for entering core area for the purposes of road decommissioning or stabilizations; and
    - To ensure the effective implementation of the open road density parameter, at least 30 percent of closure devices (gates and barriers) would be monitored annually within the Cabinet-Yaak Recovery Zone as per Design Element III in the Access Amendment.

For the Bears Outside of the Recovery Zone (BORZ) polygons:

- Linear miles of total and open roads in BORZ polygons

The current status of each of these criteria is compared to the levels established in the 2011 Grizzly Bear Access Amendment, or for the case of BORZ, the updated baseline conditions.

Definitions:

Core – An area of secure habitat within a BMU that contains no motorized travel routes or high use non-motorized trails during the non-denning season and is more than 500 meters from a drivable road. Core areas do not include any gated roads but may contain roads that are impassable due to vegetation or constructed barriers. Core areas strive to contain the full range of seasonal habitats that are available in the BMU.

TMRD (Total Motorized Route Density) **–** Calculations made with the moving windows technique that includes open roads, restricted roads, roads not meeting all reclaimed criteria, and open motorized trails. The percent of the analysis area in relevant route density classes is calculated.

OMRD (**O**pen Motorized Route Density) **–** Calculations made with the moving windows technique that includes open roads, other roads not meeting all restricted or obliterated criteria, and open motorized trails. The percent of the analysis area in relevant route density classes are calculated.

Administrative Use – Motorized vehicle use by personnel of resource management agencies on restricted roads (i.e., not open to the public) outside of core areas. This includes contractors and permittees in addition to agency employees. Administrative use is tracked in order to determine OMRD. If administrative use exceeds certain levels (60 trips during the entire Bear Year, 18 trips in the spring, 23 trips in the summer, or 19 trips in the fall) then the road is considered open for that Bear Year.

- Active bear year (non-denning season) – April 1 to November 30;
- Spring – April 1 to June 15;
- Summer – June 16 to September 15; and
- Fall – September 16 to November 30.

Interagency Grizzly Bear Committee (IGBC) road and trail definitions/codes:

1. Impassable Roads: Road that is not reasonably or prudently passable by conventional 4-wheel passenger, all-terrain vehicles, or motorcycles.
2. Restricted Roads: Road that is legally restricted with barriers, typically with gates. Administrative motorized use may occur on these roads.
3. Barriered Roads: Road that is legally restricted with barriers, typically berms or rocks. No administrative use permitted.
4. Open Roads: Road open to motorized use during any portion of the active bear season.
5. Open Motorized Trails: Trails that are passable by motorcycle or all-terrain vehicles and are not legally restricted.
6. Open Non-motorized Trails: Trails that are not reasonably or prudently passable by motorcycles or all-terrain vehicles and are not legally restricted.
7. Restricted Trails: Trails that are legally restricted and are passable by motorcycles or all-terrain vehicles.
8. High use non-motorized trails: Trails that receive greater than 20 parties per week of non-motorized use.

b) Unit of Measure: Varies (see ‘Performance Indicator Description’ above).

c) Standards/Steps for Data Collection: Each district is responsible for tracking administrative use/closure device monitoring and updating INFRA with road status changes

(i.e., IGBC codes). The tracking of admin use is done at the district level and data entered into the Access database at O:\NFS\Kootenai\Program\7700TravelMgmt\AccessMgmtDB. The updated data in INFRA would be used to create a current Bear Year roads layer in order to calculate core, TMRD, and OMRD within the BMUs. Linear miles of total and open roads within the BORZ would also be calculated. Each district is responsible for tracking when core areas are entered for the purposes of road decommissioning or stabilizations and reporting the dates/locations to the SO.

d) Data Storage: Hard copies of administrative use records closure device monitoring would be kept at the districts and data entered electronically at O:\NFS\Kootenai\Program\7700TravelMgmt\AccessMgmtDB. Changes to IGBC codes or other road updates would be tracked in INFRA. Completed core, TMRD, OMRD, and BORZ outputs (GIS layers) would be kept in the GIS library in the appropriate Bear Year folder at T:\FS\NFS\Kootenai\Program\2600Wildlife\GIS\SO\Data\GrizMonitor.

e) Spatial Unit: BMU or BORZ polygon.

f) Frequency of Measurement: Biennially for forest plan monitoring and annual reports to USFWS as per the BO for the Grizzly Bear Access Amendment (2011).

g) Precision/Reliability: Class A.

h) Analysis Methods: Using the updated information in INFRA to create a current Bear Year motorized route layer, create two roads layers to be used in the analysis. First, query for IGBC code 2, 4, and 5 routes and save as a separate coverage to be used for the TMRD and Core calculations. Next, query for IGBC code 4 and 5 routes and save as a separate coverage to be used for the OMRD calculations. These coverages should include the entire Forest so that the analyses can be conducted. Due to the buffering of routes involved in core calculations, and the size of the “window” used in the OMRD and TMRD calculations, routes outside but adjacent to individual BMUs influence the results of the calculations. Also, the BORZ areas will use the same coverages. Routes for adjacent jurisdictions (e.g., IPNF and LNF) should be included as well. Only those routes on adjacent jurisdictions that would be included in the analysis area of the Core, TMRD, and OMRD calculations would need to be included. If no changes from the previous year for those other ownerships, use the previous year’s version for the current Bear Year.

Core would be calculated by buffering all the open motorized routes and gated roads (same layer to be used for TMRD using IGBC code 2, 4, and 5 routes) by 0.31 mi (500 m). A percentage of each BMU in core would be calculated.

OMRD and TMRD would use a “moving windows” analysis to calculate road densities. The analysis area is broken into pixels (grid cells), for which a road density for a set “window” around that pixel is calculated.

The KNF moving windows model (i.e., a script or “aml” in ArcInfo that automates the calculation process) uses a 60 m grid cell size. The window is circular and uses a 907.9865 m radius (0.56 mi).

To use the automated tool for running moving windows the computer running the analysis needs to be prepped beforehand. Copy the files in T:\FS\NFS\Kootenai\Program\6800InformationMgmt\GIS\mwFilesforCdrive to C:/fsfiles/fstmp. Copy your two routes coverages (one for open, one for total and core) to a subfolder you set up for the current Bear Year in C:/fsfiles/fstmp. Make sure the data folder

from the C:/fsfiles/fstmp/mwFilesforCdrive is in fsapps/fsother/gis/officetoolset/aml. Make sure C:/fsfiles/ref/library/gis/kootenai/topo contains lattice_int. Lattice_int may be copied using ArcCatalog on your PC from the following location if you do not have it: T:\FS\Reference\RSImagery\ProcessedData\r01_knf\Topo. Copy the individual BMU coverages to C:/fsfiles/ref/library/gis/kootenai/wildlife/bmu. Note that these files need to be coverages in ArcInfo Workspaces created in ArcCatalog (instead of just folders). You cannot use shapefiles.

TMRD would use the same set of routes as the core calculations (IGBC code 2, 4, and 5 routes) and use a moving windows method to calculate the amount of each BMU in road density categories (0 mi/mi2, 0.1-0.9 mi/mi2, 1-1.9 mi/mi2, ≥2.0 mi/mi2). A percentage of each BMU with ≥2 mi/mi2 would be calculated.

To run the moving windows automated tool, open an arc prompt by going to: Start > All Programs > ArcGIS > ArcInfo Workstation > Arc. Wait for the word Arc to appear in the black screen that opens. This could be several minutes.

Typing a small case letter w and then enter will show you what directory you are currently in, which is most likely C:\Workspace. To navigate to where you filed the aml, type w and the path to where you copied the files above. In this case, type w /fsfiles/fstmp and hit the enter key.

Run Moving windows by typing in the following at the arc:

- &r mw
- Hit enter
- If you get an error, type &sys dir to list the files in your directory as ls, ls –l, and ll do not work
- Look for the following file in your current directory: mw.aml

In the box in Step 1 of the Moving Window menu window that comes up, right click and navigate to your roads coverage. Choose the coverage for the item you are running, in this case the route coverage for total roads (i.e., IGBC code 2, 4, and 5).

Step 2-6 in the Moving Windows menu take the defaults.

In Step 7 of the Moving Windows menu type in your output path and filename you want the run to be saved in. Save it to a folder for your TMRD runs under C:/fsfiles/fstmp/. Choose tmrd_out from the right hand box (Select Workspace). Click OK. Now you need to click in the white space and replace outcover with the name of the output file. Name the output file to identify it as TMRD for a specific BMU for the current Bear Year.

Step 8 of the Moving Windows menu takes the default.

In Step 9a right click in the box in 9a and navigate to the bmu coverage you want to run (i.e., choose the specific BMU you are analyzing – BMUs must be run one at a time for TMRD).

Finally, click the Run Moving Window Box in Step 9. Wait….. Watch for the Completed! comment in the Arc window.

To run the next BMU redo Step 7 and .Step 9a and change the file name and specific BMU and re-run the model.

Click the Dismiss button after completion.

Type a small case letter q to exit the arc window.

OMRD would be calculated using a moving windows method as well, with the calculations based on those routes that are open to public motorized use or exceeded administrative use levels for the current Bear Year. The percentage of each BMU with ≥ 1 mi/mi2 would be calculated.

Run OMRD in the same manner as TMRD but using the open roads coverage (i.e., IGBC code routes 4 and 5).

Linear miles of total and open routes would be calculated for each BORZ polygon by simply tallying in GIS how many miles of routes on NFS lands were within the BORZ in that Bear Year. This can be accomplished by taking the two routes coverages created earlier (open routes and total routes) and clipping each one to each BORZ polygon (NFS lands only). Use Xtools to recalculate the miles.

Export OMRD, TMRD, Core, and linear miles in BORZ summaries to Excel spreadsheets to be saved in the same folder as the GIS outputs. Pivot tables in Excel work well for summarizing the outputs. Copy all GIS outputs from your C drive over to the location described in item 8 above (Data Storage).

The percentages for core, TMRD, OMRD, and miles of total and open roads in the BORZ would be compared to the levels set in the Grizzly Bear Access Amendment, or the updated baseline in the case of BORZ.

The districts would be asked to report the instances for entering core blocks for road stabilization/watershed work. Districts would also report the total number of closure devices monitored annually as per Design Element III in the Access Amendment.

Use the previous year's monitoring report as a template to complete the current Bear Year's report to send to USFWS. Coordinate with the Lolo, Colville, and Idaho Panhandle National Forests to submit a comprehensive report for the Cabinet-Yaak and Selkirk ecosystems.

The models can be used for the NCDE BMU subunits on the KNF as well, although the Flathead NF has generally run the monitoring reports for the NCDE and have run the models for the KNF's NCDE BMU subunits as well. Kathy Ake on the FNF has been tasked with running the NCDE models in recent years.

i) Who (Cooperators): The Forest (districts and supervisor's office).

j) Cost: Costs for this indicator include gathering and compiling information on each of the parameters identified and running the appropriate analyses. Costs to update INFRA and review model outputs at the districts:

- District GIS specialist and/or transportation planner GS-7 @ $250/day for 3 days = $750 for 4 units (districts) = $3,000
- District wildlife biologist GS-9 @ $300/day for 5 days = $1,500 for 4 units (districts) = $6,000
- Cost to run the models and compile the report:
- SO or district GIS specialist GS-9 @ $300/day for 5 days = $1,500

- GS-12 Fish and Wildlife Program Manager @ $400/day for 5 days = $2,000
- Total costs = $12,500

k) References:

USDI Fish and Wildlife Service. (2013). Endangered Species Act Section 7 Consultation Biological Opinion on the Revised Forest Plan for the Kootenai National Forest. USFWS Montana Field Office and North Idaho Field Office. August 28, 2013. 411 pp.

USDI Fish and Wildlife Service. (2011). Endangered Species Act Section 7 Consultation Biological Opinion on the Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones on the Kootenai, Idaho Panhandle, and Lolo National Forests. USFWS Montana Field Office and North Idaho Field Office. October 18, 2011. 227 pp.

6) Responsibility: Forest Fish/Wildlife Program Manager, district wildlife biologists, with help from district/SO GIS specialists and transportation planners/engineers.

7) Authority: Terms and Conditions in the BOs for the Grizzly Bear Access Amendment (2011) and the revised Forest Plan (2013).

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial for Forest Plan Monitoring Report; Annual report to USFWS.

10) How Evaluated: The results from the monitoring calculations for core, OMRD, and TMRD within the recovery zones by BMU, and linear miles of open and total roads in each BORZ will be compared against the standards set forth in the Forest Plan and Access Amendment. To document the extent to which forest management is contributing to the conservation of grizzly bear, describe the progress towards the milestones identified in the Access Amendment (pages 66-68 in the Access Amendment ROD) for bringing all BMUs into compliance by the year 2019.

To facilitate the evaluation, fill in the following tables where there is XX with the current year's information.

Table 15. Cabinet-Yaak Bear Management Unit Summary for the 20XX Bear Year - [April 1 through November 30 (Cabinet-Yaak)]. Values in blue parentheses reflect standards set in place in November 2011 for the Cabinet-Yaak (USDA Forest Service 2011) or in the revised Forest Plan for the NCDE BMU subunits on the KNF

Bear Management Unit	Open Roads >1 mi/mi^2 %	Total Roads >2 mi/mi^2 %	% Core
Cabinet-Yaak			
1 (Cedar)	XX (15)	XX (15)	XX (80)
2 (Snowshoe)	XX (20)	XX (18)	XX (75)
3 (Spar)	XX (33)	XX (26)	XX (59)
4 (Bull)	XX (36)	XX (26)	XX (63)
5 (St. Paul)	XX (30)	XX (23)	XX (60)

Bear Management Unit	Open Roads >1 mi/mi^2 %	Total Roads >2 mi/mi^2 %	% Core
6 (Wanless)	XX (34)	XX (32)	XX (55)
7 (Silver Butte)	XX (26)	XX (23)	XX (63)
8 (Vermilion)	XX (32)	XX (20)	XX (55)
9 (Callahan)	XX (33)	XX (26)	XX (55)
10 (Pulpit)	XX (44)	XX (34)	XX (52)
11 (Roderick)	XX (28)	XX (26)	XX (55)
12 (Newton)	XX (45)	XX (31)	XX (55)
13 (Keno)	XX (33)	XX (26)	XX (59)
14 (NW Peak)	XX (31)	XX (26)	XX (55)
15 (Garver)	XX (33)	XX (26)	XX (55)
16 (EF Yaak)	XX (33)	XX (26)	XX (55)
17 (Big Cr.)	XX (33)	XX (26)	XX (55)
North Continental Divide Ecosystem			
Krinklehorn	XX (18)	XX (11)	XX (75)
Therriault	XX (23)	XX (10)	XX (71)

Table 16. Bear Year 20XX motorized access conditions for Bears Outside of Recovery Zone (BORZ) areas situated on the KNF. Since the Access Amendment was adopted in 2011 the BORZ have been updated, including the baselines as errors in the database have been corrected

BORZ Name	Grizzly Bear Ecosystem	Total Roads on NFS Lands (Linear Miles) 20XX/(baseline)	Open Roads on NFS Lands (Linear Miles) 20XX/(baseline)
Clark Fork	Cabinet-Yaak	XX (256.1)	XX (176.9)
Cabinet Face	Cabinet-Yaak	XX (164.6)	XX (129.5)
West Kootenai	Cabinet-Yaak	XX (654.4)	XX (343.0)
Tobacco	Cabinet-Yaak	XX (1,123.9)	XX (867.0)

Table 17. Summary of restricted and closed route monitoring within the Cabinet-Yaak Recovery Zone located on the Kootenai National Forest, 20XX. Data on file at the district offices

Closure Type	Number of Devices	Number of Closures Monitored in Bear Year 20XX	Percent monitored for Bear Year 20XX
Gate/Barrier	XX	XX	XX

Table 18. List of ongoing locations, dates, duration, and circumstances for invoking the allowance for entering core area for the purposes of road decommissioning or stabilizations in the KNF portion of the Cabinet-Yaak Recovery Zone

BMU	Location	Date	Duration	Circumstances
9	In finger of core between north and south Callahan creeks, east of Smith Patrol (mountain).	July-16-August 10, 2012	~3 ½ wks	Road 4521 – combination of decommissioning and storage work.

11) Author: Jeremy Anderson

MON-FLS-01B

1) Monitoring Question (MON-FLS-01B): (Canada lynx) To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?

2) Forest Plan References:

- FW-DC-WL-03
- FW-STD-WL-01
- FW-DC-VEG-01
- FW-DC-VEG-02
- FW-DC-VEG-05
- FW-DC-VEG-08
- FW-DC-VEG-11
- FW-OBJ-VEG-01
- FW-GDL-VEG-03
- FW-DC-FIRE-03

3) Performance Indicator(s): MON-FLS-01B: (Canada lynx) Changes in lynx habitat as a result of moving towards the desired conditions for vegetation through vegetation management, prescribed fire, or natural disturbance (see monitoring requirements for the NRLMD in appendix B of the Forest Plan). Components of this indicator:

- Changes in lynx habitat as a result of forests being regenerated (i.e., status of LAUs with regard to VEG S1 and VEG S2 from the NRLMD); and
- Snow compacting activities in lynx habitat.

Note: There are also project level reporting requirements from the NRLMD (page 9 in Attachment 1 of the NRLMD ROD) and associated BO (pages 82-83 in USFWS 2007) that would continue to be tracked but are not part of this forest plan level monitoring report.

4) Forest Plan Rationale and Explanation: The Plan identifies that direction in the Northern Rockies Lynx Amendment (NRLMD) will be used in the management of lynx and lynx habitat on the Forest (FW-STD-WL-01). The NRLMD (USDA 2007) contains standards for both of these lynx habitat components (standards VEG S1 and VEG S2), as well as reporting and monitoring requirements.

The Plan identifies that direction in the Northern Rockies Lynx Amendment (NRLMD) will be used in the management of lynx and lynx habitat on the Forest (FW-STD-WL-01). The NRLMD (USDA 2007) contains objectives and guidelines for human use projects including snow compacting activities, ski areas etc. The NRLMD ROD contains required monitoring for this indicator (NRLMD ROD, attachment page 9).

5) Performance Indicator 1: Changes in lynx habitat as a result of forests being regenerated.

a) Description: This indicator will be used to determine changes in the amount of lynx habitat within each LAU in an early stand initiation stage that does not currently provide winter snowshoe hare habitat, by assessing:

- The amount of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as a result of: natural events, vegetation management or fuel treatment projects, or any combination of these or other causes.

(Up to 30 percent of the lynx habitat in an LAU may be in this condition, see standard VEG S1).

- The amount of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as a result of regeneration harvest over a ten year period. (Up to 15 percent of lynx habitat in an LAU may be regenerated through timber management projects over a ten year period, see standard VEG S2).

Definitions (USDA 2007, NRLMD ROD)

Standard VEG S1 – Unless a broad scale assessment has been completed that substantiates different historic levels of stand initiation structural stages limit disturbance in each LAU as follows:

If more than 30 percent of lynx habitat in an LAU is in a stand initiation structural stage that does not provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects (NRLMD ROD attachment 1 pages 2 and 3).

Standard VEG S2 – Timber management projects shall not regenerate more than 15 percent of lynx habitat on NFS lands within an LAU in a ten year period (NRLMD ROD attachment 1 page 3).

Vegetation Management – Vegetation management changes the composition and structure of vegetation to meet specific objectives, using such means as prescribed fire and timber harvest. For purposes of this decision, the term does not include removing vegetation for permanent developments like mineral operations, ski runs, roads and the like, and does not apply to fire suppression or to wildland fire use (NRLMD ROD attachment 1 page 15).

Timber Management – Timber management consists of growing, tending, commercially harvesting, and regenerating crops of trees (NRLMD ROD attachment 1 page 14).

Project – All or any part or number of the various activities analyzed in an EIS, EA, or DM. For example, the vegetation management in some units or stands analyzed in an EIS could be for fuel reduction. Therefore, those units or stands would fall within the term fuel treatment project even if the remainder of the activities of the EIA is being conducted for other purposes, and the remainder of those units or stands have other activities prescribed for them. All units in an analysis do not necessarily need to be for fuel reduction purposes for certain units to be considered a fuel reduction project (NRLMD ROD attachment 1 page 13).

Regenerate (regeneration harvest in the glossary) – The cutting of trees and creating an entire new age class, an even-age harvest. The major methods are clearcutting, seed tree, shelterwood, and group selective cuts (Helms, 1998 in USDA 2007, NRLMD ROD attachment 1 page 14).

Stand Initiation Structural Stage – The stand initiation stage generally develops after a stand replacing disturbance by fire or regeneration timber harvest. A new single story layer of shrubs, tree seedlings, and saplings establish and develop, reoccupying the site. Trees that need full sun are likely to dominate these even-aged stands (Oliver and Larson, 1996 in USDA 2007, NRLMD ROD attachment 1 page 14).

Winter Snowshoe Hare Habitat – Winter snowshoe hare habitat consists of places where young trees or shrubs grow densely (thousands of woody stems per acre) and tall enough to

protrude above the snow during winter, so snowshoe hare can browse on the bark and small twigs (LCAS in USDA NRLMD ROD 2007). Winter snowshoe hare habitat develops primarily in the stand initiation, understory re-initiation and old forest multistoried structural stages (NRLMD ROD attachment 1 page 15).

Lynx Habitat in an Unsuitable Condition – Lynx habitat in an unsuitable condition consists of lynx habitat in the stand initiation structural stage where the trees are generally less than approximately 10 to 30 years old and have not grown tall enough to protrude above the snow during winter. Stand replacing fire or certain vegetation management projects can create unsuitable conditions. Vegetation management projects that can result in unsuitable habitat include clearcuts and seed tree harvest, and sometimes shelterwood cuts and commercial thinning depending on the resulting stand composition and structure (LCAS in USDA 2007, NRLMD ROD attachment 1 page 12).

b) Unit of Measure: Expressed as a percentage of all lynx habitat in the LAU, acres of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as a result of all natural events or management activities. Expressed as a percentage of all lynx habitat in the LAU and determined over a ten year period, acres of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as a result of timber management projects.

c) Standards/Steps for Data Collection: The Forest has delineated and mapped lynx analysis units (LAUs) and lynx habitat within each of those LAUs. The Forest has been keeping track of these habitat components for several years, although the terminology has changed; unsuitable lynx habitat = stands in the early stand initiation structural stage that do not provide winter snowshoe hare habitat.

In order to track the changes in unsuitable habitat updates to the fire history GIS layer and FACTS must be kept as current as possible.

d) Data Storage: GIS layers of the lynx analysis units are retained in the forest GIS library. Timber stand activity information (including prescribed fire) is retained in FACTS and fires (unplanned ignitions) in the fire history GIS layer. FSVeg Spatial contains stand data used to query for lynx habitat. The output from the analysis is stored in the GIS library: T:\FS\Reference\GIS\r01_knf\Data\wildlife.

e) Spatial Unit: Lynx Analysis Unit (LAU).

f) Frequency of Measurement: Biennially.

g) Precision/Reliability: Class A.

h) Analysis Methods: Using the most recent lynx habitat layer for the Forest, update it using FACTS and fire history layer to determine the amount of habitat that is in an early stand initiation stage that does not currently provide winter snowshoe hare habitat. The lynx habitat layer should also be updated to account for those stands that have reached an age since the last update that they now are tall enough to provide winter snowshoe hare habitat. Calculate the percentage of the lynx habitat within each LAU that is in an early stand initiation stage that does not currently provide winter snowshoe hare habitat (VEG S1). This includes all land ownerships within the LAU.

Additionally, determine how much habitat is currently in an early stand initiation stage that does not currently provide winter snowshoe hare habitat due to timber management projects in the last 10 years on NFS lands (VEG S2) within each LAU.

This analysis can be conducted at the SO as long as all the data is current in FACTS and the fire history layer.

i) Who (Cooperators): Forest and district wildlife biologists, GIS specialists, and FACTs coordinators, regional office, and the US Fish and Wildlife Service.

j) Cost: The analysis can be done at the SO if FACTS and the fire history layer are up to date. To run the analysis and compile the information:

- GS-9 GIS specialist at the SO @ $300/day for 3 days = $900
- GS-9 FACTS coordinator @ $300/day for 2 days = $600
- GS-12 Forest biologist @ $400/day for 2 days = $800

To review the information:

- GS-9 district wildlife biologist @ $300/day for 2 days = $600 for 4 units (districts) = $2,400 total
- Total costs = $4,700

k) References:

USDA Forest Service. (2007). Northern Rockies Lynx Management Direction Record of Decision. National Forests in Montana, and parts of Idaho, Wyoming, and Utah. 51 pp. plus attachments.

USDI Fish and Wildlife Service. (2007). Biological Opinion on the effects of the Northern Rocky Mountains Lynx Amendment on the Distinct Population Segment of Canada Lynx in the contiguous United States. U.S. Fish and Wildlife Service, Montana Field Office. Helena, MT. 96 pp. plus appendices.

5) Performance Indicator Component 2: Snow compacting activities in lynx habitat.

a) Description: The NRLMD had a monitoring requirement to map the location and intensity of snow compacting activities, and designated and groomed routes that occurred inside LAUs during the period of 1998 to 2000. This mapping effort was to be completed within one year of the amendment decision (March 2007) and formed the baseline to determine changes that occur in snow compacting activities and designated and groomed routes. The changes in activities and routes are to be monitored every five years after the NRLMD decision.

Definitions (USDA 2007, NRLMD ROD)

Area of Consistent Snow Compaction – An area of consistent snow compaction is an area of land or water that during winter is generally covered with snow and gets enough human use that individual tracks are indistinguishable. In such places, compacted snow is evident most of the time, except immediately after (within 48 hours) snowfall. These can be areas or linear routes, and are generally found in or near snowmobile or cross-country ski routes, in adjacent openings, parks and meadows, near ski huts or plowed roads, or in winter parking areas. Areas of consistent snow compaction will be determined based on the acreage or miles used during the period 1998-2000 (NRLMD ROD attachment 1, page 10).

Designated Over-Snow Routes – Designated over-snow routes are routes managed under permit or agreement or by the agency, where use is encouraged, either by on the ground marking or by publication in brochures, recreation opportunity guides or maps (other than travel maps), or in electronic media produced or approved by the agency. The routes identified in outfitter and guide permits are designated by definition; groomed routes also are designated by definition. The determination of baseline snow compaction will be based on the miles of designated over-snow routes authorized, promoted or encouraged during the period 1998-2000 (NRLMD ROD attachment 1, page 10).

Designated Route – A designated route is a road or trail that has been identified as open for specified travel use (NRLMD ROD attachment 1, page 10).

b) Unit of Measure: Miles, acres, location and intensity of snow compacting activities, and designated and groomed routes, when compared to the baseline map.

c) Standards/Steps for Data Collection: Every 5 years the amount (miles, acres), location, and intensity of snow compacting activities and designated and groomed routes will be determined and mapped. The forest wildlife biologist, with help from the recreation program manager, district wildlife biologists and district recreation specialists will update the baseline map with all snow compacting activities and designated and groomed routes. The baseline layer is located at T:\FS\Reference\GIS\r01_knf\Data\wildlife\LynxAmendmentWinterRoutes.gdb with additional info located at T:\FS\NFS\Kootenai\Program\2600Wildlife\GIS\SO\Data\Lynx_WinterRec_LynxAmend\lynx\snowmob.

d) Data Storage: The map of snow compacting activities and designated and groomed routes will be retained in the forest library (T:\FS\Reference\GIS\r01_knf\Data\wildlife), to be updated at least every 5 years.

e) Spatial Unit: Forest.

f) Frequency of Measurement: At least every 5 years.

g) Precision/Reliability: Class A.

h) Analysis Methods: The forest wildlife biologist and/or recreation manager will determine and map snow compacting activities. Designated and groomed routes will be mapped by the forest recreation manager and/or district personnel. Miles and/or acres of snow compaction activities and designated and groomed routes will be mapped and compared to the baseline map. A determination of intensity will be made when monitoring is being conducted.

i) Who (Cooperators): Forest and district wildlife biologists and recreation specialists. The Forest will seek to involve other cooperators such as the US Fish and Wildlife Service, and Montana Fish, Wildlife and Parks as well as other agencies or individuals involved in monitoring other species on the Forest.

j) Cost: This indicator includes the cost of updating the forestwide baseline map of the location and intensity of snow compacting activities and designated and groomed routes, and determining changes in the location and intensity of these activities at least every 5 years. The cost to update the map, and determine changes in activities (this cost may be incidental to efforts currently ongoing by the recreation manager):

Supervisor's office:

- GS-12 forest wildlife biologist @$400 per day for 3 days = $1,200
- GS-12 recreation program manager @$400 per day for 5 days = $2,000
- GS-9 GIS specialist to update map @$300 per day for 5 days = $1,500

Districts:

- GS-9 wildlife biologist @$300 per day for 3 days = $900 for 4 units = $3,600
- GS-9 recreation specialist @$300 per day for 5 days = $1,500 for 4 units = $6,000
- Total cost $14,300 every 5 years

The cost to monitor the location and intensity: Some of these activities will be conducted on weekends when a higher level of activities takes place. This may require some overtime to conduct these activities.

k) References:

USDA Forest Service. (2007). Northern Rockies Lynx Management Direction Record of Decision. National Forests in Montana, and parts of Idaho, Wyoming, and Utah. 51 pp. plus attachments.

USDI Fish and Wildlife Service. (2007). Biological Opinion on the effects of the Northern Rocky Mountains Lynx Amendment on the Distinct Population Segment of Canada Lynx in the contiguous United States. U.S. Fish and Wildlife Service, Montana Field Office. Helena, MT. 96 pp. plus appendices.

6) Responsibility: Forest Wildlife Biologist.

7) Authority: Required by the NRLMD and revised Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial (except component 2, snow compacting, which is every 5 years).

10) How Evaluated: The results from the monitoring calculations for the amount of lynx habitat in an early stand initiation stage that does not currently provide winter snowshoe hare habitat for each LAU would be converted to a percentage of the total lynx habitat in each LAU. This percentage would then be compared against the 30% percent threshold in VEG S1 from the NRLMD. The percentage of lynx habitat in this condition as a result of regeneration harvest in the last decade would be compared against the 15 percent threshold in VEG S2 of the NRLMD. If a LAU exceeds those thresholds for either VEG S1 or VEG S2 then the direction in those two standards would limit management within those LAUs.

Every five years the updated map showing changes in the location and intensity of snow compacting activities would be developed and compared to the baseline conditions that occurred in the LAUs during 1998-2000. The baseline conditions were documented as part of the Required Monitoring from the NRLMD (page 9 in Attachment 1 of the NRLMD ROD).

Document the status of these indicators and the extent to which forest management is contributing to the conservation of lynx relative to VEG S1 and VEG S2 from the NRLMD and the extent of snow compacting activities on the Forest.

Use the following table to document the percentage of lynx habitat by LAU in an early stand initiation stage that does not currently provide winter snowshoe hare habitat as per VEG S1 and VEG S2.

Table 19. Percentages in 20XX pertaining to VEG S1 and VEG S2 from the Northern Rockies Lynx Management Direction (NRLMD). For VEG S1, the percentage of lynx habitat currently in an early stand initiation structural stage that doesn't provide winter snowshoe hare habitat is displayed (all land ownerships). For VEG S2, the percentage of lynx habitat regenerated due to timber management in the last decade is displayed (NFS lands only)

LAU	VEG S1 – %	VEG S2 - %
Baldy		
Beaver-Whitepine		
Boulder-Sullivan		
Bristow		
Bull		
Callahan		
China		
Crazy		
Cripple		
Crowl		
Dry Fork-Weigel		
Edna		
Elk-Pilgrim		
Fortine		
Good		
Grave		
Hawkins		
Keeler		
Krinklehorn		
Lookout		
Lost Horse		
Lower Pipe		
Lower Quartz		
McElk		
McGuire-Tenmile		
North Fork Big		
Parsnip		
Pinkham		
Robinson		
Rock		

LAU	VEG S1 – %	VEG S2 - %
Ross		
Silver Butte		
Skookum		
South Fork Big		
Sunday-Trego		
Sutton		
Swamp		
Terriault		
Thunder		
Treasure		
Trout-Marten		
Upper Pipe		
Upper Quartz		
Upper Wolf		
Vermillion		
West Fisher		
Young-Dodge		

11) Author: Jeremy Anderson

MON-FLS-01C

1) Monitoring Question (MON-FLS-01C): (Bull Trout) To what extent is forest management contributing to the conservation of federally listed species and moving toward habitat objectives?

2) Forest Plan References:

- FW-DC-AQH-01
- FW-DC-AQH-02
- FW-DC-AQH-03
- FW-DC-AQH-05
- GOAL-AQS-01
- FW-DC-AQS-01
- FW-DC-AQS-04
- FW-DC-AQS-05
- FW-OBJ-AQS-01
- FW-GDL-AQS-01

3) Performance Indicator(s):

- **MON-FLS-01C:** Bull Trout Core Area population trends based on redd counts in known spawning reaches. (There is no INFISH requirement to evaluate bull trout population trends, as indicated in chapter 5 of the Forest Plan. Effectiveness of implementing INFISH is conducted by the PACFISH/INFISH Biological Opinion Effectiveness Monitoring team (PIBO EM), USFS Fish and Aquatic Ecology Unit, Logan, UT.)

4) Forest Plan Rationale and Explanation: The Forest Plan provides an emphasis for native species management and in particular threatened, endangered, and sensitive species. Bull trout, a federally listed species, are a focus of some conservation and restoration efforts being put forward under the new Forest Plan direction.

5) Performance Indicator 1: Bull Trout Core Area population trends based on redd counts in known spawning reaches.

a) Description: Redd counts are a surrogate for estimating populations and long-term trend data at specific reaches has been monitored by interagency personnel, providing a good baseline reference for population trends.

b) Unit of Measure: Number of redds in selected spawning reaches.

c) Standards/Steps for Data Collection: Data is collected in accordance with Montana Fish, Wildlife, & Parks protocols and are assisted by Avista Co., and Forest Service personnel as available.

d) Data Storage: Data is maintained by the Montana Fish, Wildlife and Parks.

e) Spatial Unit: Forestwide.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Trend analyses are conducted by Montana Fish, Wildlife & Parks. For Forest Plan reporting purposes, provide graphs of trend and synopsis of results for the following drainage basins which are identified by the USFWS as Bull Trout Recovery Core Areas; Lower Clark Fork River, Upper Kootenai River, and Middle Kootenai River.

i) Who (Cooperators): Forest Service, Avista Co., Montana Fish, Wildlife & Parks, and Idaho Fish and Game Department.

j) Cost: Estimated using an average cost to government of a GS-12 employee ($405) for one day to review red count data and report out. Nine days of a GS-09 (cost to government = $280/day) to assist Fish and Game in data collection for a total of ~$3,000/year.

k) References: None

6) Responsibility: Forest fisheries program manager.

7) Authority: There are no legal requirements for the Forest Service to report this information, although it is in the interest of multiple agencies to track improvements to bull trout populations relative to the Endangered Species Act.

8) Monitoring Priority: Priority B - required by Forest Plan, but not required by law.

9) Frequency of Evaluation Report: Biennially.

10) How Evaluated: Trends in bull trout population are reported annually by Montana Fish, Wildlife & Parks. The information from MFWP will be summarized for each of the Bull Trout Recovery Areas on the Forest. If trends show movement neutral or away from desired condition and habitat objectives, the narrative will document why.

11) Author: John W. Carlson

Resource: Management Indicator Species (MIS)

MON-MIS-01A

1) Monitoring Question (MON-MIS-01A): (Elk) Are habitat trends for Management Indicator Species (MIS) consistent with the objectives?

2) Forest Plan References:

- FW-OBJ-WL-02
- FW-GDL-WL-10

3) Performance Indicator(s):

- **MON-MIS-01A:** (Elk) Number of planning subunits providing >30 percent security and >50 percent security (high priority subunits) on NFS lands during the hunting season

4) Forest Plan Rationale and Explanation: See the Performance Indicator Description.

5) Performance Indicator 1: (Elk) Number of planning subunits providing >30 percent security and >50 percent security (high priority subunits) on NFS lands during the hunting season.

a) Description: Elk was chosen as a MIS for elk security habitat. FW-OBJ-WL-02 set an objective for improvement of elk security on the Forest.

Security Habitat (Elk): Generally timbered stands on NFS lands at least 250 acres in size greater than 0.5 mile away from open motorized routes during the hunting season. Security is calculated for individual planning subunits. Roads not open to the public for motorized use during the hunting season is not included in this calculation. The effects of non-motorized use and/or administrative motorized use of closed or temporary roads during the hunting season are not included in this calculation and would instead be analyzed separately at the project level.

Planning subunits are pre-defined areas on the KNF that are generally groups of 6th code HUCs. They are maintained as a layer in the Forest GIS library. High priority subunits were identified through coordination with MFWP and a layer of subunit priority is included in the Forest GIS library.

b) Unit of Measure: Number of planning subunits with >30 percent security or >50 percent (high priority subunits) on NFS lands during the hunting season.

c) Standards/Steps for Data Collection: INFRA (for motorized routes) and FACTS (to determine non-timbered stands) would need to be kept current. Fire history GIS layer would also be used to assist in determining what stands are not currently timbered. Subunits are maintained as a layer in the Forest GIS library. A layer showing subunit priority related to elk security is included in the Forest GIS library.

d) Data Storage: Motorized routes tracked in INFRA, vegetation management tracked in FACTS. The yearly security habitat analysis runs/GIS outputs would be kept in the Forest GIS library (T:\FS\Reference\GIS\r01_knf\Data\wildlife).

e) Spatial Unit: Planning subunits.

f) Frequency of Measurement: Annual.

g) Precision/Reliability: Class A.

h) Analysis Methods: Using the data from INFRA, FACTS, and other sources needed to determine motorized routes and timbered stands, calculate the percentage of areas meeting the definition of elk security within each planning subunit. Tally the number of planning subunits with >30 percent security and >50 percent security (high priority planning subunits).

Using GIS, buffer all motorized routes open during hunting season by 0.5 miles. Eliminate patches smaller than 250 acres in size and/or non-timbered (non-timbered = rock, water, meadow, recent regen units or burns where the stands likely do not currently provide hiding cover such as stands in the seedling structural stage). Tally the acres of security habitat by planning subunit and calculate the percent of the subunit in secure habitat.

i) Who (Cooperators): Forest and district biologist, GIS specialists, travel planners, and FACTS coordinators.

j) Cost: The cost associated with running the analysis and compiling the report:

- GS-12 Forest wildlife biologist @ $400/day for 2 days = $800
- GS-9 SO GIS specialist and/or FACTS coordinator @ $300/day for 3 days = $900
- The cost associated with district review:
- GS-9 District wildlife biologist @ $300/day for 2 days= 600 for 4 units = $2,400
- GS-7 District travel planner and/or FACTs coordinator @ $250/day for 1 days for 4 units = $1,000
- Total cost – $5,100

k) References: None.

6) Responsibility: Forest wildlife biologist.

7) Authority: Revised Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: The results of the monitoring calculations would be compared to the baseline elk security conditions shown in table 55 on pages 329-330 of the FEIS for the revised Forest Plan. Progress towards FW-OBJ-WL-02 would be documented. The objective states that over the life of the Plan, the Forest would increase by 1 the number of planning subunits that provide at least 30 percent elk security and increase by 1 the number of high emphasis planning subunits that provide at least 50 percent elk security. Review trends and describe movement towards, away from, or neutral to desired condition. If movement is neutral or away from desired conditions, document why.

Use the following tables to document and track changes in elk security by planning subunit.

Table 20. Displayed is the percent security habitat within the planning subunits on the KNF

KNF Planning Subunit	Priority Level	Baseline Fall % Security	20XX Fall % Security
Alexander	High	22%	
Beaver	High	45%	
Big	Medium	31%	
Billiard	High	43%	
Boulder	High	20%	
Bristow	Medium	13%	
Buckhorn	Medium	42%	
Bull	High	40%	
Callahan	Medium	42%	
Crazy	Medium	23%	
Cripple	Medium	17%	
Dodge	Medium	23%	
Elk	High	31%	
Fortine	Low	19%	
Grave	Medium	56%	
Green	High	48%	
Grizzly	Medium	49%	
Ksanka	Medium	43%	
Lake	Medium	56%	
LYaak	Medium	35%	
Marten	High	36%	
McElk	Medium	29%	
McGregor	Low	0%	
McSutten	Medium	36%	
McSwede	Medium	19%	
Meadow	Low	1%	
Murphy	Medium	44%	
NEYaak	Medium	47%	
NWYaak	Medium	48%	
OBrien	Medium	21%	
Parsnip	Medium	45%	
Pilgrim	Medium	23%	
Pine	Medium	35%	
Pinkham	Low	7%	
Pipestone	Medium	17%	

KNF Planning Subunit	Priority Level	Baseline Fall % Security	20XX Fall % Security
Pleasant	Low	7%	
Quartz	Medium	19%	
Riverview	Medium	9%	
Rock	High	36%	
Seventeenmile	High	55%	
SFYaak	Medium	47%	
Sheep	Low	17%	
Silverfish	High	46%	
Spar	High	34%	
Stillwater	High	45%	
Sunday	Medium	37%	
Swamp	Low	9%	
Treasure	High	44%	
Trego	Low	45%	
Trout	High	57%	
Twentyodd	High	54%	
UBig	High	65%	
Vermilion	Medium	45%	
Whitepine	High	19%	
Wigwam	Medium	56%	
Wolf	Low	17%	
Total SU FS Lands	Medium	35%	

Table 21. Number of planning subunits meeting the 30% and 50% (high emphasis) thresholds

Priority Level	Baseline Number of Subunits Meeting Threshold	Current Number of Subunits Meeting Threshold
High Emphasis (≥50% security)	4	
Low/Medium Emphasis (≥30% Security)	20	

11) Author: Jeremy Anderson

MON-MIS-01B

1) Monitoring Question (MON-MIS-01B): (Landbird assemblage (insectivores)) Are habitat trends for Management Indicator Species (MIS) consistent with the objectives?

2) Forest Plan References:

- FW-OBJ-WL-03
- FW-DC-VEG-01
- FW-DC-VEG-02
- FW-DC-VEG-03
- FW-DC-VEG-04
- FW-DC-VEG-05
- FW-DC-VEG-07
- FW-DC-VEG-11
- FW-OBJ-VEG-01
- FW-STD-VEG-01
- FW-GDL-VEG-01
- FW-GDL-VEG-04
- FW-GDL-VEG-05
- FW-GDL-VEG-06
- FW-DC-FIRE-03

3) Performance Indicator(s):

- **MON-MIS-01B:** (Landbird assemblage (insectivores)) a) number of acres where planned ignitions were used to maintain/improve habitat; b) percentage of natural, unplanned ignitions managed for the maintenance or restoration or fire adapted ecosystems.

4) Forest Plan Rationale and Explanation: The landbird assemblage was chosen as a MIS for movement towards the desired conditions for vegetation. FW-OBJ-WL-03 set an objective for the management of planned ignitions on 1,000 to 5,000 acres, annually, to provide habitat for olive-sided flycatchers, hairy woodpeckers, chipping sparrows, and Hammond's and dusky flycatchers (Also see FW-OBJ-FIRE-02, which provides additional habitat for these species).

5) Performance Indicator 1: (Landbird assemblage (insectivores)) a) number of acres where planned ignitions were used to maintain/improve habitat; b) percentage of natural, unplanned ignitions managed for the maintenance or restoration or fire adapted ecosystems.

a) Description: This indicator tracks the acres of planned ignitions that maintained or improved habitat for the landbirds (insectivores). The amount of unplanned ignitions that may maintain or improve habitat for landbirds is tracked under MON-FIRE-02.

b) Unit of Measure: (Acres) The percentage of natural, unplanned ignitions managed for maintenance or restoration of fire adapted ecosystems is measured according to MON-FIRE-02.

c) Standards/Steps for Data Collection: District biologists report to the Forest wildlife biologist the number of acres, annually, where planned ignitions were used to provide habitat for the landbird assemblage. The percentage of natural, unplanned ignitions managed for maintenance or restoration of fire adapted ecosystems is measured according to MON-FIRE-02.

d) Data Storage: Acres accomplished towards providing habitat for the landbird assemblage annually recorded in WFRP database and also tracked at the districts.

e) Spatial Unit: Forest.

f) Frequency of Measurement: Annual.

g) Precision/Reliability: Class A.

h) Analysis Methods: District wildlife biologists report to the forest wildlife biologists the acres where planned ignitions were used to maintain/improve habitat for the landbird assemblage, annually. See the indicator for MON-FIRE-02 for the analysis method for determining the percentage of natural, unplanned ignitions managed for maintenance or restoration of fire adapted ecosystems.

i) Who (Cooperators): Forest and district biologists, Fire/Fuels specialists.

j) Cost: The cost associated with compiling the report:

- GS-12 Forest wildlife biologist @ $400/day for 2 days = $800
- GS-09 District wildlife biologist @ $300/day for 1 days for 4 units = $1,200
- Total cost – $2,000

k) References: None

6) Responsibility: Forest wildlife biologist.

7) Authority: Revised Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Document the acres of planned ignitions during the year that improved or maintained habitat for members of the landbird assemblage by moving towards the Desired Conditions for Vegetation and compare the results to FW-OBJ-WL-03 which sets an objective of 1,000-5,000 acres annually. Also summarize results from MON-FIRE-02 and describe the overall effect on habitat for landbird assemblage. Review habitat trends and describe movement towards, away from, or neutral to desired conditions. If movement is neutral or away from desired conditions, document why.

Use the following tables to document acres of planned ignitions and number of natural, unplanned ignitions that improved or maintained habitat for members of the landbird assemblage.

Table 22. Acres of Planned Ignitions and the Landbird Assemblage Members that Benefited

Fiscal Year	Acres Burned	Species Benefited

Table 23. Number of Natural, Unplanned Ignitions and the Landbird Assemblage Members that Benefited

Fiscal Year	Total Number of Natural, Unplanned Ignitions	Number of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	% of Natural, Unplanned Ignitions Managed for Maintenance/Restoration	Species Benefited

11) Author: Jeremy Anderson

MON-MIS-01C

1) Monitoring Question (MON-MIS-01C): (Aquatic Invertebrates) Are habitat trends for MIS consistent with objectives?

2) Forest Plan References:

- FW-OBJ-AQH-02

3) Performance Indicator(s):

- **MON-MIS-01C:** Changes in KNF River Invertebrate Prediction and Classification System (Observed/Effect model) score

4) Forest Plan Rationale and Explanation: The Forest Plan has a strong emphasis in improving water quality and enhancing in-stream and riparian habitats. Changes in macroinvertebrate populations within the taxa Ephemeroptera, Plecoptera, and Tricoptera, the most sensitive to most pollutants, will help evaluate deviations from current conditions.

5) Performance Indicator 1: Changes in KNF River Invertebrate Prediction and Classification System (Observed/Effect model) score.

a) Description: Changes in the Observed/Effect model score relative to the baseline are expected to show positive or negative changes in water quality across the entire planning area.

b) Unit of Measure: The KNF River Invertebrate Prediction and Classification System (RIVPACS) analysis Observed/Effect (O/E) Model maintains a score of between 0.80 and 1.20 at all sites monitored on individual water bodies within the planning area for aquatic macroinvertebrate communities.

c) Standards/Steps for Data Collection: Data is collected by the National PACFISH/INFISH Biological Opinion PIBO Effectiveness Monitoring (PIBO EM) crew.

d) Data Storage: PIBO data can be downloaded by going to the internal Forest Service - Intermountain Region home page and selecting the 'PACFISH/INFISH Biological Opinion' link in the 'R4 Hotbox' on the right side of the page.

e) Spatial Unit: Forestwide.

f) Frequency of Measurement: Every 5 years.

g) Precision/Reliability: Class A.

h) Analysis Methods: Analyze the most current PIBO EM database and determine individual values by site and an average value for “managed” sites on the KNF for comparison.

i) Who (Cooperators): None.

j) Cost: Estimated using an average 1 day of a GS-12/3 employee, in order to compile information from PIBO EM database. Cost of approximately $400/5-year.

k) References:

Hawkins, C. P. (2005). Development of a RIVPACS (O/E) Model for Assessing the Biological Integrity of Montana Streams (Draft). The Western Center for Monitoring and Assessment of Freshwater Ecosystems, Utah State University, 10 November 2005.

Hawkins, C. P. (2006). Quantifying biological integrity by taxonomic completeness: evaluation of a potential indicator for use in regional- and global-scale assessments. Ecological Applications 16:1277–1294.

Jessup, B. K., C. Hawkins, and J. B. Stribling. (2006). Biological indicators of stream condition in Montana using benthic macroinvertebrates. Prepared by Tetra Tech, Inc., Owings Mills, Maryland and Utah State University, Logan, Utah, for the Department of Environmental Quality, Helena, Montana. (Available from: http://www.deq.state.mt.us/wqinfo/Standards/Montana%20Indicators%20Report%20(FINALcomb_061004).pdf).

6) Responsibility: Forest watershed and fisheries program manager.

7) Authority: PACFISH/INFISH Biological Opinion.

8) Monitoring Priority: Priority B - required by Forest Plan, but not required by law.

9) Frequency of Evaluation Report: Data is summarized every 5 years and reported at the frequency of every third Evaluation Report. Record the monitoring item as “not applicable,” if the information has not been evaluated relative to the 5-year reporting interval.

10) How Evaluated: Review the KNF River Invertebrate Prediction and Classification System (Observed/Effect model) score for any given year and the overall trends. Provide an analysis of meeting the objective of maintaining a score of 0.80 to 1.20 on all sites monitored. Provide rationale for any scores outside of this range.

Table 24. Yearly RIVPACS Score

Fiscal Year	Site Monitored	RIVPACS Score

11) Author: John W. Carlson

MON-MIS-Supplemental

1) Monitoring Question: This is not tied to any specific monitoring question. It relates to the landbird assemblage MIS.

2) Forest Plan References:

- FW-DC-VEG-01
- FW-DC-VEG-02
- FW-DC-VEG-03
- FW-DC-VEG-04
- FW-DC-VEG-05
- FW-DC-VEG-07
- FW-DC-VEG-11
- FW-OBJ-VEG-01
- FW-STD-VEG-01
- FW-GDL-VEG-01
- FW-GDL-VEG-04
- FW-GDL-VEG-05
- FW-GDL-VEG-06
- FW-DC-FIRE-03

3) Performance Indicator(s):

- Not tied to a specific indicator in chapter 5 of the revised Forest Plan

4) Forest Plan Rationale and Explanation: The Forest Plan provides direction to maintain or improve habitat for landbirds. This monitoring item would provide information on population trends, to determine if the Forest is making progress towards desired conditions for landbirds.

5) Performance Indicator 1: Not tied to a specific indicator in chapter 5 of the revised Forest Plan.

a) Description: This optional supplemental monitoring item would boost the sample size for the KNF portion of the Regional Landbird Monitoring Program (IMBCR – Integrated Monitoring using Bird Conservation Regions). Additional transects would be sampled beyond the 10 transects already sampled by the Regional Landbird Monitoring Program. The populations of the landbird assemblage MIS, in addition to other landbirds, are currently sampled using the ongoing Regional Landbird Monitoring Program. Trends can be determined based on the ongoing monitoring already in place. The KNF could optionally supplement the funding for the program to increase the sampling intensity for the Forest. This would allow a finer scale analysis.

b) Unit of Measure: Transects would result in a tally of individuals of each species which could then be used to estimate population or relative density.

c) Standards/Steps for Data Collection: Data would be collected as per the Regional Landbird Monitoring Program protocol. The work would be done by the crews involved in the program rather than KNF employees.

d) Data Storage: Data would be retained by the Regional Landbird Monitoring Program with results and information available to the Forest.

e) Spatial Unit: Forest.

f) Frequency of Measurement: Annual.

g) Precision/Reliability: Class A.

h) Analysis Methods: Data would be analyzed by the Regional Landbird Monitoring Program to determine population estimate or relative density and trend. The results would be provided to the Forest.

i) Who (Cooperators): Forest, regional office, Regional Landbird Monitoring Program and associated cooperators.

j) Cost:

- Supplement up to 20 additional transects @ $1,000 per transect per year
- Total cost – $20,000

RO/Regional Landbird Monitoring Program cooperators are given funds to survey transects. Note, these 20 transects are in addition to the 10 transects that the RO/Regional Landbird Monitoring Program already pays for and surveys annually on the Forest.

k) References: None

6) Responsibility: KNF's responsibility to supply additional funding if the optional additional transects are surveyed, if funding is available. The regional office and the cooperators' in the Regional Landbird Monitoring Program responsibility to run the baseline transects, the additional transects the Forest pays for, analyze the data, and provide the results.

7) Authority: 1982 Planning Rule.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Available from the Regional Landbird Monitoring Program at the frequency agreed to in any current contract among the cooperators.

10) How Evaluated: Monitoring results and population trends calculated by the Regional Landbird Monitoring Program (IMBCR – Integrated Monitoring using Bird Conservation Regions) cooperators would be compared to the expected trends for the landbird assemblage. Trends would also be compared to the rest of the Region to gain insight into whether the trends are localized or wide-spread. Conclusions as to whether the trends are consistent with those predicted to occur by moving towards the Desired Conditions for Vegetation under the revised Forest Plan would be documented.

11) Author: Jeremy Anderson

Resource: Wildlife

MON-WDL-01

1) Monitoring Question (MON-WDL-01): Have management activities met Plan objectives and maintained or improved habitat to achieve desired terrestrial habitat conditions?

2) Forest Plan References:

- FW-OBJ-WL-01
- FW-DC-VEG-01
- FW-DC-VEG-02
- FW-DC-VEG-03
- FW-DC-VEG-04
- FW-DC-VEG-05
- FW-DC-VEG-07
- FW-DC-VEG-08
- FW-DC-VEG-11
- FW-OBJ-VEG-01
- FW-STD-VEG-01
- FW-GDL-VEG-01
- FW-GDL-VEG-03
- FW-GDL-VEG-04
- FW-GDL-VEG-05
- FW-GDL-VEG-06
- FW-DC-FIRE-03

3) Performance Indicator(s):

- **MON-WDL-01-01:** Acres of terrestrial habitat restored or enhanced. Also see indicators MON-VEG-01-01 through MON-VEG-01-05 and MON-FIRE-02-01

4) Forest Plan Rationale and Explanation: FW-OBJ-WL-01 set an objective for the maintenance or restoration of wildlife habitat on 1,000 to 5,000 acres of NFS lands, annually, with an emphasis on restoration of habitats for threatened and endangered listed species and sensitive species. This indicator will measure attainment of this objective and movement towards desired conditions.

5) Performance Indicator 1: Acres of terrestrial habitat restored or enhanced.

a) Description: Restoration or enhancement of terrestrial habitat is achieved by many different methods or treatments. Planned ignitions, commercial timber harvest, weed treatment, and precommercial thinning are some examples.

b) Unit of Measure: Acres where wildlife habitat was maintained or restored on NFS lands, annually.

c) Standards/Steps for Data Collection: District biologists report to the forest wildlife biologist the number of acres, annually, wildlife habitat was maintained or restored.

d) Data Storage: Acres accomplished towards maintained or restoring wildlife habitat annually recorded in WFRP database and also tracked at the districts.

e) Spatial Unit: Forest.

f) Frequency of Measurement: Annual.

g) Precision/Reliability: Class A.

h) Analysis Methods: District wildlife biologists report to the forest wildlife biologists the acres where wildlife habitat was restored or maintained.

i) Who (Cooperators): Forest and district biologists.

j) Cost: The cost associated with compiling the report:

- GS-12 Forest wildlife biologist @ $400/day for 2 days = $800
- GS-09 District wildlife biologist @ $300/day for 1 days for 4 units = $1,200
- Total cost – $2,000

k) References: None

6) Responsibility: Forest wildlife biologist.

7) Authority: Revised Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Document the acres of habitat restored or maintained for each year and compare the results to FW-OBJ-WL-01 which sets an objective of 1,000-5,000 acres annually. Summarize acres by type of treatment and how habitat is maintained or improved. Review habitat trends and describe movement towards, away from, or neutral to desired condition. If movement is neutral or away from desired conditions, document why.

Use the following tables to document acres of habitat restored or maintained.

Table 25. Acres of Habitat Restored or Maintained and the Species that Benefited

Fiscal Year	Acres Restored/Maintained	Species Benefited

11) Author: Jeremy Anderson

Resource: Access and Recreation

MON-AR-01

1) Monitoring Question (MON-AR-01): Have appropriate management actions been taken on recreation sites where opportunities have been identified, use is at or near capacity, or where there are resource concerns?

2) Forest Plan Reference:

- **FW-DC-AR-01**
- **MA6-DC-AR-01**
- **MA7-DC-AR-01**
- **MA7-DC-AR-05**
- **GA-DC-AR-BULL-01**
- **GA-DC-AR-CLK-01**
- **GA-DC-AR-KOO-01**
- **GA-DC-AR-LIB-01**
- **GA-DC-AR-TOB-01**
- **GA-DC-AR-YAK-01**
- **FW-OBJ-AR-01**
- **FW-OBJ-AR-02**

3) Performance Indicator(s):

- **MON-AR-01-01:** Number and type of recreation sites;
- **MON-AR-01-02:** Number of Persons at One Time developed sites (PAOT);
- **MON-AR-01-03:** Deferred maintenance amount needed by forest;
- **MON-AR-01-04:** Number of recreation partnerships; and
- **MON-AR-01-05:** Percent of the Forest and locations managed in the various Recreation Opportunity Spectrum (ROS) classes.

4) Forest Plan Rationale and Explanation: Public law requires the Forest Service to manage national forests for outdoor recreation and to offer a range of recreational opportunities. The public has stated they expect to have recreation sites available and managed for their use. It is the agency's responsibility to manage the sites within established standards and balance those uses with other resource needs. Monitoring is necessary to determine if the desired conditions at recreation sites are being met.

5) Performance Indicators 1, 2, 3, 4, & 5: Number and type of recreation sites. Number of Persons at One Time developed sites (PAOT). Deferred maintenance amount needed by forest. Number of recreation partnerships. Percent of the Forest and locations managed in the various Recreation Opportunity Spectrum (ROS) classes.

a) Description: The Forest Plan desired conditions and objectives align the Forest's recreation infrastructure and operate and maintain the recreation sites with available revenue, while continuing to provide a range of recreation opportunities.

The number and type of recreation sites (dispersed and developed) show the range of recreation opportunities that is being managed. Capacity (PAOT) at developed sites, and visitor use numbers, measures the ability of these sites to meet current use. ROS provides an overview of the mix of recreation opportunities available forestwide.

Managing increasing and more diverse visitors with level to smaller programs will continue to be a challenge. One tool used is to partner with individuals or organizations to provide recreation opportunities that may not otherwise be provided. The number of recreation partnerships and opportunities provided will be monitored.

b) Unit of Measure:

- MON-AR-01-01: Number and type of recreation sites;
- MON-AR-01-02: Number of PAOT (capacity) of developed sites;
- MON-AR-01-03: Deferred maintenance amount needed by forest;
- MON-AR-01-04: Number of recreation partnerships; and
- MON-AR-01-05: Percent of forest in each ROS class.

c) Standards/Steps for Data Collection: National standards have been developed through meaningful measures (MM) for all recreation sites. Meaningful measures standards provide for consistent operation and maintenance of sites as well as providing a base for evaluating capacity and resource impacts (http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml

Recreation site condition surveys document the field inventory and condition of facilities. Design, preparation, and implementation of changes identified are accomplished through maintenance funding, capital improvement (CI) programs, partners, or grants.

MON-AR-01-01 through 03 is derived from the Natural Resource Management (NRM) database.

- **MON-AR-01-01:** Number and type of recreation sites (dispersed and developed). The major difference between these sites is management actions in dispersed sites are primarily to protect other resources, while in developed sites management actions are focused on user comforts.

The Forest started an inventory of dispersed sites (development scale 0-2) in 2011. We anticipate the forestwide inventory to be complete by 2014. The inventory will capture approximately 80 percent of the existing dispersed sites along roads. Additional sites will be added as they are inventoried.

Developed sites (development scale 3-5) were inventoried in 1999, and are field surveyed every 5 years. Individual recreation sites may move from dispersed to developed (and vice versa) based on management decisions.

- **MON-AR-01-02:** Number of Persons at One Time (PAOT) for developed sites. PAOTs are the designed capacity of the site, which takes into consideration national design criteria, other resources, and user comforts.

For example, the national standard for individual camping unit is five people at one time. Picnic tables are designed to accommodate five people, the parking areas are designed for one to two vehicles, and the number of toilets provided is one toilet per 25 PAOTs. Total capacity for a site reflects the amount of use that can be accommodated without resource impacts or user conflicts.

- **MON-AR-01-03:** Deferred maintenance amount needed by forest tracks maintenance needed to meet national standards for developed recreation sites.

As facilities reach their designed life major repairs are common; and annual maintenance that does not occur can add to deferred maintenance needs. As site condition surveys are completed the amount needed may go up, while as projects are completed the amount needed would be reduced.

- **MON-AR-01-04:** Number of partnerships (signed agreements). Review of forest partnership agreements for recreation or trails projects. Note number of partnerships and type of services provided.
- **MON-AR-01-5:** Percent Forest by Recreation Opportunity Spectrum category. Analyzed on a forestwide basis, through National ROS Protocol located at http://www.fs.fed.us/eng/ros. Map and tabulate current ROS and compare to desired distribution of forestwide recreation opportunity spectrum settings for winter and summer.

d) Data Storage: Information is stored in the Natural Resource Manager database. NRM has project management and development responsibility for many Forest Service national applications, including FACTS, Infra, NRIS, and TIM. Permanent files (hard copy documents) are kept in the forest recreation files.

Data for MON-AR-01-01 through 04 can be found at http://basenet.fs.fed.us/.

Data for MON-AR-01-5 is located at T:\FS\NFS\Kootenai\Project\SO\Planning\FPMonitoring\GIS.

e) Spatial Unit: Each recreation site identified in NRM has associated point location, GPS. ROS categories are by forest.

f) Frequency of Measurement: Every 5 years. Each recreation site is surveyed (Condition of Facility Survey) once every 5 years with approximately 20 percent surveyed each year. ROS mapping forestwide reviewed every five years.

g) Precision/Reliability (Class A): Condition facility survey is done for each recreation site. ROS summary is compiled at the forest level.

h) Analysis Methods: (MON-AR-01-01, 02 and 03) This information is queried as part of the Recreation Facility Analysis. MON-AR-01-04 and 05; NRM data base is queried for completed partnerships, and the ROS model run to display changes in ROS over time.

i) Who (Cooperators): Forest recreation staff officer provides overall direction and coordination of data collection, analysis of data, and management of the databases. District recreation managers are responsible for seeing data is collected. Actual survey may be by Forest Service personnel, by volunteers, or by contractor.

j) Cost: Conducting condition surveys, analysis of data, populating databases, and managing improvements projects is part of the ongoing recreation program. Collection of date is paid through appropriated funds. Preparing the monitoring report will cost approximately $760 using the following personnel:

- 4 GS-9 ($30/hr) District program manager data review -4 hrs. each = $480
- 1 GS-12 ($35/hr) Forest program manager data review, summarize information -8 hrs = $280

k) References:
IBSC - Integrated Business Service Center; national standards and guides http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml.

2300/2320 Fiscal Year Recreation, Heritage, Wilderness & Wild and Scenic Rivers Information Management (annual direction Director of Recreation).

National ROS Inventory Mapping Protocol, (7/01/2003), http://www.fs.fed.us/eng/ros.

6) Responsibility: Forest recreation program manager.

7) Authority: The Multiple-Use Sustained-Yield Act of 1960 and the Federal Land Policy and Management Act of 1976 require that the national forests be managed for outdoor recreation and human occupancy and use while protecting other resources. Monitoring to determine compliance is required by the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Once every 5 years.

10) How Evaluated: Review increase or decrease in the number of recreation sites or capacity (PAOT) over time. The narrative will describe the opportunity identified or resource concern addressed by the trend. It would also summarize the number and type of recreation sites being managed. The narrative would make conclusions on the overall trend for recreation opportunities, achievement of forest plan objectives, and progress regarding movement towards desired condition.

For example, Resort/Marina capacity doubled in 2014 with the construction of the Abayance Bay Marina. Increase in number of boating sites due to separation of several boat sites previously listed under site type of campground.

In addition, review campground and cabin rental receipts, campground host records, and professional observations to determine trends for use at specific sites or areas. The narrative will describe use at sites that appear to be at or near capacity or where there are site specific resource concerns, and management actions proposed or accomplished.

To evaluate movement towards the desired condition, include summary from recreation management plans completed in the monitoring period. This may include: Recreation Facility Analysis (update) Outfitter and Guide needs analysis, Lake Koocanusa Management Plan, Cabinet Mountain Wilderness Management Plan (update), Pacific Northwest National Scenic Trail Management Plan, Lake Koocanusa Scenic Byway Plan, or other plans recreation plans as needed.

Use the following table.

Table 26. Recreation Site and Capacity

	Developed Rec Sites (Dev Scale 3-5)				Dispersed Rec Sites (DS 0-2)		
Example Fiscal Year 2014	**Forest Plan Baseline**	**Forest Plan Baseline PAOT**	**# Rec Sites**	**PAOT**	**# Managed Rec Sites (DS 1-2)**	**# Rec Sites (DS -0)**	**Total Site Types**
Boating Site	**17**	1000	**22**	1637	6	7	35
Campground	26	2600	28	2573	12		40
Camping Area	-	-	-	-	122	433	555
Climbing Area					2		2
Day Use					86	88	174

	Developed Rec Sites (Dev Scale 3-5)				Dispersed Rec Sites (DS 0-2)		
Example Fiscal Year 2014	**Forest Plan Baseline**	**Forest Plan Baseline PAOT**	**# Rec Sites**	**PAOT**	**# Managed Rec Sites (DS 1-2)**	**# Rec Sites (DS -0)**	**Total Site Types**
Fishing Site					1	2	3
Group Sites/ Picnic	11	1050	6	835			6
Horse Camp					1		1
Interpretative Site					3		3
Resort/Marina	2*	**500**	2	**1000**			2
Lookout/Cabin	12	57	13	73	2		115
Observation Site			1		66	22	89
Picnic Site			5	349			5
Ski Area Alpine	1*		1	275			1
Ski Area Nordic	1*		2	95			2
Snow park	4*		5	238	9		5
Swimming Area	4	340	4	326			4
Target Range	4*		2	123	1		3
Trailhead	3	373	3	128	86	163	252
TOTAL	**72**	**5420**	**94**	**7652**			

*Privately developed

PAOT – Persons at one time, a measure of capacity

Deferred maintenance amount needed by Forest tracks maintenance needed to meet national standards for developed recreation sites. Changes in deferred maintenance increase or decreases will be described in the narrative. The Forest Plan objective (FW-OBJ-AR-02) is a 5-10 percent reduction of deferred maintenance at cabin and lookout sites and water based sites over the life of the Plan.

Table 27. Deferred Maintenance

Deferred Maintenance				
	Baseline 2014	**2019**	**2024**	**2029**
Minor Constructed Features	$101,400			
Buildings	$1,015,800			
Drinking Water	$364			

Deferred Maintenance				
	Baseline 2014	2019	2024	2029
Waste Water	0			
Total				

Evaluation of recreation partnerships (indicator 4) will include all aspects of partners in recreation and trail projects. Use the following table to track opportunities that are provided through partnerships. The narrative will describe the trend in partnerships for providing recreation opportunities across the Forest.

Table 28. Partnerships

Partnerships/Private Development				
	Baseline 2014	2019	2024	2029
Groomed Cross-country Ski	1			
Groomed Snowmobile area	4			
Marina	2			
Outfitter and Guides	37			
Ski Area	1			
Target Range	4			
Grant/agreements with organizations (no. agreements)	10			
Volunteers (hours)	28,700			

The Recreation Opportunity Spectrum will be evaluated on a forestwide basis, through National ROS Protocol located at http://www.fs.fed.us/eng/ros. For the monitoring period, map and tabulate current ROS and compare to desired distribution of forestwide recreation opportunity spectrum settings for winter and summer. The narrative will describe the trend toward or away from the desired condition, specific areas of changes, and management decisions leading to those changes.

Table 29. Recreation Opportunity Spectrum

Summer ROS Class	Percentage of KNF Forest Acreage			
	2013 baseline	RFP desired condition	2019	2024
Primitive	10%	8%		
Semi-Primitive Non-motorized	57%	54%		
Semi-Primitive Motorized	10%	16%		
Roaded Natural/Rural	23%	22%		
Total	100%	100%		

Table 30. Recreation Opportunity Spectrum

Winter ROS Class	Percentage of KNF Forest Acreage			
	2013 baseline	RFP desired condition	2019	2024
Primitive	<1%	<1%		
Semi-Primitive Non-motorized	5%	14%		
Semi-Primitive Motorized	87%	78%		
Roaded Natural/Rural	8%	8%		
Total	**100%**	**100%**		

The narrative would then describe the results of the five indicators regarding the monitoring question and movement of recreation towards, away from, or neutral to desired conditions. Include a discussion on attainment of the two recreation objectives. If progress is more or less than the objectives, document why.

11) Author: Mary Laws

MON-AR-02

1) Monitoring Question (MON-AR-02): Have management activities trended towards desired conditions for a minimum transportation system that provides recreation opportunities, safe and efficient public and agency access, and are environmentally compatible?

2) Forest Plan Reference:

- **FW-DC-AR-03**
- **FW-DC-AR-04**
- **FW-DC-AR-05**
- **FW-DC-AR-07**
- **FW-OBJ-AR-03**
- **MA6-DC-AR-03**
- **GA-DC-AR-BUL-01**
- **GA-DC-AR-TOB-03**

3) Performance Indicator(s):

- **MON-AR-02-01:** Miles of road open year-long;
- **MON-AR-02-02:** Miles of road open seasonally;
- **MON-AR-02-03:** Miles of roads maintained by maintenance level;
- **MON-AR-02-04:** Miles of roads decommissioned; and
- **MON-AR-02-05:** Miles of roads put into intermittent storage.

4) Forest Plan Rationale and Explanation: As described in the Analysis of the Management Situation, access to NFS lands is one of the most controversial topics in forest management today. Increases in user demand, decreasing maintenance budgets, habitat protection measures necessary for species protection, and restoration needs for improving watershed health are all factors influencing the level of road access available for recreation and forest management. Monitoring these items is a method for the agency and public to see the trends in road management on the Forest.

- Indicators MON-AR-02-01 and MON-AR-02-02 address the level of access available. There is a strong public interest in how much access is available for motor vehicles on the KNF.
- Indicator MON-AR-02-03 addresses the level of road maintenance accomplished. The purpose of monitoring road maintenance accomplishments is to determine if budgets for road maintenance are adequate to maintain roads at their objective levels in order to meet public and agency needs. As budgets and staffing change, the ability to efficiently allocate both financial and human resources needs to be periodically assessed. Safety and health for the public and employees as well as resource protection should be considered when making allocation decisions.
- Upward reporting requirements are also served by completing MON-AR-02-03. The Washington Office requires that the Forest annually submit our Roads Accomplishment Report which reports the same items.
- Indicators MON-AR-02-04 and MON-AR-02-05 address reaching direction in 36 CFR 212.5 Subpart A requiring the management of a minimum road system needed for safe and efficient travel and for administration, utilization, and protection of NFS lands while protecting natural resources. Agency direction is to move out of road development, take a systematic look at what is existing, and determine what is needed to meet our mission. The Forest's ability to meet its mission relies on having a transportation system in place that provides the level of access needed and yet can

be maintained with available budgets. As unneeded roads are identified, they may become candidates to convert to some other use (trails) or be decommissioned and removed from the transportation system. Treatments of roads placed in intermittent stored service are intended to reduce maintenance costs and risks to other resources. As roads are decommissioned or placed in intermittent stored service, the Forest moves toward a minimum transportation system, protect important resources, and reduce long-term maintenance needs.

5) Performance Indicators 1, 2, 3, 4, & 5: Miles of road open year-long. Miles of road open seasonally. Miles of roads maintained by maintenance level. Miles of roads decommissioned. Miles of roads put into intermittent storage.

a) Description: In order to determine if the desired conditions and objectives are being met, the Forest will track how many miles of road are open yearlong and seasonally, how much road maintenance is accomplished, and how many miles of road are decommissioned or put in intermittent service. Visitor satisfaction, including satisfaction regarding access, is addressed in MON-AR-04-02.

b) Unit of Measure: Miles

c) Standards/Steps for Data Collection: Road data is tracked in two data sets, tabular and spatial data. Road maintenance accomplishments are recorded yearly as required by national road accomplishment reporting requirements.

- Tabular data is managed by data stewards according to national standards set forth in the Infra Travel Routes Data Dictionary and housed in the Forest Service Natural Resources Manager Web site's Infra database.
- Spatial data is managed by data stewards according to the Core Data Standards set forth for transportation in a geographic information system (GIS). The Forest Service National GIS Data Dictionary is located at http://fsweb.datamgt.fs.fed.us/.
- Although the spatial data is not necessary in order to report out for this performance indicator, it is useful for being able to produce display products (maps) of the tabular data.

d) Data Storage: The Travel Routes module within the national Infra database is the repository for the tabular data about roads. This database has a number of standard data sets (called ‘views’) that can be accessed for compiling mileage measures.

- **MON-AR-02-01 and MON-AR-02-02:** Route designations (yearlong and seasonal) are tracked in the ATM module. The performance indicator reporting will use the view titled MVUM Road Allowed Use (II_MVUM_ROAD_ALLOW).
- On or before September 30th of each year a copy of the II_MVUM_ROAD_ALLOW file for the Forest will be placed in O:\NFS\Kootenai\Program\7100Engineering\engr\monitoring_evaluation \#### (where the #### represents the fiscal year.)
- **MON-AR-02-03:** Yearly road accomplishment report will be filed electronically in the Forest Service data center at O:\NFS\Kootenai\Program\7100Engineering\engr\rd_accomplishment_report.
- **MON-AR-02-04 and MON-AR-02-05:** Decommissioning and intermittent stored service work is tracked in the linear events field called route_status. Additional data is recorded in the record of events fields including the event_subtype and event_date. The

performance indicator reporting will use the view titled Road Record of Events (II_ROAD_ROE_V).

On or before September 30th of each year a copy of the II_ROAD_ROE_V file for the Forest will be placed in:
O:\NFS\Kootenai\Program\7100Engineering\engr\monitoring_evaluation \####
(where the #### represents the fiscal year.)

Spatial data for KNF roads is kept at the Forest Service national data center at:
T:\FS\Reference\GIS\r01_knf\Data\Road.

e) Spatial Unit: The spatial unit is the individual roads within the KNF boundary.

f) Frequency of Measurement: Annual

g) Precision/Reliability:
- MON-AR-02-01, 02, 04, and 05 are Class A: Validity and reliability of this data is high; and
- MON-AR-02-03 is Class B: Mostly qualitative methods from project records.

h) Analysis Methods:
- MON-AR-02-01, 02, 04, and 05: A standard query of the tabular data in II_MVUM_ROAD_ALLOW or II_ROAD_ROE_V will produce the results needed for these performance indicators.

The query for road designation is:
  - Route_status = EX – Existing
  - Jurisdiction = FS – Forest Service
  - System = NFSR – National Forest System Road
  - Seasonal = Yearlong or Seasonal

The query for road decommissioning or intermittent stored service:
  - Event = C – Construction
  - Event_subtype = DE – Decommissioned or ISS – Intermittent Stored Service

- MON-AR-02-03: Engineering project team leaders keep records of what maintenance activities are completed by operational road maintenance level. The average unit cost of maintenance accomplished is then compared to annual funding to determine if funding is adequate to attain the stated objective.

i) Who (Cooperators): Assistant forest engineer, engineering team leaders, transportation planner, road managers Infra travel routes data steward.

j) Cost: Tracking road data, conducting annual maintenance, and reporting maintenance accomplishment is part of the ongoing engineering program. Reviewing the data for forest monitoring would be estimated as follows:

Table 31. Estimated Cost for this Performance Indicator

Staff	Days	Cost per Days	Total
Forest Engineering Staff	1	$378.00	$378.00
Engineering Project Team Leader	3	$327.00	$981.00
Transportation Planner	2	$357.00	$714.00
Total			**$2,073.00**

k) References:
Forest Service Handbook (FSH) 6609.15 Chapter 30: Geographic Information Systems (GIS) Core Data Structure Standards and Chapter 40: Geospatial Metadata Standards.

Forest Service Travel Routes Data Dictionary, ATM Data Dictionary, and Road Performance Measures Data Dictionary found on the Travel Routes Road User Board website at http://fsweb.r6.fs.fed.us/eng/travel_routes/user_board/.

6) Responsibility: Forest transportation planner or engineering staff.

7) Authority: The Multiple-Use Sustained-Yield Act of 1960 and the Federal Land Policy and Management Act of 1976 require that the national forests be managed for outdoor recreation and human occupancy and use while protecting other resources.

Monitoring management effectiveness and progress toward achieving or maintaining the Forest Plan desired conditions or objectives is required by 36 CFR 219.

National forest road management direction is found at 36 CFR 212 and Forest Service Manual (FSM) 7703.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Once every 5 years.

10) How Evaluated: Review the trend in yearlong and seasonal road access and accomplished road maintenance. Determine if increases or decreases in miles of open road over the monitoring period are trending toward forest plan desired conditions for providing motorized recreation access. Determine if annual road maintenance is occurring per forest plan objectives to provide safe and environmentally compatible public and administrative access. Review road decommissioning and intermittent stored service work to determine trend toward meeting forest plan desired conditions for an efficient transportation system as directed in 36 CFR 212 Subpart A.

Describe the trends and whether there is movement towards, away from, or neutral to forest plan desired conditions. If motorized access is found to be decreasing and/or accomplished road maintenance miles are less than forest plan objectives, describe contributing factors (e.g., environmental factors such as habitat security or water quality protection requirements, budget factors, etc.).

Use the following tables for tracking miles and accomplishments.

Table 32. Motorized Route Access

Indicator	Forest Plan Baseline (miles)	2014 (miles)	2015 (miles)	Trend (+/-)
Miles of Road Open Yearlong	2,832			
Miles of Road Open Seasonally	721			

Table 33. Road Maintenance Accomplishment

Indicator	Forest Plan Objective	2014 (miles)	2015 (miles)
Miles of ML 3–5 Roads Maintained	20–30% (Annually)		
Miles of ML 2 Roads Maintained	10–20% (Annually)		
Miles of Roads Decommissioned and/or put into Intermittent Storage	150–300 (Over Life of Plan)		

The narrative would then describe the results of the five indicators regarding the monitoring question and movement towards, away from, or neutral to forest plan desired conditions. Include a discussion on attainment of FW-OBJ-AR-03. If progress is more or less than the objective, document why.

19) Author: Timory Peel

MON-AR-03

1) Monitoring Question (M0N-AR-03): What motorized and non-motorized winter and summer trail recreation opportunities have been provided?

2) Forest Plan Reference:

- **FW-DC-AR-03:** Opportunities for outdoor recreation;
- **FW-DC-AR-04:** Provide year-round outdoor recreation opportunities;
- **FW-DC-AR-05:** A variety of motorized and non-motorized winter and summer recreation opportunities;
- **FW-OBJ-AR-04:** Winter trails maintained;
- **FW-OBJ-AR-05:** Summer trails maintained;
- **MA6-DC-AR-03:** Range of opportunities, route conditions are maintained or improved;
- **MA7-DC-AR-03:** Trails are developed and maintained to a high standard;
- **GA-DC-AR-BUL-01:** Maintain or increase recreational opportunities;
- **GA-DC-AR-CLK-01:** Partners help develop and maintain access;
- **GA-DC-AR-KOO-04:** Opportunities for equestrians, mountain bikers, and OHV users;
- **GA-DC-AR-LIB-01:** Opportunities to utilize partnerships and user groups;
- **GA-DC-AR-LIB-03:** Opportunities for winter motorized access; or
- **GA-DC-AR-LIB-04:** Multiple-use trail (motorized and non-motorized) between Libby and Troy as well as a possible ski area on Treasure Mountain.

3) Performance Indicator(s):

- **MON-AR-03-01:** Acres open to over-snow vehicle use; acres non-motorized winter use
- **MON-AR-03-02:** Miles of managed over-snow motor vehicle trails;
- **MON-AR-03-03:** Miles of managed cross-country ski trails;
- **MON-AR-03-04:** Miles of trails designated for motor vehicle use yearlong or seasonally; miles of trail designated for non-motorized use yearlong; and
- **MON-AR-03-05:** Miles of trails maintained to standards for a variety of managed uses (e.g., hiker, equestrian, mountain biking, OHV, motorcycle).

4) Forest Plan Rationale and Explanation: As described in the Analysis of the Management Situation, balancing recreation opportunities with wildlife habitat conservation needs is an important public concern. Increases in recreation demand, decreasing maintenance budgets, habitat protection measures necessary for species protection, and restoration needs for improving watershed health are all factors influencing the level of winter and summer trail opportunities. Monitoring these items is a method for the agency and public to see the trends in trail management on the KNF.

- Indicators MON-AR-03-01, MON-AR-03-02, and MON-AR-03-03 address the level of opportunities for motorized and non-motorized winter recreation. There is a strong public interest in how much winter recreation access is available on the KNF.
- Indicator MON-AR-03-04 addresses the level of designated trail available. There is a public desire for additional trails designated for motor vehicle use.
- Indicator MON-AR-03-05 addresses the level trail maintenance accomplished. The purpose of monitoring trail maintenance accomplishments is to determine if budgets for trail maintenance are adequate to maintain trails for their managed uses in order

to meet recreation demand. As budgets and staffing change, the ability to efficiently allocate both financial and human resources needs to be periodically assessed. Upward reporting requirements are also served by completing this monitoring item. The Washington Office requires that the Forest annually submit our Trails Accomplishment Report in NRM which reports: miles of trail meeting standard, miles of trail maintain, and miles of trail improved.

5) Performance Indicators 1, 2, 3, 4, & 5: Acres open to over-snow vehicle use. Miles of managed over-snow motor vehicle trails. Miles of managed cross-country ski trails. Miles of trails designated for motor vehicle use yearlong or seasonally. Miles of trails maintained for varied managed uses (e.g., hiker, equestrian, mountain biking, OHV, motorcycle).

a) Description: In order to determine if the desired conditions and objectives are being met the Forest will track acres of the KNF that are open to over-snow vehicle use, miles of trail are managed or designated for various uses either yearlong or seasonally, and how many miles of trail are maintained. Visitor satisfaction, including satisfaction regarding access, is addressed in MON-AR-04-02.

b) Unit of Measure: Acres/Miles

c) Standards/Steps for Data Collection: Trail data is tracked in two data sets, spatial and tabular. Trail maintenance accomplishments are recorded yearly as required by national trail accomplishment reporting requirements.

- Spatial data is managed by data stewards according to the Core Data Standards set forth for in the Forest Service National GIS Data Dictionary (http://fsweb.datamgt.fs.fed.us/).
- Tabular data is managed by data stewards according to national standards set forth in the Recreation Heritage and Resource Integrated Business site http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml, housed in the Forest Service Natural Resources Manager Web site's Infra database.

d) Data Storage: The Travel Trails module within the national NRM database is the repository for the tabular data about roads. This database has a number of standard data sets (called ‘views’) that can be accessed for compiling mileage measures.

- **MON-AR-03-01:** Spatial data for KNF areas allowing over-snow vehicle use is kept at the Forest Service national data center at: T:\FS\Reference\GIS\r01_knf\Mgmt\AreaClosures;
- **MON-AR-03-02 and MON-AR-03-03:** Managed uses are tracked in the ATM module of the NRM Trails module. The performance indicator reporting will use the view titled ATM Manage and Designed Use by Forest (II_TRAIL_ATM_MNG_DSGN_RRFF_V). On or before Sept 30th of each year a copy of the II_TRAIL_ATM_MNG_DSGN_RRFF_V file for the Forest will be placed in O:\NFS\Kootenai\Program\XXX\monitoring_evaluation \#### (where the #### represents the fiscal year);
- **MON-AR-03-04:** Route designations (yearlong and seasonal) are tracked in the ATM module. The performance indicator reporting will use the view titled MVUM Trail Allowed Use (II_MVUM_TRAIL_ALLOW). On or before September 30th of each year a copy of the II_MVUM_TRAIL_ALLOW file for the Forest will be placed in O:\NFS\Kootenai\Program\XXX\monitoring_evaluation \####; and
- **MON-AR-03-05:** Yearly trail maintenance accomplishment reports are filed electronically in the NRM Trails Reports Trail Module titles Trail Annual Accomplishments.

e) Spatial Unit: The spatial unit is the individual trail or over-snow vehicle use area within the KNF boundary.

f) Frequency of Measurement: Annually.

g) Precision/Reliability:
- **MON-AR-03-01, 02, 03, and 04 are Class A:** Validity and reliability of this data is high; and
- **MON-AR-02-05 Class B:** Mostly qualitative data collection from program of work and partnership records.

h) Analysis Methods:
- **MON-AR-03-01:** A standard acreage calculation on the spatial data containing information where over-snow vehicle use is allowed will provide the data;
- **MON-AR-03-02 and MON-AR-03-03:** A standard query of the tabular data in II_TRAIL_ATM_MNG_DSGN_RRFF_V will produce the results needed for these performance indicators.

The query for trail managed uses is:

i. Route_status = EX – Existing;

ii. Jurisdiction = FS – Forest Service; and

iii. System = NFST – National Forest System Trail.

- **MON-AR-03-04:** A standard query of the tabular data in II_MVUM_TRAIL_ALLOW will produce the results needed for this performance indicator.

The query for trail designation is:
- Route_status = EX – Existing;
- Jurisdiction = FS – Forest Service;
- System = NFSR – National Forest System Road; and
- Seasonal = yearlong or seasonal.

- **MON-AR-03-05:** Yearly trail maintenance accomplishment reports are filed electronically in the NRM Trails Reports Trail Module titled Trail Annual Accomplishments.

i) Who (Cooperators): Forest and district recreation staff.

j) Cost: Tracking trail data, conducting annual maintenance, and reporting maintenance accomplishment is part of the ongoing recreation program.

Reviewing the data for Forest monitoring would be estimated as follows:

Table 34. Estimated Cost for this Performance Indicator

Staff	Days	Cost per Day	Total
Forest Recreation Program Manager	1	$280.00	$280.00
District Program Managers	2 (1/2-day for four districts/zones)	$240.00	$480.00
Total			**$760.00**

k) References:

2300/2320 Fiscal Year 2012 Recreation, Heritage, and Volunteer Resources, and Wilderness & Wild and Scenic Rivers Information Management (annual direction by letter from Director of Recreation).

Forest Service Handbook (FSH) 6609.15 Chapter 30: Geographic Information Systems (GIS) Core Data Structure Standards and Chapter 40: Geospatial Metadata Standards.

Integrated Business Service Center (IBSC); national standards and guides http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml

6) Responsibility: Forest recreation staff officer.

7) Authority: The Multiple-Use Sustained-Yield Act of 1960 and the Federal Land Policy and Management Act of 1976 require that the national forests be managed for outdoor recreation and human occupancy and use while protecting other resources.

Monitoring management effectiveness and progress toward achieving or maintaining the Forest Plan desired conditions or objectives is required by 36 CFR 219.

National forest trail management, including designating motor vehicle and over-snow vehicle use, is found at 36 CFR 212 & 261, and Forest Service Manual (FSM) 7703 and 2350.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Once every 5 years.

10) How Evaluated: Review the trend in trail recreation opportunities. Determine if increase or decrease in miles or area over the monitoring period are trending towards forest plan objectives: winter annual access available on 250-290 miles of motorized and 25-45 miles of non-motorized and summer annual maintenance performed on 10-20 miles motorized and 250 -750 miles non-motorized trail.

To evaluate movement towards the desired conditions, review acres open to over-snow and non-motorized, miles of trail designated for motor vehicle use and non-motorized. Describe the trend and whether there is movement towards, away from, or neutral to forest plan desired conditions.

Fill in the following tables:

Table 35. Trail Managed Uses

Type of Use Allowed	Use	Miles of Trail			
		Forest Plan Baseline	2014	2019	2024
Non-motorized	Hiker/Pedestrian	1,812			
	Pack and Saddle	1,809			
	Cross-Country Ski	1,812			
Mechanized	Bicycle/Game Cart	1,718			
Motorized	Motor Vehicle (Motorcycle/ORV)	144			
	Over-snow	971			

Balancing trail recreation opportunities with wildlife habitat conservation needs is an important public concern. Increases in recreation demand, decreasing maintenance budgets, habitat protection measures necessary for species protection, and restoration needs for improving watershed health are all factors influencing the level of winter and summer trail opportunities. Monitoring these items is a method for the agency and public to see the trends in trail management, and movement towards, away, or neutral to desired conditions.

Table 36. Trail Maintenance Accomplishment

Trail	Type Use	Forest Plan Baseline	Example 2013	2019
Miles to Standard	All		384	
Miles Maintained	Motorized	10-20	741	
	Non-motorized	250-750		
Over-snow Groomed Miles	Cross-Country Ski	25-45	16	
	Motorized	250-290	250	

The purpose of monitoring trail maintenance accomplishments, trails maintained to standard is to determine if budgets for trail maintenance are adequate to maintain trails for their managed uses in order to meet recreation demand. The narrative would then describe the results of the five indicators regarding the monitoring question and movement towards, away from, or neutral to forest plan desired conditions. Include a discussion on attainment of the two access objectives, FW-OBJ-AR-04 and FW-OBJ-AR-05. If progress is more or less than the objectives, document why.

11) Author: Mary Laws

MON-AR-04

1) Monitoring Question (MON-AR-04): What are the trends in visitation forestwide; and are visitors satisfied with the facilities, access, services, and perception of their safety?

2) Forest Plan Reference:

- **FW-DC-AR-04**
- **MA6-DC-AR-01**
- **MA7-DC-AR-01**
- **MA7-DC-AR-05**

3) Performance Indicator(s):

- **MON-AR-04-01:** Visitor use and trends in use forestwide; and
- **MON-AR-04-02:** Percent Satisfaction Index for developed facilities, access, services, and perception of safety.

4) Forest Plan Rationale and Explanation: Public law requires the Forest Service to manage national forests for outdoor recreation and to offer a range of recreational opportunities. The public has stated they expect to have recreation sites available and managed for their use. It is the agency's responsibility to manage the sites within established standards and balance those uses with other resource needs. Monitoring is necessary to determine if the desired conditions at recreation sites are being met.

5) Performance Indicators 1 & 2: Visitor use and trends in use forestwide. Percent Satisfaction Index for developed facilities, access, services, and perception of safety.

a) Description: The Forest Plan desired conditions and objectives align the Forest's recreation infrastructure and operate & maintain recreation sites with available revenue, while continuing to provide a range of recreation opportunities.

Overall visitor use trends and satisfaction for recreation opportunities will be measured through the National Visitor Use Monitoring total forest visitation, and percent satisfaction index for developed facilities, access, services, and perception of safety. Conceptually, the Public Satisfaction Index (PSI) indicator shows the percent of all recreation customers who are satisfied with agency performance across the Forest.

b) Unit of Measure:

- MON-AR-04-01: Annual visitation estimate by forest total and visit type; day use developed sites, overnight use developed site, general forest area (dispersed), and designated wilderness; and
- MON-AR-04-02: Percent satisfied index scores for aggregate categories; developed facilities, access, services, and feeling of safety.

c) Standards/Steps for Data Collection: The status and trend of visitor use numbers indicate the demand for recreation facilities. The satisfaction elements most readily controlled by managers were aggregated into four categories: developed facilities, access, services, and visitor safety. The site types sampled were aggregated into three groups: developed sites (includes both day use and overnight developed sites), dispersed areas, and designated wilderness.

The Percent Satisfied Index (PSI) is the proportion of all ratings for the elements in the category where the satisfaction ratings had a numerical rating of 4 or 5. The agency's

national target for this indicator is 85 percent. It is usually difficult to consistently have a higher satisfaction score than 85 percent since given tradeoffs among user groups and other factors.

Data collection is through national protocol located at http://fsweb.nris.fs.fed.us/products/NVUM_Inventory_Design/index.shtml

d) Data Storage: Information is stored in the Natural Resource Manager database. NRM has project management and development responsibility for many Forest Service national applications.

Information on visitor use and customer satisfaction MON-AR-04-01 and 02 is at http://apps.fs.fed.us/nrm/nvum/results/.

e) Spatial Unit: Visitor use and satisfaction is by forest.

f) Frequency of Measurement: Visitor Use and Satisfaction (National Visitor Use Monitoring) is surveyed once every 5 years: 2012, 2017, and 2022.

g) Precision/Reliability, Class A: NVUM survey methods are statistically valid and repeatable.

h) Analysis Methods: In response to need for improved information on the recreational use of National Forest System lands, a nationwide, systematic monitoring process has been developed, which estimates annual recreational use of National Forest System lands. The basic unit of measure is the existing volume of visitors from a recreation site on a given day. Sites are stratified according to the type of site. Days are stratified according to the expected volume of exiting recreation visitors. A double-sampling strategy is the primary means used to obtain measures of exiting recreation traffic. Where possible, observable counts of other measures that are highly correlated with visitation; such as fee envelopes, ski lift tickets, or concessionaire reports are used in order to reduce variation in the visitation estimates. (2001 Forest Service National Visitor Use Monitoring Process: Research Method Documentation).

i) Who (Cooperators): Forest recreation staff officer provides overall direction and coordination of data collection, analysis of data, and management of the databases. District recreation managers are responsible for seeing data is collected. Actual survey may be by Forest Service personnel, by volunteers, or by contractor.

j) Cost: Cost of the NVUM is through Inventory and Monitoring (NFIM).

Preparing the monitoring report will cost approximately $760 using the following personnel:

- 4 GS-9 ($30/hr.) District program manager data review -4 hrs. each = $480
- 1 GS-12 ($35/hr) Forest program manager data review, summarize information -8 hrs = $280

k) References:
National Visitor Use Monitoring http://apps.fs.fed.us/nrm/nvum/results/.

Integrated Business Service Center (IBSC); national standards and guides http://fsweb.wo.fs.fed.us/rhwr/ibsc/index.shtml.

National Visitor Use Monitor Program;
http://fsweb.nris.fs.fed.us/products/NVUM_Inventory_Design/index.shtml and
http://www.fs.fed.us/recreation/programs/nvum/.

6) Responsibility: Forest recreation program manager.

7) Authority: The Multiple-Use Sustained-Yield Act of 1960 and the Federal Land Policy and Management Act of 1976 require that the national forests are managed for outdoor recreation and human occupancy and use while protecting other resources. Monitoring to determine compliance is required by the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Every 5 years.

10) How Evaluated: NVUM can be used to measure visitor use. However, for measuring trend in visitor use, caution must be used in comparing previous year's data. Changes in use numbers previous to round 3 data (2012) was influenced by changes in data collection protocol and data stratification. Caution should be used in interpreting any comparison of results between Round 1-3 data, due to several method changes. Use data for Round 4 (2017) will be more useful in indicating trend.

Use information is updated/ reconciled periodically, with updated survey information from surrounding forests and regions.

Table 37. National Visitor Use Data

Site Visit	Annual Visitation Estimate Rnd 3 2012	Annual Visitation Estimate NVUM 2017	Annual Visitation Estimate NVUM 2022
Day Use Developed	128,000		
Overnight Use Developed	47,000		
General Forest Area	414,000		
Designated Wilderness	12,000		
Total Site Visit	600,000		
Special Events	6,000		

Review of overall satisfaction for recreation opportunities through the National Visitor Use Monitoring for the monitoring period. Determine if the majority of visitors are satisfied with facilities, access, services, and the perception of their safety. The agency's national target for the Percent Satisfied Index (PSI) is 85 percent.

Table 38. National Visitor Use Survey Data

Satisfaction Element Round 3 (FY2012)	Satisfied Survey Respondents (%)		
	Developed Sites‡	Undeveloped Areas (GFAs)	Designated Wilderness

Satisfaction Element Round 3 (FY2012)	Satisfied Survey Respondents (%)		
	Developed Sites‡	Undeveloped Areas (GFAs)	Designated Wilderness
Developed Facilities	85.0	68.4	100.0
Access	89.8	77.1	81.7
Services	74.2	75.0	51.5
Feeling of Safety	100.0	95.2	29.6

This is a composite rating. It is the proportion of satisfaction ratings scored by visitors as good (4) or very good (5). Computed as the percentage of all ratings for the elements within the sub grouping that are at or above the target level and indicates the percent of all visitors that are reasonably well satisfied with agency performance.

‡This category includes both Day Use and Overnight Use Developed Sites.

The narrative would then describe the results of the two indicators regarding the monitoring question and movement towards, away from, or neutral to forest plan desired conditions.

11) Author: Mary Laws

Resource: Wilderness

MON-WLDN-01

1) Monitoring Question (MON-WLDN-01): Have management activities met Forest Plan desired conditions and standards, and trended towards management area desired conditions for designated wilderness and Wilderness Study Areas?

2) Forest Plan References:

- **FW-DC-AR-06**
- **MA1a-DC-AR-01**
- **MA1c-DC-AR-01**

3) Performance Indicator(s):

- **MON-WLDN-01-01:** Designated Wilderness managed to standard; and
- **MON-WLDN-01-02:** Montana Wilderness Study Area wilderness character is not diminished beyond what existed in 1977.

4) Forest Plan Rationale and Explanation: To determine the effectiveness of the Forest in managing designated wilderness and WSA

5) Performance Indicators 1 & 2: Designated Wilderness managed to standard. Montana Wilderness Study Area wilderness character is not diminished beyond what existed in 1977.

a) Description: The Chief's Ten-Year Wilderness Strategy requires all designated wildernesses to be managed to standard by 2015. Ten elements are evaluated annually to determine progress toward reaching that goal. The base line for change was the rating for the ten elements in 2005. When a composite rating of 60 is reached, the wilderness is considered to be managed to standard.

Wilderness Study Area, MA1c, will be monitored to ensure that the wilderness character is not diminished beyond what existed in 1977, and to ensure that the areas are maintained for potential inclusion in the National Wilderness Preservation System (R1Supplement FSM 2329, 4. Monitoring). Wilderness characteristics include; natural integrity, apparent naturalness, opportunities for primitive recreation experience, and opportunities for solitude. Recent efforts to standardize wilderness character monitoring (Landres et al. 2008, Schlenker and Filardi, 2012) have provided an improved structure and template for building wilderness character monitoring assessments.

b) Unit of Measure: The unit is the individual land unit or spatial unit described in (e) below.

c) Standards/Steps for Data Collection: Designated Wilderness: The ten elements were established by an agency team for use on all designated wilderness areas managed by the Forest Service. Forests are required to be annually evaluated and reported through the Infra database. Evaluations are done by the forest wilderness manager and data steward with input from district wilderness managers. Data is obtained from cursory field visits by the Forest Service and the public.

WSA: The Region 1 interpretation of minimum protocol for wilderness character monitoring will be utilized to complete wilderness character monitoring for Ten Lakes WSA. Past

assessments include 1982 Ten Lakes Study Report, 2003 Ten Lakes WSA Wilderness Characteristic Assessment and 2010 Wilderness Character Monitoring Ten lakes WSA. The Forest will develop a “baseline” of wilderness conditions as a snapshot in time, and establish what constitutes “significant change” thresholds, and assign weights for each measure that reflect local and regional importance.

d) Data Storage: Designated Wilderness: Data is stored in the NRM-WILD database. http://basenet.fs.fed.us/. Wilderness Study Area to be determined.

e) Spatial Unit:
- For designated wilderness the spatial unit is the designated Cabinet Mountains Wilderness.; and
- For Wilderness Study Area the Ten Lakes WSA.

f) Frequency of Measurement: Current national protocol calls for the elements to be measured, evaluated, and reported annually for designated wildernesses. After the Wilderness Character Monitoring Report, utilizing the Region 1 interpretation of minimum protocol is complete, monitoring WSA will be reported every five years.

g) Precision/Reliability, Class B: Data will primarily come from public comments, visitor surveys (NVUM), comment cards (such as those at trailheads), wilderness ranger contacts, field crew observations, and education programs.

h) Analysis Methods: The ten elements will be evaluated annually for the Cabinet Mountains Wilderness to determine changes in the standards rating and provide recommendations for mitigation or improvement. National protocol can be found at the Lead Wilderness Data Steward Home Page http://fsweb.wo.fs.fed.us/rhwr/wilderness/lwds/index_lwds.html.

A Wilderness Character Monitoring Report protocol for the Ten Lakes WSA will be developed utilizing Wilderness Character monitoring protocol, modified to address WSA elements. http://www.wilderness.net/character and http://www.wilderness.net/toolboxes/documents/WC/FS%20Wilderness%20Character%20Technical%20Guide.pdf and http://leopold.wilderness.net/research/fprojects/F014.htm.

i) Who (Cooperators): Forest and district recreation and wilderness managers, wilderness rangers, recreation and wilderness data steward, and volunteers.

j) Cost: Evaluation and recording of the ten standard elements for designated wilderness is routine and required. Data collection and evaluation of impacted character in recommended wilderness is expected to cost $820 for each spatial until (data collection = $230, analysis = $260, determination and recommendation = $330.) Each monitoring report will cost $250. Total $1,070 annually.

k) References:
FSM 2300 - Recreation, Wilderness, and Related Resource Management Chapter 2320 - Wilderness Management.

Wilderness data http://fsweb.wo.fs.fed.us/rhwr/wilderness/lwds/index_lwds.html.

NRM http://basenet.fs.fed.us/ and www.wilderness.net.

National Visitor Use Monitoring http://apps.fs.fed.us/nrm/nvum/results/.

http://www.wilderness.net/toolboxes/documents/WC/FS%20Wilderness%20Character%20Technical%20Guide.pdf.

http://fsweb.wo.fs.fed.us/rhwr/wilderness/lwds/fy2014_infrawild_instructions.pdf.

Landres et al. 2008, Schlenker and Filardi, 2012.

6) Responsibility: Forest recreation staff officer.

7) Authority: The Wilderness Act of 1964 designated the Cabinet Mountains Wilderness and provides management direction. Forest Service Manual 2322.03, 2c – requires monitoring to deter whether prescriptions, standards, and guidelines are met.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Every five years.

10) How Evaluated: The Cabinet Mountain Wilderness will be measured against the accomplishment levels detailed for all 10 primary output elements for 'wildernesses managed to a minimum stewardship level". A minimum cumulative score of "60" must be achieved in order to be considered as meeting the "minimum stewardship level." Each of the 10 element scores are reported annually and will be reviewed and summarized in the narrative report for the monitoring period.

Table 39. Wilderness Stewardship

Elements of Minimum Stewardship Level	FY2014	FY2015
1. Fire management direction in the Forest Plan	6	
2. Successful treatment for non-native, invasive plants	5	
3. Air quality baseline established and monitored	10	
4. Actions identified in wilderness education plan implemented	6	
5. Adequate direction, monitoring, and management actions to protect opportunities for solitude or primitive and unconfined recreation	6	
6. Recreation site inventory complete	8	
7. Outfitting and Guide model appropriate wilderness practices	8	
8. Adequate direction in the Forest Plan to prevent degradation of the wilderness resource	8	
9. Information addressed in field data collection, storage, and analysis	4	
10. Wilderness has baseline workforce in place	4	
Bonus points (reporting and volunteers)	4	
TOTAL SCORE	69	

This information is used for internal information sharing and for evaluating the consistent and appropriate use of federal regulations for wilderness management purposes.

For the Ten Lakes Wilderness Study Area the Forest will develop a "baseline" of wilderness conditions as a snapshot in time, and establish what constitutes "significant change" thresholds,

and assign weights for each measure that reflect local and regional importance within 5 years (2019).

The narrative would then describe the results of the two indicators regarding the monitoring question and movement towards, away from, or neutral to forest plan desired conditions.

11) Author: Mary Laws

Resource: Cultural Resources

MON-CR-01

1) Monitoring Question (MON-CR-01): To what extent is the Forest meeting forest plan objectives and trending towards desired condition to identify, evaluate, and nominate cultural resources for listing on the National Register of Historic Places?

2) Forest Plan References:

- **FW-DC-CR-01**
- **FW-OBJ-CR-01**
- **FW-OBJ-CR-02**

3) Performance Indicator(s):

- **MON-CR-01-01:** Number of properties identified;
- **MON-CR-01-02:** Number of properties evaluated; and
- **MON-CR-01-03:** Number of properties nominated.

4) Forest Plan Rationale and Explanation: The performance measure is directly related to the desired condition "Cultural resources are inventoried, evaluated for inclusion on the National Register of Historic Places, and managed according to their allocation category, including preservation, enhancement-public use, or scientific investigation." Individual measures were identified because each measurement is explicitly identified in law and regulation and has a separate and distinct measurement.

5) Performance Indicator 1: Number of properties identified.

a) Description: The Forest Plan objective FW-OBJ-CR-01 is to evaluate and nominate 5 to 10 significant cultural resources to the National Register of Historic Places, over the life of the Plan. "Historic properties" is the term used in the National Historic Preservation Act to describe prehistoric and historic properties. Historic properties are of Euro-American association during the historic period (50 years old or older). Prehistoric properties are associated with American Indian occupation (200 – 8,000 years ago). Identification of properties involves a survey strategy that follows the Secretary's "Standards and Guidelines for Archeology and Historic Preservation" and agency programs to meet the requirements of section 110. The KNF meets these standards and guidelines by following the Forest Site Inventory Strategy for property identification.

b) Unit of Measure: Number of historic properties identified.

c) Standards/Steps for Data Collection: Cultural properties are identified through field survey and are entered into a national heritage data base in Infra.

d) Data Storage: Cultural resource inventory information is documented in an Inventory Report with the field surveyor as author and is stored in the Heritage Infra Data Base as an Event. Cultural properties are recorded on a Montana State Site Form with the site recorder as author and information about the site is stored in the Infra National Heritage Data Base as a Site.

e) Spatial Unit: Historic properties.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Heritage Infra can be queried to sort all new properties identified in any given year.

i) Who (Cooperators): Kootenai National Forest and District Archaeologists.

j) Cost: Forest Archaeologist (GS-12): 1 day ($370/day) = $370.

k) References: None

5) Performance Indicator 2: Number of properties evaluated.

a) Description: The Forest Plan objective FW-OBJ-CR-02 is to evaluate and nominate 5 to 10 significant cultural resources to the National Register of Historic Places, over the life of the Plan. When properties have been identified as historic properties, their significance must be evaluated applying the National Register of Historic Places Criteria. The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That has yielded or may be likely to yield, information important in prehistory or history.

If the Forest Service archaeologist and the State Historic Preservation Officer agree that the property is eligible or not eligible under the criteria, then the property shall be considered eligible or not eligible for the National Register for Section 106 purposes.

b) Unit of Measure: Number of historic properties evaluated.

c) Standards/Steps for Data Collection: Cultural properties are identified through field survey, are evaluated in the office, eligibility determination resolved with the Montana State Historic Preservation Office, and the eligibility status entered into the Infra National Heritage Data Base.

d) Data Storage: Eligibility information about the site is stored in the Heritage Infra Data Base.

e) Spatial Unit: Historic property.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A

h) Analysis Methods: Heritage Infra can be queried to sort the eligibility status for all new properties identified in any given year.

i) Who (Cooperators): Kootenai National Forest, District Archaeologists, and Montana State Historic Preservation Office.

j) Cost: Forest Archaeologist (GS-12): 1 day ($370/day) = $370.

k) References: None

5) Performance Indicator 3: Number of properties nominated.

a) Description: The Forest Plan objective FW-OBJ-CR-02 is to evaluate and nominate 5 to 10 significant cultural resources to the National Register of Historic Places, over the life of the Plan. When historic properties have been determined as eligible, they may then be nominated to the National Register of Historic Places. The National Register of Historic Places is the Nation's official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The nomination process follows guidance provided in National Register Bulletin 16B (U.S, Department of Interior National Park Service Interagency Resources Division).

b) Unit of Measure: Number of historic properties nominated.

c) Standards/Steps for Data Collection: A sub-set of eligible historic properties are selected for nomination. National Register Nomination forms are filled out and forwarded to the Montana State Historic Preservation Office for review and forwarding to the Keeper of the National Register for listing on the Register. Listed properties are indicated in the Infra National Heritage Data Base.

d) Data Storage: Nomination information about the historic property is stored in the Heritage Infra Data Base.

e) Spatial Unit: Historic property.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A

h) Analysis Methods: Heritage Infra can be queried to sort the nomination status of all properties listed on the National Register.

i) Who (Cooperators): Kootenai National Forest, Montana State Historic Preservation Office, and Keeper of the National Register.

j) Cost: Forest Archaeologist (GS-12): 1 day ($370/day) = $370.

k) References: None

6) Responsibility: Forest Archaeologist.

7) Authority: Interim Directive No. 6509.11k-2006-14; Programmatic Agreement among the United States Department of Agriculture, Forest Service, Northern Region (Montana), and the Montana State Historic Preservation Officer Regarding Cultural Resource Management on National Forests in the State of Montana.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Document the number of acres inventoried outside of project areas. Determine if inventories are trending towards the forest plan objective of 50 to 100 acres completed annually. Document the number of properties identified, the number evaluated, and the number nominated for listing on the National Register of Historic Places. Determine if evaluation and nomination are trending towards the forest plan objective of 5-10 properties over the life of the Plan. Describe the extent of progress towards the forest plan desired condition. If movement is neutral or away from the desired condition, document why.

11) Author: Becky Timmons.

MON-CR-02

1) Monitoring Question (MON-CR-02): To what extent are historic properties protected and public education and interpretation provided to move towards desired conditions?

2) Forest Plan References:

- **FW-DC-CR-02**
- **FW-OBJ-CR-04**

3) Performance Indicator(s):

- **MON-CR-02-01:** Number of properties protected/preserved; and
- **MON-CR-02-02:** Number of newly interpreted or updated historic properties.

4) Forest Plan Rationale and Explanation: The indicators are directly related to FW-DC-CR-02.

5) Performance Indicator 1: Number of properties protected/preserved.

a) Description: The number of historic properties that are protected or preserved, as identified in the Heritage Infra database.

b) Unit of Measure: Number of sites.

c) Standards/Steps for Data Collection: The action of protecting a property is recorded in the Infra Heritage Data Base as a Deferred Maintenance Cost.

d) Data Storage: Protection information about the historic property is stored in the Heritage Infra Data Base.

e) Spatial Unit: Historic property.

f) Frequency of Measurement: Annually.

g) Precision/Reliability: Class A.

h) Analysis Methods: Heritage Infra can be queried to report protection of historic properties.

i) Who (Cooperators): Kootenai National Forest.

j) Cost: Forest Archaeologist (GS-12): 1 day ($370/day) = $370.

k) References: None

5) Performance Indicator 2: Number of newly interpreted or updated historic properties.

a) Description: The number of historic properties that are interpreted for public education or properties where interpretations have been updated.

b) Unit of Measure: Number of sites.

c) Standards/Steps for Data Collection: The action of developing an interpretation for public education or updating an existing interpretation is tracked by the district archaeologists.

d) Data Storage: Interpretation of sites is documented by the Forest Archaeologist.

e) Spatial Unit: Historic property.

f) Frequency of Measurement: Every 5 years.

g) Precision/Reliability: Class A

h) Analysis Methods: The districts would submit a list of interpretations conducted to the Forest Archaeologist for a forestwide report.

i) Who (Cooperators): Kootenai National Forest.

j) Cost: Forest Archaeologist (GS-12): 1 day ($370/day) = $370.

k) References: None

6) Responsibility: Forest Archaeologist.

7) Authority: Interim Directive No. 6509.11k-2006-14; Programmatic Agreement among the United States Department of Agriculture, Forest Service, Northern Region (Montana), and the Montana State Historic Preservation Officer Regarding Cultural Resource Management on National Forests in the State of Montana.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Document the number of historic property sites protected and the number interpreted. Also document any public outreach that has been conducted to enhance public education of cultural resources and/or history of the KNF. Determine if the number of new interpretations, updated interpretations, or public outreaches is trending towards the forest plan objective of one enhancement to public education completed annually. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired protect and interpret historical sites. Provide rationale for movement that is neutral or away from the desired condition.

11) Author: Becky Timmons.

Resource: American Indian Rights and Interests

MON-AI-01

1) Monitoring Question (MON-AI-01): To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions for consultation with each Tribe?

2) Forest Plan References:

- **FW-DC-AI-02**
- **FW-OBJ-AI-03**

3) Performance Indicator(s):

- **MON-AI-01-01:** Number of approved consultation protocols

4) Forest Plan Rationale and Explanation: The performance measure is directly related to the desired condition to develop consultation protocols with each Tribe. The fundamental relationship between the federal government and the individual American Indian tribe is characterized as a government-to-government relationship (Region 1 Policy). This measure will assure that the Forest fulfills its government-to-government responsibilities to Tribes as sovereign nations.

5) Performance Indicator 1: Number of approved consultation protocols.

a) Description: The performance measure is to develop one consultation protocol per Tribe for ongoing consultation with each tribe (FW-DC-AI-02 and FW-OBJ-AI-03). The Treaty Tribes that the Forest has treaty responsibilities to is the Confederated Salish and Kootenai Tribes (including the Kootenai Tribe of Idaho). General guidance on tribal consultation directs us to increase and improve the involvement of tribes in the decision-making process in the areas where our decisions affect tribes and their treaty rights and interests. There is a trust responsibility in regard to managing the resources that the Treaties depend on. The Forest is also required by law to consult with all federally-recognized tribes that had/have traditional uses within the Forest boundary. That consultation extends to the Kalispel, Coeur d' Alene and Lower Pend Orielle Tribes. Most of the business between the Forest Service and Tribes is conducted at the local level between the individual tribe and each forest and/or district. Leadership for the Region's Tribal Relations Program has been primarily vested in Forest Supervisors; each forest working as needed with respective tribal governments. A consultation protocol will outline a detailed process for consultation tailored to each tribe.

b) Unit of Measure: Number of approved tribal consultation protocols.

c) Standards/Steps for Data Collection: Tribal protocols will be developed in consultation with each Tribe to assure that the protocol reflects each Tribe’s definition of meaningful consultation.

d) Data Storage: The completed tribal consultation protocols will be on file in the Forest Supervisor’s Office.

e) Spatial Unit: Tribe.

f) Frequency of Measurement: Annually, until completed.

g) Precision/Reliability: Class A.

h) Analysis Methods: Tribal Consultation Protocol has been completed and signed by the Forest Supervisor and the Tribal Chairman.

i) Who (Cooperators): Forest Supervisor & Tribal Chairs.

j) Cost: Forest Tribal Government Specialist (GS-12): ½ day ($370/day) = $185.

k) References: None

6) Responsibility: Forest Tribal Government Specialist.

7) Authority: Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Describe the extent of progress towards a consultation protocol for each Tribe with historical or treaty interests in KNF lands. Document if a consultation protocol is being worked on or has been established. If work is underway, describe the progress. Describe consultation that has occurred annually with the Tribes. If movement is neutral or away from desired conditions, document why.

11) Author: Becky Timmons.

MON-AI-02

1) Monitoring Question (MON-AI-02): To what extent has the agreement for access and acquisition of forest products for traditional cultural uses progressed in consultation with each Tribe?

2) Forest Plan References:

- **FW-DC-AI-01**
- **FW-OBJ-AI-01**

3) Performance Indicator(s):

- **MON-AI-02-01:** Number of approved product use agreements

4) Forest Plan Rationale and Explanation: The performance measure is directly related to the desired condition to develop a forest product agreement for traditional cultural use with each Tribe. The fundamental relationship between the federal government and the individual American Indian tribe is characterized as a government-to-government relationship. This measure will assure that the Forest fulfills its government-to-government responsibilities to Tribes as sovereign nations.

5) Performance Indicator 1: Number of approved product use agreements.

a) Description: The performance measure is to establish one Forest agreement per Tribe for access and acquisition of forest products for traditional cultural uses by tribal members (FW-DC-AI-01, FW-OBJ-AI-01). The Treaty Tribes that the Forest has treaty responsibilities to is the Confederated Salish and Kootenai Tribes (including the Kootenai Tribe of Idaho). The Flathead, Kootenai, and Upper Pend d'Orielle Indian Tribes reserved rights under the Hellgate Treaty of 1855 (July 16, 1855). These rights include the "right of taking fish at all usual and accustomed places, in common with citizens of the Territory, and of erecting temporary buildings for curing; together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land". The federal government has trust responsibilities to Tribes under a government-to-government relationship to ensure that the Tribes' reserved rights are protected. Consultations with the Tribes in early phases of project planning help the Forest Service meet their trust responsibilities.

b) Unit of Measure: Number of approved product use agreements.

c) Standards/Steps for Data Collection: Tribal forest product use agreements will be developed in consultation with each Tribe to assure that the protocol reflects each Tribe's concerns regarding forest product use.

d) Data Storage: The completed tribal forest product use agreements will be on file in the Forest Supervisor's Office.

e) Spatial Unit: Tribe.

f) Frequency of Measurement: Annually, until completed.

g) Precision/Reliability: Class A.

h) Analysis Methods: Tribal forest product agreement has been completed and signed by the Forest Supervisor and the appropriate Tribal Chairman.

i) Who (Cooperators): Forest Supervisor & Tribal Chairs.

j) Cost: Forest Tribal Government Specialist (GS-12): ½ day ($370/day) = $185.

k) References: None

6) Responsibility: Forest Tribal Government Specialist.

7) Authority: Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Describe the extent of progress towards a product use agreement for each Tribe with historical or treaty interests in KNF lands. Document if a product use agreement is being worked on or has been established. If work is underway, describe the progress. If movement is neutral or away from desired conditions, document why.

11) Author: Becky Timmons.

MON-AI-03

1) Monitoring Question (MON-AI-03): To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions for protecting traditional cultural areas?

2) Forest Plan References:

- **FW-DC-AI-03**
- **FW-OBJ-AI-02**

3) Performance Indicator(s):

- **MON-AI-03-01:** Number of approved management plans for traditional cultural areas

4) Forest Plan Rationale and Explanation: The performance measure is directly related to the desired condition to complete management plans for Tribal traditional cultural use in compliance with laws and executive orders. The fundamental relationship between the federal government and the individual American Indian tribe is characterized as a government-to-government relationship. This measure will assure that the Forest fulfills its government-to-government responsibilities to Tribes as sovereign nations.

5) Performance Indicator 1: Number of approved management plans for traditional cultural areas.

a) Description: The performance measure is to complete management plans for the traditional cultural areas identified as Traditional Cultural Areas by the Confederated Salish and Kootenai Tribes (CSKT). These areas are not management area in the Forest Plan. However, they are delineated areas kept on file at the Supervisor's Office. See the GIS data stored in the KNF library for delineation of these areas. Management plans will outline measures to protect resources reserved to the Tribes under treaty, including wildlife habitat and traditional used plants. In addition to treaty resources there are traditional cultural use areas identified as traditional cultural areas by the CSKT that reflect non-resource gathering use by Tribal traditionalists. Several of the individually identified areas may effectively be combined into one management plan, so the number of management plans range from 6 to 24.

b) Unit of Measure: Number of approved management plans.

c) Standards/Steps for Data Collection: Tribal traditional cultural management plans will be developed to protect and enhance the resource values for which the area was identified.

d) Data Storage: The completed management plans will be on file in the Forest Supervisor's Office.

e) Spatial Unit: The spatial unit is the Kootenai National Forest.

f) Frequency of Measurement: Annually, until completed.

g) Precision/Reliability: Class A

h) Analysis Methods: Area management plans completed and signed by the Forest Supervisor and the appropriate Tribal Chairman.

i) Who (Cooperators): Forest Supervisor & Tribal Chairs.

j) Cost: Forest Tribal Government Specialist (GS-12): ½ day ($370/day) = $185.

k) References: None

6) Responsibility: Forest Tribal Government Specialist.

7) Authority: Forest Plan.

8) Monitoring Priority: Priority A.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Describe progress towards development of management plans for the traditional cultural areas and document the number completed. Describe any problems with protection of traditional cultural areas and how they are being dealt with. If movement is neutral or away from desired conditions, document why.

11) Author: Becky Timmons.

Resource: Timber

MON-TBR-01

1) Monitoring Question (MON-TBR-01): To what extent is the Forest meeting Forest Plan objectives and trending towards desired conditions to provide a mix of timber products in response to market demands?

2) Forest Plan References:

- **FW-DC-TBR-01**
- **FW-OBJ-TBR-01**

3) Performance Indicator(s):

- **MON-TBR-01-01:** MMBF offered and MMBF sold annually.

4) Forest Plan Rationale and Explanation: The amount of timber offered and the amount sold has a direct correlation to the Timber desired condition and objective. This is also an important measure for determining jobs and income for Social/Economic MON-SOC-01-01.

5) Performance Indicator 1: MMBF offered and MMBF sold annually.

a) Description: Amount of timber offered and the amount sold is tracked on the Forest using TIM.

b) Unit of Measure: MMBF.

c) Standards/Steps for Data Collection: Need to enter timber sale information in TIM. See TIM for data entry standards.

d) Data Storage: TIM.

e) Spatial Unit: Forest

f) Frequency of Measurement: The information is entered into TIM as timber sales are developed.

g) Precision/Reliability: Class A.

h) Analysis Methods: None.

i) Who (Cooperators): Forest Service only − timber and resource specialists at the district to input data; resource specialists at S.O. to query and summarize data.

j) Cost: S.O. resource clerk (GS-7) 0.5 days = $113. Timber Program Manager (GS-12) 0.5 day = $200. Total = $313.

k) References: None

6) Responsibility: Timber Program Manager.

7) Authority: Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Review the amount of timber offered and the amount sold each fiscal year. Determine if timber sold levels are trending towards the forest plan objective. Review trends to determine if amounts are within the Forest Plan Allowable Sale Quantity (ASQ). Describe the trend and provide rationale as to why actual sold levels may be more or less than the objective. If trends are higher than the ASQ, document why (e.g., salvage sale for a catastrophic event, etc.).

Table 40. Amount of Timber Offered and Sold by Fiscal Year

Fiscal Year	Timber Offered (MMBF)	Timber Sold (MMBF)	Forest Plan Objective Amount (FW-OBJ-TBR-01) (MMBF)	Forest Plan ASQ (MMBF)
2015			47.5	80.2

11) Author: Ellen Frament.

MON-TBR-02

1) Monitoring Question (MON-TBR-02): To what extent is the Forest meeting NFMA requirements and desired conditions on size of harvest openings?

2) Forest Plan References:

- **FW-DC-VEG-05**
- **FW-STD-TMBR-02 (Also 1982 Rule requirement [219.12(k)(5)(iii)])**

3) Performance Indicator(s):

- **MON-TBR-02-01:** Number of even-aged regeneration harvest units exceeding 40 acres in size and category for exceeding

4) Forest Plan Rationale and Explanation: Forest Plan direction includes a standard (FW-STD-TBR-02) that any proposed even-aged timber harvest openings that would exceed 40 acres must follow NFMA requirements regarding public notification and approval. This measure will track when this occurs, how much it's occurring, and why.

5) Performance Indicator 1: Number of even-aged regeneration harvest units exceeding 40 acres in size and category for exceeding.

a) Description: Even-aged regeneration harvest includes clear cuts, seed tree cuts, or shelterwood cuts. Size of harvest units is tracked in FACTS and FSVeg-Poly. This measure does not include areas harvested because of catastrophes such as, but not limited to, fire, insect and disease attack, or windstorm (the 40 acre limit does not apply to these instances).

b) Unit of Measure: Acres and category (reason).

c) Standards/Steps for Data Collection: FACTS has standards for entering harvest units. Size and harvest type is tracked in FACTS. Districts will document harvest units greater than 40 acres. The document for Regional Forester approval to exceed 40 acre limit contains reasons. Districts will enter into spreadsheet the harvest units exceeding 40 acres and the reason. This spreadsheet will be filed on the O drive (at O/….need to determine) and reasons tracked by category.

d) Data Storage: FACTS, spreadsheet.

e) Spatial Unit: Harvest unit

f) Frequency of Measurement: The information is entered into FACTS on an on-going basis.

g) Precision/Reliability: Class A.

h) Analysis Methods: None.

i) Who (Cooperators): Forest Service only − timber (S.O. and districts).

j) Cost: Forest NEPA Coordinator (GS-12) 1 day = $400.

k) References: None

6) Responsibility: Forest NEPA Coordinator.

7) Authority: NFMA and Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Provide a list of timber sales and units that exceed 40 acres and provide rationale for the size of harvest units. Describe how this is consistent with vegetation desired conditions. Document the trends in number of units exceeding 40 acres in size.

Table 41. Harvest Units Greater than 40 Acres by Fiscal Year

Fiscal Year	Timber Sale	Unit	Acres	Reason(s) Greater than 40 Acres
2015				

11) Author: Ellen Frament.

MON-TBR-03

1) Monitoring Question (MON-TBR-03): To what extent are regeneration units restocked to trend towards vegetation desired conditions?

2) Forest Plan References:

- **FW-DC-VEG-04**
- **FW-DC-VEG-11**
- **FW-DC-TBR-02,**
- **FW-DC-TBR-03**
- **FW-STD-TBR-03 (1982 Rule requirement [219.12(k)(5)(i)]**

3) Performance Indicator(s):

- **MON-TBR-03-01:** Percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest

4) Forest Plan Rationale and Explanation: Restocking within 5 years following regeneration harvest is a standard and desired condition in the Plan. On lands suitable for timber production, restocking within 5 years ensures sustainability of timber harvest. The silvicultural prescription for the stand sets the level of restocking required.

5) Performance Indicator 1: Percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest.

a) Description: Regeneration harvest includes clear cuts, seed tree cuts, shelterwood cuts, or selection harvest (individual tree or group selection). Restocking of regeneration harvest units is tracked in FACTS.

b) Unit of Measure: Acres.

c) Standards/Steps for Data Collection: Follow FACTS protocol for inventorying and entering restocking of stands

d) Data Storage: FACTS.

e) Spatial Unit: Regeneration harvest units.

f) Frequency of Measurement: The information is entered into FACTS as timber sales monitored for stocking requirements.

g) Precision/Reliability: Class A.

h) Analysis Methods: Compare restocking of stands after 5 years of harvest to the silvicultural prescription and determine if stocking has been met. Report acres that have been adequately restocked and acres not adequately restocked to generate a percentage.

i) Who (Cooperators): Forest Service only − timber and resource specialists at the district to input data; resource specialists at S.O. to query and summarize data.

j) Cost: FACTS coordinator (GS-9) query data base 5 days = $1,500. Forest Silviculturist (GS-12) 0.5 day = $200. Total = $1,700.

k) References: None

6) Responsibility: Forest Silviculturist.

7) Authority: Required by the Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Biennial.

10) How Evaluated: Provide the number of acres with adequate restocking and the number of acres with inadequate restocking five years after regeneration harvest, based on the silvicultural prescription. For those acres not meeting restocking prescriptions, document why they are not met. Document the trends in acres with adequate and inadequate restocking.

Table 42. Acres with Adequate or Inadequate Stocking 5 Years Following Regeneration Harvest

Fiscal Year	Total Acres of Regeneration Harvest 5 Years Old	Acres with Adequate Restocking	Acres with Inadequate Restocking	Percent Acres with Inadequate Restocking
2015				

11) Author: Ellen Frament.

Resource: Minerals

MON-MIN-01

1) Monitoring Question (MON-MIN-01): Are reclamation activities improving ecological and human health conditions?

2) Forest Plan References:

- **FW-DC-MIN-01**
- **FW-OBJ-MIN-01**

3) Performance Indicator(s):

- **MON-MIN-01-01:** Number of reclaimed abandoned mine sites over a five-year period. Number reclaimed to reduce the risk to human health.

4) Forest Plan Rationale and Explanation: Reclamation of abandoned mine sites is included as a forest plan desired condition and an objective. The Forest Plan puts emphasis on reclamation of abandoned mines to reduce risk to human health, but it also acknowledges the importance of reclamation to reduce risk for environmental degradation.

5) Performance Indicator 1: Number of reclaimed abandoned mine sites over a five-year period. Number reclaimed to reduce the risk to human health.

a) Description: The performance measure is the number of abandoned mine sites on the Forest that have been determined by the authorized official to have been reclaimed as outlined in the approved reclamation plan criteria for the site. Of the total reclaimed, those where reclamation has reduced the risk to human health will also be identified. The measure is accountable at the close of the fiscal year when an authorized officer has made such determination and it is recorded in the administrative record for that site.

b) Unit of Measure: Site.

c) Standards/Steps for Data Collection: None.

d) Data Storage: The determination that an abandoned mine site is meeting the objectives of the reclamation are found in the administrative record for the site. The record is stored at the district office for the site.

e) Spatial Unit: Abandoned mine site being reclaimed.

f) Frequency of Measurement: Annual

g) Precision/Reliability: Class A.

h) Analysis Methods: The authorized official conducts a site review and objectives of the site reclamation plan to determine whether it is in compliance with the objectives of the plan or if additional requirements are needed to reduce the risk to human health.

i) Who (Cooperators): District Mineral Specialist, Forest Geologist.

j) Cost: Collect and compile the required data would take one day. Forest Geologist (GS-12), one day: $369.00.

k) References:

Hargrave, P., English, A., Kershen, M., Liva, G., Loon, J., Madison, J., & Witnergerst, R. (1999). Abandoned-inactive mines of the Kootenai National Forest-administered land. Open-File Report MBMG 395. Prepared for the USDA Forest Service, Region 1 by Montana Bureau of Mines and Geology. Retrieved from: http://www.mbmg.mtech.edu/pdf-open-files/MBMG395_Kootenai.pdf. (27 September 2011).

6) Responsibility: Forest Geologist.

7) Authority: The Forest Plan, Comprehensive Environmental Response Compensation and Liability Act (CERCLA), and the Clean Water Act.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Every 5 years.

10) How Evaluated: Review the trend of reclaiming abandoned mines. Determine if reclamation activities are trending towards the forest plan objective of reclaiming one abandoned mine annually. List the number of mines reclaimed each fiscal year and whether or not reclamation resulted in reduced risk to human health. Present a total for the 5 year interval. Describe the trend and whether there is movement towards, away from, or neutral to the forest plan desired condition to reclaim abandoned mines. If progress is less than the objective, document why.

11) Author: Ellen Frament.

Resource: Social and Economic Systems

MON-SOC-01

1) Monitoring Question (MON-SOC-01): To what extent is forest management contributing towards desired conditions for a stable and functioning local economy?

2) Forest Plan References:

- **FW-DC-SES-02**

3) Performance Indicator(s):

- **MON-SOC-01-01:** Number of jobs and thousands of dollars in labor income from KNF management and percent of total planning area jobs and income

4) Forest Plan Rationale and Explanation: Jobs and income from forest management is a good measure of contributions to the quality of lifestyles and stable communities in the local area and movement towards desired conditions.

5) Performance Indicator 1: Number of jobs and thousands of dollars in labor income from KNF management and percent of total planning area jobs and income.

a) Description: The amount of jobs and income generated in the planning area (IMPLAN zone of influence) from KNF management activities. For the KNF, the planning area includes Lincoln, Sanders, and Flathead counties in Montana and Boundary and Bonner counties in Idaho. The IMPLAN and FEAST models are used in calculating the jobs and income based on output levels for timber, recreation, grazing, and Forest Service employment and budget.

b) Unit of Measure: Number of jobs and thousands of dollars of labor income and percent of total jobs and labor income in the planning area (the five counties listed in the description above).

c) Standards/Steps for Data Collection: IMPLAN and FEAST will be used to determine jobs and income from forest outputs of timber harvest, recreation, grazing, and Forest Service employment and budget. The following are the sources for resource output levels used in calculating jobs and income:

- Timber – amount of cut from the Cut and Sold Report;
- Range – amount of authorized use from grazing permits;
- Payments to States – Report ASR18-01;
- Program Receipts – Report ASR-01;
- Recreation Use – most recent NVUM for the Forest;
- Visitor Segments and spending – “Spending Profiles of National Forest Visitors, NVUM Round 2 Update”, White and Stynes 2009;
- FS Employment – from HRM Focus report - count by series, grade, and appointment type (Report HCTSERGR) for forest averaging pay periods 14 and 1; and
- FS Salaries – from OPM web site.

This data is collected and entered into the Resource_data excel spreadsheet (stored on O drive at

O:\NFS\Kootenai\Program\1900Planning\1940InventoryMonitoringAssessment\monitor_2015plan).

d) Data Storage: Data collected from Step 9 are stored in the Resource_data excel spreadsheet and are then entered and stored in FEAST.

e) Spatial Unit: Output levels are for the Forest; resulting jobs and income are for the zone of influence, or the 5 counties mentioned above.

f) Frequency of Measurement: Resource data and employment is measured annually.

g) Precision/Reliability: Class A

h) Analysis Methods: IMPLAN and FEAST.

i) Who (Cooperators): Forest Service.

j) Cost: 5 day Regional economist = $900. 1 day Forest Planner (GS-12) = $400. Total = $4,400.

k) References:
White, E.M. & Stynes, D.J. (2009, March). Spending profiles of national forest visitors, NVUM round 2 update. 68 p.

Alward, Gregory; Hokans, Rick; Marshall, Richard; Niccolucci, Michael; Redmond, Clair; Smith, Doug; and Susan Winter. (2010). Economic Impact Technical Guide. 138 p.

6) Responsibility: Forest Planner.

7) Authority: Forest Plan.

8) Monitoring Priority: Priority B.

9) Frequency of Evaluation Report: Every 5 years.

10) How Evaluated: Calculate the jobs and income associated with KNF management using a 3-year average of Forest activities and outputs (see above discussion). Determine the percent of total area jobs and income attributed to KNF management. Describe the trend (comparing to FEIS and any prior 5-year reports), impacts to the zone of influence, and movement towards, away from, or neutral to FW-DC-SES-02. Provide rationale if movement is away from the desired condition.

11) Author: Ellen Frament.