

# MONITORING TASKS

APPENDIX



Goal #	Objective #	MQ #	Element	Task #	Method of Collection	Reporting Frequency	Precision/Reliability	Responsibility
10, 11		1, 19	Trends in the numbers, locations, abundance and conditions of rare community occurrences by type	1	Annually schedule site visits to map and track locations, composition and condition of selected sample of rare communities utilizing standard GIS coverage and NRIS Terra, FSVeg and Fauna databases. Utilize standard reports for Annual M&E reporting. Use the assigned values to determine cave classification and to determine cave significance under the implementation regulations of the Federal Cave Resources Protection Act of 1988.	5 Year Intervals	Moderate	Forest Ecologist or Botanist
10, 11		1	Acres and/or number of occurrences of rare communities treated to maintain or restore desired conditions	2	Track annual accomplishments with standard tracking systems and compare with changing occurrences and conditions as determined in task #1	Annual	Moderate/High	Forest Botanist
12	12.01, 12.02, 12.03, 12.04, 12.05	2, 19	Status and trend in forest cover acreage by major forest and woodland community type and successional stage	3	Map and update changes through annual routine inventories. Monitor acres by major forest and woodland community type and trends?	5 Year Intervals	Moderate	Forest Silviculturist
12	12.01, 12.02, 12.03, 12.04, 12.05	2	Acres of silvicultural treatments implemented by activity type and forest type	4	Summarize acres of treatments by major community type utilizing established activity tracking systems.	Annual	Moderate	Forest Silviculturist
17	17.01, 17.02, 17.03	2	Acres burned (wildland and prescribed fire) by forest type and season of burn compared to desired fire regimes	5	Acres burned (wildland and prescribed) by major forest community type. Maps of prescribed burn units are incorporated into the GIS data base annually, by the end of the burning season. Total acres are determined from a GIS query.	Annual	Moderate	Forest Ecologist
6, 12	12.01, 12.02, 12.03, 12.04, 12.05	2	Trends in MIS populations in relationship to the major forest community/condition MIS was selected to indicate. (See Tables 5-1 in Chapter 5).	6	Annual Breeding Bird Survey occurrence trends for selected MIS compared to status and trends in forest cover acreage in Task #3.	5 Year Intervals	Moderate	Forest Ecology Group

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6, 12	12.01, 12.02, 12.03, 12.04, 12.05	3, 19	Trends in early, mid-, and late-successional forests by prescription group	7	Map and update changes through annual routine inventories. Monitor acres by successional stage and trend.	5 Year Intervals	Moderate	Forest Silviculturist
6, 7	7.02	3	How many acres of high-elevation early-successional habitats exist and what are the trends in their abundance and condition	8	Map and update changes through periodic routine inventories. Monitor acres and trends.	5 Year Intervals	Moderate	Forest Silviculturist
6		3	Trends in MIS populations in relationship to the successional stage habitat condition MIS was selected to indicate. (See Tables 5-2 in Chapter 5).	9	Annual Breeding Bird Survey occurrence trends for selected MIS compared to successional stage habitat trends in Task #8.	5 Year Intervals	Moderate	Forest Ecology Group
6, 7, 8	7.01, 8.01	3	Trend in the abundance and distribution of landscapes important for forest interior birds	10	Rerun IMI analysis periodically or as needed	10 Year Intervals	Moderate	Forest Biologist
12	12.01	3, 19	Acreage of existing and potential old growth by forest community class	11	Rerun IMI and CISC analysis periodically or as needed	5 Year Intervals	Moderate	Forest Silviculturist
6	12.05	4, 19	Trends in hard mast production capability	12	Map and update changes in forest composition and condition through annual routine inventories. Infer mast production capability from the status of older age classes of oak forest community types	5 Year Intervals	Moderate	Forest Silviculturist
6	12.01, 12.02, 12.03, 12.04, 12.05	4	Trends in MIS populations in relationship to the terrestrial habitat attributes MIS was selected to indicate. (See Tables 5-3 in Chapter 5).	13	Annual Breeding Bird Survey occurrence trends for Pileated woodpeckers compared to snag abundance as indicated by trends in late-successional forest communities. See Task #14.	Annual	Moderate	Forest Ecology Group
6, 12, 14	12.01, 12.02, 12.03, 12.04, 12.05, 14.01, 14.02	4	Abundance of snags and downed wood	14	Map and update changes in forest successional conditions and area impacted by insect and disease through routine annual inventories. Infer snag and downed wood by the acres of late-successional stage forests and mortality due to insects and disease	Annual	Moderate	Forest Silviculturist

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2, 6, 12	12.01, 12.03, 12.05	4, 19	Trend in riparian area acreage by forest type and successional stage	15	Map and update changes in riparian areas, forest community type and successional conditions through	5 Year Intervals	Moderate	Forest Silviculturist
2, 6, 12	12.01, 12.03, 12.05	4	Acres of vegetation management implemented in riparian areas by activity type	16	Track annual accomplishments with standard tracking system	Annual	Moderate	Forest Silviculturist
2, 3, 5	2.01, 3.01, 3.02, 5.01	5, 19	Conditions and trends in the overall health of streams including trends in water quality parameters and physical habitat conditions in relationship to aquatic communities	17	Water quality sampling, emphasis on nitrogen, sulfur, and mercury compounds. Aquatic macroinvertebrate sampling (EPA's Rapid Bioassessment Protocol II (EPA 1989) with modifications by Smith & Voshell (1997)). Systematic stream fish community inventories, stream stability, streambed structure and large woody debris as appropriate. Sample selected streams on a periodic basis and use fixed sampling points - coordinate locations with other aquatic monitoring.	Annual	High to Moderate	Forest Ecology Group
3, 5	5.01	5, 19	Trends in presence and abundance of wild trout in relation to acidification of stream systems and the application of mitigating measures.	18	Sample selected streams on a periodic basis for wild trout and pH in high elevation streams using systematic stream fish community inventories.	As Available	High	Forest Aquatic Biologist
5	5.01	6, 19	Trends in air pollution effects on forest soil and vegetation.	19	Complete assessment of watersheds at risk from acid deposition. Sample soil water and vegetation in high risk areas.	As Available	High to Moderate	Forest Ecology Group & Silviculturist
5	5.01	6, 19	Trends in air pollutants (ozone, fine particulates, and acid deposition).	20	Summarize air quality monitoring data from sites on or near the Forest, especially acid deposition and ozone.	Annually	High to Moderate	Zone Air Specialist

**MONITORING TASKS**

MONITORING TASKS

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12, 18	18.04	6	Conditions and trends of forest fuels and acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment	21	Fuel monitoring following Regional protocol. Acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment mapped into the GIS data base reports generated through GIS/	Annual	Moderate	Forest Fire Management Group
19	19.01	6, 19	Coordinate with State & local air quality agencies to track emissions from NF lands for compliance with NAAQS, with emphasis on PM2.5 emissions from prescribed fires. Ensure NF prescribed fire emissions are considered when they fall within PM2.5 non-attainment areas. [36 CFR 219.27(a)(12)]	22	Monitor fine particulate from a select portion of prescribed fires using filter or optical based monitors.	Annual	High	Zone Air Specialist & Fire Managers
14	14.01, 14.02	6, 19	What are the trends in insect and disease effects? [36 CFR 219(k)(5)(iv), 36 CFR 219.20(b)]	23	Map and update trends in insect and disease outbreaks and epidemics using routine inventory methods as part of Forest Health Monitoring Program.	Annual	High	Forest Health Program
12	12.01, 12.02, 12.03, 12.04, 12.05	6, 19	What are the trends in forest composition and condition that have been associated with these insects and diseases? Are planned measures to control destructive insects and disease being achieved? [36 CFR 219.12(k)5 (iv)]	24	Task #22 in relation to Task #3.	5 Year Intervals	Moderate	Forest Health Program
3	3.02	7, 19	Population status of Blackside dace and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	25	Follow recovery plan	Annual	Moderate	Forest Aquatic Biologist
3	3.02	7, 19	Population status of James River spiny mussel and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	26	Follow recovery plan	Annual	Moderate	Forest Aquatic Biologist
9	9.01	7, 19	Population status of Northern flying squirrel and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	27	Follow recovery plan	Annual	Moderate	Forest Biologist

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9	9.02	7, 19	Population status of Indiana bat and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	28	Follow recovery plan and protocols of Indiana bat Recovery Team. Biennial surveys of all Indiana bat hibernacula. Yearly surveys for 3 years on newly gated hibernacula, then biennial.	2 Year Intervals	Moderate	Forest Ecologist
9	9.04	7, 19	Population status of northeastern bulrush and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	29	Follow recovery plan	Annual	High	Forest Botanist
9	9.04	7, 19	Population status of Virginia spirea and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	30	Follow recovery plan	Annual	High	Forest Botanist
9	9.04	7, 19	Population status of small-whorled pogonia and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	31	Follow recovery plan	Annual	High	Forest Botanist
9	9.05	7, 19	Population status of Virginia round-leaf birch and progress towards recovery. [MIS - 36 CFR 219.19(a)(6)]	32	Follow recovery plan	Annual	High	Forest Botanist
9	9.03	7, 19	Population trends in Peaks of Otter Salamander as an indicator of effectiveness of management on conservation of the species [MIS - 36 CFR 219.19(a)(6)]	33	Follow Conservation Plan	5 Year Intervals	Moderate	Forest Ecology Group
7	7.01	7, 19	Presence/absence of cerulean warblers in suitable habitats.	34	Using standardized survey methods (CEWAP) determine presence/absence of cerulean warbler in optimal habitats. If present, determine habitat relationships.	5 Year Intervals	High	Forest Ecology Group
7	7.02	7, 19	Presence/absence of golden-winged warblers in suitable habitats.	35	Standardized surveys for Golden-winged warblers using transects and playback in high-elevation early-successional habitats. Habitat characterized at occupied sites.	5 Year Intervals	High	Forest Ecology Group
6		7, 19	Trends in recovery of T&E species, and status and distribution of some viability concern species that are not specifically identified under other elements. Species targeted under this element will be determined through periodic review of each species' status and conservation priority. [36 CFR 219.19 (a)(7)]	36	Various methods will be used as appropriate to the species or species group to monitor status, trends and distribution (refer to the PETS Inventory and Monitoring Handbook)	As Available	Moderate	Forest Ecology Group

MONITORING TASKS

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6		7	Trends in harvest data for demand MIS in relationship to habitat improvement activities for those animals? [MIS - 36 CFR 219.19(a)(6)]. (See Table 5-6 in Chapter 5).	37	Collect harvest data from Cooperating State Agency related to annual accomplishments for habitat improvement tracked with standard tracking systems	5 Year Intervals	High	Forest Biologist
20	20.01, 20.02, 20.03, 20.04	9	Results and trends in user satisfaction ratings [36 CFR 219.21(a)]	38	Analysis of NVUM customer satisfaction data for Day Use, Overnight General Forest Area, and Wilderness programs and local Customer Satisfaction survey tools.	5 Year Intervals	Low/Moderate	SO-Recreation Staff
20	20.01	9, 20	Are semi-primitive recreation settings and backcountry recreation opportunities maintained or increased?	39	Analysis of road construction, reconstruction, and maintenance activities in relation to semi-primitive (SPNM, SPM, & SP2) ROS settings through review of site-specific projects.	Annual	High	Forest Recreation Staff
20		9, 20	User impacts, conflicts and effects within the AT Corridor	40	Analysis of NVUM data, Customer Satisfaction survey, GIS mapping of shelter sites, trailhead registration data	As needed	Moderate	Forest Recreation Staff
20	20.02, 20.04	9, 20	Are the following recreation opportunities being increased: wildlife/bird viewing, photography, interpretive opportunities, nature trails, day use and group facilities, water-based facilities, nonmotorized trails, OHV routes, ATV systems, Special Interest Areas?	41	Review of construction, reconstruction, and maintenance of facilities plans and accomplishments. Check of INFRA inventory.	Annual	High	Forest Recreation Staff
20	20.02, 20.03	9, 20	Are motorized and nonmotorized trails being maintained?	42	Analysis of INFRA Deferred Maintenance Report and reporting of per cent change in backlog.	Annual	High	Forest Recreation Staff
21	21.01	10, 20	Is wilderness visitor use within limits that do not impair the values for which the wilderness was established? [36 CFR 219.18(a)]	43	Analyze trends in wilderness visitor use and compile summary report using GIS mapping (number and location of concentrated use areas) and use of visitor satisfaction results using NVUM and wilderness trailhead registration data.	5 Year Intervals	Moderate	Forest Recreation Staff
21	21.03	10	Trends in fire regimes and effects on fire dependent communities in Wilderness	44	Annual summary report of number of Wildland Fire Use Fires and acres and number of management ignited fires and season of burn.	Annual	Moderate	Forest Fire Management Group

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22	22.01	10, 20	Trends in air quality related values in Class 1 Wilderness areas [36 CFR 219.27(a)(12)]	45	IMPROVE national aerosol monitoring network, water quality sampling for acid deposition, vegetation sampling for ozone & long-term trends, soil water sampling.	As Available	High to Moderate	Zone Air Specialist & National data analysis
23		11, 20	Are free-flowing conditions and Outstandingly Remarkable Values being protected?	46	Implement annual program review at the forest level to track number and types of projects implemented along the river corridor.	5 Year Intervals	High	Forest Recreation Group
23	23.01	11, 20	Have suitability studies for North Creek and Roaring Branch been completed?	47	5 year review	5 Year Intervals	High	
25	25.01, 25.02	12, 20	Acres of National Forest land that meet or exceed established scenic quality objectives [36 CFR 219.27(c)(6), 36 CFR 219.27(d)(1)]	48	Treatment and location data entered in activity tracking system at time treatment completed. Summary report of project acres that meet or exceed the assigned SIO.	Annual	Low/ High	Forest Landscape Architect
26		12, 20	Are landscape character themes changing and why?	49	Annual routine inventory through Scenery Management System. Summary report of acres by landscape character theme.	5 Year Intervals	Low/ High	Forest Landscape Architect
27	27.01	13, 20	Are heritage sites being identified for protection? Are protection measures effective? [36 CFR 219.24(a)(4)]	50	Heritage inventories and surveys pursuant to 106 for all ground disturbing projects are reviewed by SHPO/THPO per Regional PA and Forest MOUs. Sample field condition assessment of sites eligible or listed in National Register. Review of preservation/maintenance plans completed.	Annual	High	Forest Archeologist

**MONITORING TASKS**

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1	1.01	14, 19	Stream stability in reference watersheds compared to stability of streams in watersheds where projects are occurring	51	Conduct pebble count sampling on a subset sample of projects once per year (September – October or following a major storm event) using procedure described by Kappesser (2002). Utilize Riffle Stability Index, Relative Bed Stability (Kauffman, 1999) and percent finer than 4 millimeters to determine acceptable levels of variability or thresholds of concern. Evaluate project watersheds before, during, and after projects and compare with reference watershed data.	Annual	Moderate/High	Forest Hydrologist
1	1.01	14, 19	Stream water temperatures in reference watersheds compared to watersheds where projects are occurring (maximums and minimums)	52	Install data loggers in all reference watershed streams and use data from them to compare with data from managed watersheds. Once a year, conduct statistical analysis to evaluate occurrence and significance of differences.	Annual	Moderate/High	Forest Hydrologist
1	1.01	14, 19	Condition and trend of chemical resilience of watersheds across the Forest as indicated by chemical parameters	53	Water quality sampling protocol	Periodic	Moderate/High	Forest Hydrologist
4		14, 19	Effect of management activities on soil quality and productivity [36 CFR 219.12 (k)(2), 36 CFR 219.27(a)(1)]	54	Sample projects for soil loss. Actual soil movement may sometimes be determined by techniques such as fabric dams.	Periodic or at random	Moderate/High	Forest Soil Scientist
4	4.01	14	Are temporary roads being revegetated within 10 years of contract or permit termination? [36 CFR 219.27(a)(11)]	55	Sample projects during program reviews to determine and document that standard is being met.	Annual	Moderate	Forest Soil Scientist and Forest Engineer



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29	29.03	14	Did reclamation of mineral sites occur at the appropriate stage of the mineral operation? Was reclamation effective? Is follow-up needed?	56	Field inspection of project sites following established monitoring protocol. Review of sample of project documents and related NEPA documents for compliance with laws, BMPs and standards. Followup field inspections annually after reclamation operations for five years. Summarize findings and recommend	As Appropriate	High	Forest Geologist
2		15	Are State BMPs and Forest Standards being implemented to protect and maintain soil and water resources? [36 CFR 219.27(a)(4), 36 CFR 219.12(k)(2)]	57	Field inspection of project sites following established monitoring protocol. Review of sample of project documents and related EAs/EISs for compliance with BMPs and standards.	Annual	Moderate/High	Forest Hydrologist and Soil Scientist
2		15	Are Standards (BMPs) Effective minimizing non-point source pollution?	58	Sample project activities related to BMPs to for effectiveness of BMPs and standards. 1) Visual inspection of implemented standards, 2) Measured effects of standards, and/or 3) Aquatic biota inventories.	Periodic or at random	Moderate	Forest Hydrologist and Soil Scientist
2	2.01	15, 19	Are riparian areas or corridors providing necessary shade and cover for aquatic habitats?	59	Stream surveys in selected sample of project areas of shade and cover of aquatic habitats. Measurements taken	Annual	Moderate	Forest Hydrologist or Aquatic Biologist
15, 16	15.01, 16.01, 16.02	16, 20	Are forest products being produced within predicted ranges? [36 CFR 219.27 (c)(2)]	60	Sales Tracking and Reporting System	Annual	High	Forest Timber Management Staff
28	28.02	5	Are livestock management systems and improvements adequately protecting riparian areas and aquatic habitats?	61	Pastures monitored annually for livestock damage.	Annual	High	Forest Soil Scientist
29	29.01, 29.02, 30.02	16, 20	Were mineral authorizations processed in a timely manner?	62	Review of requests received and process time elapsed to decision for energy and nonenergy minerals as well as requests from private mineral holders.	5 Year Intervals	High	Forest Geologist

**MONITORING TASKS**

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32, 33, 35	32.01, 32.02, 32.03, 33.01, 35.01	16, 20	Are roads being maintained, constructed or reconstructed to reduce sediment delivery to water bodies and to provide a transportation system that supplies safe and efficient access for forest users while protecting forest resources. [36 CFR 219.27 (a)(10)]	63	Miles of National Forest System Roads (NFSR) exist compared to miles maintained to their objective maintenance level. Miles of road improved. Routine condition surveys on 25-33% of roads per year. Miles of road decommissioned (classified and unclassified) with reasons for decommissioning. Miles of right-of-way settled and acres of National Forest land accessed as a result.	Annual	Moderate	Forest Engineer
			Were special use authorizations processed in a timely manner?	64	Review of requests received and process time elapsed to decision.	5 Year Intervals	High	Forest Lands Staff
			Are National Forest System lands being managed to improve management effectiveness and enhance public benefits?	65	Miles of boundary surveyed. Title claims and encroachments resolved. Acres of lands acquired and reasons for acquisition. Lands conveyed and reasons for conveyance.	Annual	High	Forest Lands Staff
34	NFMA Requirement	16, 20	How do estimated and actual costs of plan implementation compare? [36 CFR 219.12(k)3]	66	Review of projected forest plan costs compared to actual costs and annual budgets.	5 Year Intervals	Moderate	Forest Planning Staff
			Are lands being adequately restocked within 5 years of regeneration treatments? [36 CFR 219.27(c)(3)]	67	Routine regeneration examinations following standard protocols.	Annual	High	District Silviculturists
36, 37, 38	NFMA Requirement	17	Are lands not suited for timber production classified as such? [36 CFR 219.12(k)5(ii)] Have lands identified as not suitable for timber production become suitable? [36 CFR 219.14 (a) (d), 36 CFR 219.27(c)(1)]	68	Routine timber stand inventory and prescription documented in CISC. Review changes every ten years.	10 Year Intervals	Moderate	District Silviculturists and Forest Silviculturist
			Are harvest unit sizes within the allowable limits? [36 CFR 219.12(k)5 (iii)] Should maximum harvest unit size limits be continued? [36 CFR 219.27(d)]	69	Annual field inspection of selected site-specific projects. Document needs for change in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Forest Silviculturist, Planning IDT

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	NFMA Requirement	17	Are appropriate harvest methods used on the Forest. [36 CFR 219.27]	70	Annual field inspection of selected site-specific projects. Document needs for change in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Forest Silviculturist, Planning IDT
	NFMA Requirement	18	Determine whether standards, guidelines, and management requirements are being met and are effective in achieving expected results. [36 CFR 219.27 (a)(6)]	71	Annual field inspection of selected site-specific projects. Document needs for change in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Planning IDT
	NFMA Requirement	18	Determine when changes in GPRA, policies, or other direction would have significant effects on Forest Plans. [36 CFR 219.10(g)]	72	5 year review	5 Year Intervals	Moderate	Forest Planning Staff
	NFMA Requirement	18	Determine if planning information or physical conditions have changed. [36 CFR 219.10(g)]	73	5 year review	5 Year Intervals	Moderate	Forest Planning Staff
	NFMA Requirement	18	During monitoring determine research needs. [36 CFR 219.28]	74	Document research needs in annual Monitoring and Evaluation Report if appropriate.	As Appropriate	Moderate	Planning IDT

**MONITORING TASKS**



The Jefferson National Forest is the source of the purest streams, rivers, and lakes.