

Transition of Monitoring Strategy to Comply with 2012 Planning Rule

Apache-Sitgreaves National Forests

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INTRODUCTION AND BACKGROUND

The Forest Service published its [2012 Planning Rule](#) (hereafter, “2012 Rule”) on April 9, 2012, in the Federal Register (USDA-Forest Service, 2012). The 2012 Rule went into effect 30 days after publication. The 2012 Rule emphasizes the use of best available science for forest planning, requires extensive public participation in the planning process, provides for ecological, social, and economic sustainability, focuses attention on biological diversity and ecological health, requires a balanced, multiple-use approach to planning, lays out requirements for timber production, prescribes a tightly integrated adaptive management approach that ties monitoring questions and indicators back to effects of management and progress toward desired conditions, and lays out a number of administrative requirements for the planning process including those related to plan amendments, planning records, plan consistency for projects, and public notification.

Unlike previous planning rules, the 2012 Rule requires forests that had developed their Land Management Plans under previous rules to “. . . modify the plan monitoring program within 4 years of the effective date of this part, or as soon as practicable, to meet the requirements of this section” (36 CFR 219.12 (c) (1)). The Apache-Sitgreaves National Forests (ASNFs, forests) published their [Revised Land Management Plan](#) in August, 2015, and began implementing it on October 25, 2015. The revised plan was developed under the [1982 Planning Rule](#) under an optional provision in the 2012 Rule (36 CFR 219.17(b)(3)) which allows forests that had initiated their planning before the effective date of the 2012 Rule to “complete . . . plan revision in conformance with the provisions of the prior planning regulation.” In order to comply with the requirements of the 2012 Rule, the ASNFs must now modify the Monitoring Strategy, which is in Chapter 5 of the Revised Land Management Plan. Modifying the Monitoring Strategy falls under the 2012 Rule’s Administrative Changes procedure (36 CFR 219.13 (c)), which provides that “[a] substantive change to the monitoring program made outside of the process for plan revision or amendment may be made only after notice to the public of the intended change and consideration of public comment.”

The 2012 Rule sets forth a number of requirements for how the monitoring program will be developed and what it should contain. These are:

- The Responsible Official (Forest Supervisor for 2012 Rule plans) has the discretion to set the scope and scale of the unit’s Plan Monitoring Program (219.12(a)(4)) within the financial and technical capabilities of the Agency (219.12(a)(4)(ii).
- The unit monitoring program should be developed:
 - collaboratively with other agencies, organizations, and individuals (219.12(c)(3)(i & ii)), in consultation with tribes (219.12(c)(3)(iii)), while coordinating with FS Research and State and Private Forestry (219.12(a)(1));
 - to inform forest management of the status of resources in the plan area, “. . .including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan’s desired conditions or objectives.”(219.12(a)(2));

- utilizing the best available scientific information (BASI) (219.3).
- The unit's Plan Monitoring Program is to be coordinated and integrated with the broader scale monitoring strategy developed by the Region/Regional Forester (219.12(a)(3)).
- Required elements: each plan monitoring program must contain one or more monitoring questions and associated indicators addressing each of 8 areas (219.12(a)(5)).

In this white paper we will first describe the general requirements for developing the unit monitoring program and show how the ASNFs met those requirements during the planning process. Then we will discuss whether the ASNFs have adequately addressed each of the 8 required elements, and in cases where the plan falls short, propose changes to comply with those requirements.

GENERAL REQUIREMENTS FOR MONITORING

The 2012 Rule sets forth a number of general requirements for developing the monitoring program. These will be discussed below, and the ways in which the ASNFs met these requirements will be presented.

Collaboration and Public Involvement

The unit's Plan Monitoring Program is to be developed collaboratively with other agencies, organizations, and individuals (219.12(c)(3)(i & ii)), in consultation with tribes (219.12(c)(3)(iii)), while coordinating with FS Research and State and Private Forestry (219.12(a)(1)).

Development of the Monitoring Strategy was integrated with the plan development process and was the subject of discussions with partners, tribes, and the public. Throughout the 9-year planning process, the ASNFs extensively engaged partners including state and local governments, other federal agencies, private organizations, tribes, and individuals, both through coordination with other planning efforts within the same landscape and through direct involvement from partners in the planning process. This engagement is fully documented in the [Apache-Sitgreaves National Forests Land Management Plan Programmatic Final Environmental Impact Statement](#), in [appendices C and F](#) (USDA-Forest Service, 2015a). Beginning in 2006 and continuing throughout the planning process, the ASNFs conducted numerous meetings with key government and agency partners including Greenlee, Navajo, and Apache Counties, Arizona, and Catron County, New Mexico, Arizona Game and Fish Department (AZGFD), the US Fish and Wildlife Service (USFWS), the USDA Natural Resources Conservation Service (NRCS), USDA-Forest Service Rocky Mountain Research Station, county Natural Resource Conservation Districts (NRCD), and councils of several municipalities in and around the forests. Tribal consultation began early with notification of tribes in 2006, meetings with tribal officials in March, 2007, a letter requesting input on the working draft plan in 2009. Formal consultation meetings were held throughout the process with the five tribes who elected to engage in that way, and written responses were provided by two of those tribes and one additional tribe. Pre-release copies of the Draft Plan and Draft EIS were sent to all of the tribes, and one tribe provided written comments at that time.

Meetings and other communications with non-governmental partners also were conducted throughout the planning process. The forests met or otherwise communicated with The Nature Conservancy, the Audubon Society, Arizona Cattle grower's Association, White Mountain Open Trails Association, Grand Canyon Wildlands Council, Defenders of Wildlife, Arizona Coalition of Conservation Groups, White Mountain Conservation League, Sierra Club, Western Watersheds

Project, Center for Biological Diversity, and numerous local homeowners' associations, service organizations, and other groups. Public meetings were held at frequent intervals and various locations around the forests and in metropolitan areas of the state throughout the process. These contacts are catalogued in the [Collaboration Log](#), which was kept throughout the planning process. At least 24 public meetings were held before the Notice of Intent (NOI) to revise the forest plan was published, and at least 12 were held between the NOI and the publication of the final documents in 2015.

This early, extensive public involvement in the development of the Monitoring Strategy has positioned the forests to move forward with the transition to the 2012 Rule compliance by re-engaging key partners and the public. Comment from partners and the public is being solicited during a 30-day period prior to final implementation of the Administrative Changes. Key partners and interested parties have been notified of the comment period by mail or email.

Adaptive Management

Monitoring is to be developed to inform forest management of the status of resources in the plan area, "...including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives."(36 CFR 219.12(a)(2)).

The requirement that the Monitoring Strategy be developed to inform management of the status of resources in the plan area has been met. ASNFs tied monitoring questions and associated indicators to desired conditions and objectives through selection of indicators and direct language in the questions.

Best Available Scientific Information

Monitoring is to be developed utilizing the best available scientific information (BASI) (36 CFR 219.3).

The 2012 Rule requires the responsible official to document how the best available scientific information (BASI) was used to inform the assessment, plan decision, and monitoring program. The documentation must identify which information was determined to be BASI, explain the basis for that determination, and explain how the BASI was applied during the process (36 CFR 219.3). The Forest Service Handbook (FSH 1909.12, 07.1) provides further clarification of this requirement:

The responsible official shall identify and use the best available scientific information (BASI) to inform the planning process and document how BASI was determined to be accurate, reliable, and relevant to issues being considered. The BASI includes relevant ecological, social, and economic scientific information. Use of BASI must be documented for the assessment, the plan decision, and the monitoring program.

While the BASI informs the planning process, plan components, and other plan content, it does not dictate what the decisions must be. There may be competing scientific perspectives and uncertainty in the available science. Plan decisions also reflect other relevant factors such as budget, legal authorities, traditional ecological knowledge, agency policies, public input, and the experience of land managers.

And further:

Best available scientific information must be used to inform the development of the monitoring program. The responsible official must design the monitoring program to test assumptions used in developing plan components and to evaluate relevant changes and management effectiveness of the plan components.

The issues being considered in the monitoring program are those related to the selection of monitoring questions and indicators in the monitoring program. Typically, monitoring questions seek additional information to increase knowledge and understanding of changing conditions, uncertainties, and risks identified in the BASI as part of an adaptive management framework. BASI can identify indicators that address associated monitoring questions. The BASI is also important in the further development of the monitoring program as it may help identify protocols and specific methods for the collection and evaluation of monitoring information.

The use of BASI is required to ensure that assessment, planning, and monitoring are based on known, reliable information and repeatable results. Types of BASI are described in the [Preamble to the 2012 Rule](#):

In some circumstances, the BASI would be that which is developed using the scientific method, which includes clearly stated questions, well-designed investigations and logically analyzed results, documented clearly and subjected to peer review. However, in other circumstances the BASI for the matter under consideration may be information from analyses of data obtained from a local area, or studies to address a specific question in one area. In other circumstances, the BASI also could be the result of expert opinion, panel consensus, or observations, as long as the responsible official has a reasonable basis for relying on that scientific information as the best available.” (77 FR 21192 (April 9, 2012))

BASI can thus take the form of peer-reviewed scientific papers, published scientific reports (non-peer-reviewed), expert opinion or consensus, databases, modeling output, or documented observations. ASNFs used a broad range of sources of BASI during the assessment and planning phases of plan development, and in the development of the Monitoring Strategy. While the majority of these sources were identified by ASNFs during literature searches and database queries or generated by forest personnel, additional scientific information was provided by partners including Northern Arizona University, The Nature Conservancy, the Center for Biological Diversity, and others. Information acquired in these ways was used during the assessment phase and during development of desired conditions, objectives, standards, and guidelines for the plan, the effects analyses included in the EIS, and the identification of forest planning species, management indicator species, and ecological indicators. In turn, monitoring questions and indicators were tied directly to plan direction by use of BASI.

Peer-reviewed Literature

Peer-reviewed scientific literature is considered to be the most reliable source for scientific information. During the planning process, ASNFs conducted extensive literature reviews to ensure that BASI was drawn from as broad a base as feasible. The Forest Service maintains subscriptions to a number of scientific literature databases and makes them available to employees. Further access to books and other resources is provided through the [National Agricultural Library](#) and the [National Forest Service Library](#). Hundreds of peer-reviewed articles

were used to develop, and are cited in, the [Final EIS, Plan, and supporting documents](#) including the 27 specialist reports developed for the Final EIS and the 24 specialist reports written for the [Draft EIS](#). In addition, many other sources such as books, species recovery plans, Forest Service publications, etc. cited in these documents contain or consist of literature reviews that cite hundreds more peer-reviewed sources.

Non-peer-reviewed Literature

Published scientific reports that are not peer-reviewed (e.g. most Forest Service publications, papers in conference proceedings, white papers, web pages, pamphlets and fact sheets) often contain BASI relevant to the assessment, plan, or monitoring strategy. The responsible official must evaluate information in these publications to determine whether it constitutes reliable, tested, relevant information that can be considered to be BASI. Criteria for such determinations can include specific relevance to the planning unit, ecosystem, process, or organism in question, descriptions in the publication of methods and materials used for acquiring the information, and consistency with similar information in other publications.

ASNFs made extensive use of non-peer-reviewed literature sources during the assessment and planning phases and during development of the Monitoring Strategy. As with peer-reviewed sources, many hundreds of non-peer-reviewed sources were used and cited in the plan, EIS, and supporting documents, and many more were cited by sources used in the assessment and planning phases and during development of the Monitoring Strategy. Examples of non-peer-reviewed scientific publications used in the development of the ASNFs Monitoring Strategy are a 2013 publication from the Rocky Mountain Research Station entitled [Restoring Composition and Structure in Southwestern Frequent-fire Forests: A Science-based Framework for Improving Ecosystem Resiliency](#) (Reynolds, et al., 2013), which was used extensively in developing restoration desired conditions, and a Climate Change Vulnerability Assessment published by the Southwestern Region Office (Triepeke, et al., 2014), which serves as background material for selection of climate-change-related questions and associated indicators in this white paper.

Expert Opinion or Consensus

Often published information relevant to assessment, plan development, or monitoring is not available. ASNFs contracted with experts in some cases to provide information on specific topics that was, in many cases, unavailable in the published literature. Examples include a review of invertebrate species that inhabit the forests (Stevens, 2007), and an assessment of ecological and biological diversity in Region 3 forests produced by The Nature Conservancy (Vander Lee, et al., 2006), both used during the assessment phase for the ASNFs Revised Plan. Expert knowledge and opinion is also obtained from Forest Service employees who have training and experience in the relevant fields. In particular, [specialist reports](#) contain this kind of information in addition to that from published sources.

Databases

ASNFs consulted a number of online databases during the assessment and planning phases and during development of the Monitoring Strategy. Databases can provide locally relevant information derived from analyses of data collected on or near the planning unit. One of the best examples of this type of information used by ASNFs during assessment and plan development is the online database maintained by [NatureServe](#). NatureServe is a nonprofit organization that provides conservation data in a searchable format. Types of information available range from

conservation status of, and background information on, individual species, to descriptions of vegetation types across the Americas. ASNFs made extensive use of the data available from NatureServe to identify and screen species of concern, species of interest, and forest planning species, as well as to inform the development of desired conditions, objectives, standards, and guidelines focused on habitat management for these species. Other examples of species databases consulted during development of the ASNFs plan and Monitoring Strategy include the [IUCN Red List](#) (IUCN, 2015), [Arizona Game and Fish Department's Heritage Database Management System](#) (Arizona Game and Fish Department, 2016b), and [SEINET](#) (SEINET, 2015).

Modeling Output

Models are tools that can simplify complex processes, predict outcomes of management actions, and allow decision-makers to select between alternative scenarios. Models played a crucial role in the development of the ASNFs plan and Monitoring Strategy. A model called Vegetation Dynamics Development Tool (VDDT) (ESSA Technologies, 2007) was used to predict long-term vegetation trends in the major vegetation types on the forests under different alternatives in the EIS. Input data for the modeling came from data collected on the forests over a 25-year period. The [outputs](#) provided information about how close the vegetation types are to desired conditions and how long it would take, under the different management scenarios, to reach desired conditions (White, 2014). Monitoring questions and associated indicators were then developed to verify predicted outcomes and inform management actions over the life of the plan.

Documented Observations

Often, the only available type of information about a species, ecosystem process, or other management-related phenomenon is observations by individuals. This type of information is particularly useful at the local scale, where other types of data do not exist or are not complete. Examples of observations relevant to management could include the presence of a species in a given habitat, or the behavior of fire in a particular place, as influenced by fuels and topography. It is important to document observations appropriately if they are to be used in the development of plan components or monitoring questions and indicators.

Broader Scale Monitoring Coordination

A regional broad-scale monitoring program is being developed for USDA-Forest Service Regions 2 and 3 in cooperation with Northern Arizona University. Workshops are being held during 2016 in both regions to gather input from partners and Forest Service personnel for the development of this program. ASNFs has participated and will continue to be engaged in these discussions, and when a final broad-scale monitoring program is published, it will be incorporated into the forests' Monitoring Strategy.

SPECIFIC GUIDANCE FOR QUESTIONS AND INDICATORS: 8 REQUIRED ELEMENTS

We demonstrate in this section, for each of the following 8 required elements in the 2012 Rule (219.12(a)(5)), how the ASNFs Land Management Plan Monitoring Strategy either meets the requirement or can be modified to do so. A companion document, *Land Management Plan for the Apache-Sitgreaves National Forests Administrative Change #1*, contains changes which address each of the identified deficiencies in the Land Management Plan.

Each plan monitoring program must contain one or more monitoring questions and associated indicators addressing each of the following:

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).

The 8 required plan monitoring program elements are each discussed below in the context of the current ASNFs Monitoring Strategy. Questions which meet the requirements are listed, and changes required to bring the Monitoring Strategy into compliance with the 2012 Rule are presented. Many of the questions and indicators are relevant to more than one required element; however, to avoid redundancy, we have listed each question only once. The ASNFs Monitoring Strategy includes a provision to monitor the achievement of all plan objectives. Therefore, to reflect this aspect of the monitoring program and give a more complete picture of what monitoring will be done, we have listed relevant plan objectives under several of the required elements.

1. The status of select watershed conditions

Management and protection of watershed conditions on national forest lands was codified in the 1960 Multiple Use-Sustained Yield Act, which set forth five multiple use priorities for National Forests—outdoor recreation, range, timber, watershed, and fish and wildlife resources. Watershed condition on ASNFs is integrated into desired conditions, objectives, standards and guidelines throughout the Revised Land Management Plan.

The following monitoring questions and plan objectives meet the requirement. Therefore, no changes to the Monitoring Strategy are proposed for this required element.

Monitoring Questions

- How well are management activities contributing to desired conditions or maintaining watersheds in a healthy state and meeting Arizona water quality standards?

Relevant Objectives

- During the planning period, improve the condition class on at least 10 priority 6th level HUC¹ watersheds by removing or mitigating degrading factors. (Plan, p. 17)
- Annually, enhance or restore an average of 350 acres within priority 6th level HUC watersheds, including treating the causes of State and federally designated impaired or threatened waters to improve watershed condition and water quality. (Plan, p. 21)
- Within the planning period, relocate, repair, improve, or decommission a minimum of 4 miles of National Forest System roads or trails that add sediment to streams, damage riparian vegetation, erode stream banks, cause gullies, and/or compact floodplain soils. (Plan, p. 35)
- Annually, remove an average of 2 miles of unauthorized roads or trails that add sediment to streams, damage riparian vegetation, erode stream banks, cause gullies, and/or compact floodplain soils. (Plan, p. 35)
- Annually, rehabilitate, stabilize, revegetate, or relocate an average of five dispersed campsites to improve recreation opportunities and/or protect the environment. (Plan, p. 72)

2. The status of key ecosystem characteristics

The 2012 Rule requires that the plan contain “plan components, including standards or guidelines, to provide for ecological conditions which maintain the diversity of plant and animal communities and support the persistence of most native species in the plan area” (36 CFR 219.9). Ecological conditions include the concepts of integrity and diversity of terrestrial and aquatic ecosystems. Ecosystem integrity is defined in the 2012 Rule [Preamble](#) as a “means of evaluating ecological conditions in terms of their sustainability,” which includes the elements of structure, function, composition, and connectivity.

The ecological diversity requirement includes the components of maintaining healthy populations of common species as well as maintaining viable populations of species of conservation concern, contributing to the recovery of threatened and endangered species, and conserving proposed and candidate species (USDA-Forest Service, 2015b). Maintaining ecological conditions that promote the diversity of fish and wildlife species is required under the National Forest Management Act ([NFMA](#)).

The following monitoring questions and plan objectives meet the requirement. Therefore, no changes to the Monitoring Strategy are proposed for this required element.

Monitoring Questions

- How are management activities contributing to desired conditions or affecting riparian habitats, including wetlands, on the forests? Are riparian areas attaining and/or moving toward proper functioning condition? Are identified ecological indicators (e.g., aspen, riparian) present and fulfilling their ecological function?
- What is the effect of management upon habitat trends of ecological indicators (aspen, riparian) across the forests?
- How are management activities affecting late successional forest structure in relation to desired conditions?

¹ [Hydrologic Unit Code](#)

- Are management activities moving vegetation communities and habitats closer to the desired condition identified at the appropriate scales?
- How is harvest unit size affecting landscape patterns across the forests?

Relevant Objectives

- Annually, enhance or restore 5 to 15 miles of stream and riparian habitat to restore structure, composition, and function of physical habitat for native fisheries and riparian-dependent species. (Plan, p. 26)
- Annually, move 200 to 500 acres toward desired composition, structure, and function of streams, floodplains, and riparian vegetation. (Plan, p. 35)
- Within the planning period, enhance or restore 5 to 25 wet meadows, springs, seeps, or cienegas to proper hydrologic function and native plant and animal species composition. (Plan, p. 35)
- Annually, treat 5,000 to 35,000 acres to reduce tree densities, restore natural fire regimes, promote species habitat and ecosystem health, reduce fire hazard, maintain desired conditions, initiate recovery from uncharacteristic disturbance, and provide forest products, leaving a desired mix of species with the range of desired densities that are resilient to changing climatic conditions. (Plan, p. 37)
- Aspen dominated and codominated acres within forested PNVT²s, representing a range of age classes, are maintained on at least 50,000 acres during the planning period. (Plan, p. 51)
- Annually, treat or maintain 5,000 to 15,000 acres to promote a highly diverse structure. (Plan, p. 52)
- Decrease or maintain the woody canopy cover at less than 10 percent by treating up to 25,000 acres annually. (Plan, p. 58)
- Annually, contain, control, or eradicate invasive species (e.g., musk thistle, Dalmatian toadflax) on 500 to 3,500 acres. (Plan, p. 66)
- Annually, control or eradicate invasive species (e.g., tamarisk, bullfrogs) on at least 2 stream miles. (Plan, p. 66)

3. The status of focal species to assess ecological conditions

Monitoring for ecological conditions is one aspect of the ASNFs Plan requiring transition. The 2012 Planning Rule requires the responsible official to select a set of “ecological conditions” to be monitored for ecosystems and at-risk species (FSH 1909.12, 32.13b) (USDA-Forest Service, 2015c). Ecological conditions are defined as “the biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems” (36 CFR 219.19). Focal species, as described below, are one tool the responsible official may use to monitor ecological conditions.

Transition from Management Indicator Species to Focal Species

In the 2012 Rule, focal species monitoring replaced monitoring for Management Indicator Species (MIS). For a discussion about how the MIS were selected and the ecological conditions they were selected to represent, see [Wildlife Specialist Report—Viability](#) (WhiteTrifaro, 2014) and [Report on the Selection of Management Indicator Species and Ecological Indicators](#)

² Potential Natural Vegetation Type

(WhiteTrifaro, 2013). Focal species represent a part of the monitoring requirements for ecological sustainability and diversity of plant and animal communities, and every forest plan monitoring program must identify at least one focal species (FSH 1909.12, 32.13c). The purpose for tracking the status of focal species is that focal species are indicators of ecological integrity (FSH 1909.12, 32.13c), as they provide insight into the:

1. Integrity of and risks to ecological systems on which focal species depend or that they influence, in the case of keystone species or ecological engineers,
2. Effects of management on those ecological systems, their conditions, and risk factors,
3. Effectiveness of the plan components to provide for ecological integrity and maintain or restore ecological conditions, and
4. Progress towards achieving desired conditions and objectives for the plan area.

When making the shift to focal species, the 2012 Rule considered the challenges the Forest Service faced in monitoring MIS under the 1982 Rule. MIS monitoring has been the subject of much of the legal debate around the species provisions of the 1982 Rule. The 2012 Rule does not include requirements to designate MIS or monitor their population trends. The concept of MIS as a surrogate for the status of other species is not supported by current science, and population trends are difficult and sometimes impossible to determine within the lifespan of a plan.

The concept of focal species, however, is well supported in the scientific literature and community. Focal species are not surrogates for the status of other species. Focal species monitoring provides information regarding the effectiveness of the plan in providing the ecological conditions necessary to maintain the diversity of plant and animal communities and the persistence of native species in the plan area. As explained in the Committee of Scientists Report (Johnson, et al., 1999), focal species may be indicator species, keystone species, ecological engineers, umbrella species, link species, or species of concern. Agency directives provide guidance for considering the selection of a focal species from these or other categories (FSH 1909.12, 32.13c) (USDA-Forest Service, 2015c). Criteria for selection may include: the number and extent of relevant ecosystems in the plan area; the primary threats or stressors to those ecosystems, especially those related to predominant management activities on the plan area; the sensitivity of the species to changing conditions or their utility in confirming the existence of desired ecological conditions; the broad monitoring questions to be answered; factors that may limit viability of species; and others. This does not preclude the use of an invasive species whose presence is a major stressor to an ecosystem, as a focal species.

Monitoring Focal Species

The 2012 Rule does not require or prohibit monitoring of population trends of focal species. Instead, it allows the use of any existing or emerging approaches for monitoring the status of focal species that are supported by current science. This allows managers greater flexibility for monitoring focal species than was afforded MIS under the 1982 Rule requirements. Further, it facilitates better and more meaningful data that will allow for improved efficiencies and more responsive management within plan time frames (approximately 15 years). Monitoring methods for evaluating the status of focal species may include measures of abundance, distribution, reproduction, presence/absence, survival rates, or others. The objective is not to choose the monitoring technique(s) that will provide the most information about the focal species, but to choose a monitoring technique(s) for the focal species that will provide useful information with regard to the purpose for which the species is being monitored. The expectation is that

monitoring key ecosystem and watershed conditions along with monitoring the status of a set of well-chosen focal species will provide timely information regarding the effectiveness of plan components related to plant and animal diversity.

Focal species represent a part of the monitoring requirements for ecological sustainability and diversity of plant and animal communities. “It is not expected that a focal species be selected for every element of ecological conditions” (77 FR 21233, April 9, 2012). Focal species should be selected to monitor when doing so is feasible and they are the best way to track whether ecological integrity and ecosystem diversity is being maintained or improved. Monitoring focal species is intended to address situations where they provide more useful information or are more efficiently monitored than monitoring other potential indicators. Focal species are to be carefully selected and monitored when the key ecological indicators of composition, structure, function, and connectivity are either unavailable or difficult to monitor. There may be situations where key ecological indicators could be monitored directly, but monitoring focal species as an overall measure of composition, structure, function, and connectivity may be a more appropriate indicator of integrity.

Key Considerations for selecting focal species:

- Can the species be effectively monitored?
- Is the species cryptic, rare, or otherwise difficult species to monitor?
- Is it within financial capability of the unit(s)?
- Do standardized monitoring approaches exist?
- Does the species provide feedback that is necessary to inform management?
- Are focal species abundant enough to measure change in status?
- Are species responses to management activities and other stressors well known?
- Are there ‘off-site’ stressors that would mask the response to activities/conditions on NFS lands?
- Sampling design: how to monitor effectively
- Potential to monitor focal species across multiple units
- Opportunities for multi-party monitoring

Focal Species on the ASNFs

When the ASNFs revised their plan in 2015, they identified three MIS that were used in the analysis and comparison of plan alternatives in the Final Environmental Impact Statement (FEIS). Management Indicator Species were chosen to represent those vegetation types which have the greatest risk to species viability, as discussed in the Wildlife Effects Analysis in Chapter 3 of the forest plan revision FEIS (USDA-Forest Service, 2015a). Knowing that the ASNFs would eventually need to transition to the monitoring requirements in the 2012 Rule, MIS were selected that might also serve as focal species. The ASNFs has determined that the three MIS, Mexican spotted owl, northern goshawk, and American pronghorn, will be carried forward as focal species. After reviewing the key considerations for selecting focal species, the ASNFs found these species best represent ecological systems and habitats for measuring ecological sustainability and diversity of plant and animal communities for the forests.

Mexican Spotted Owl

On the ASNFs, Mexican spotted owls (*Strix occidentalis lucida*) serve as an indicator of mature, late-successional mixed conifer forests. Ecological elements of mature forests provide nesting,

roosting, foraging, and dispersing habitat for this species, as indicated in the primary constituent elements of its designated critical habitat (USDI-Fish and Wildlife Service, 2004):

- stands where 30 to 45 percent of trees have a diameter at breast height (dbh) greater than 12 inches;
- a shade canopy where branches cover 40 percent or more of the ground;
- large dead trees (snags) with a dbh of at least 12 inches;
- high volumes of fallen trees and woody debris;
- a wide range of tree and plant species, including hardwoods; and
- adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

Mixed conifer forests occur on every ranger district, as does this wide-spread resident species. Additionally, if Mexican spotted owls are present in an area, at least one of the above ecological elements of mature forests is also likely present on the landscape. Forest management practices can enhance ecological characteristics of mature tree stands when older, larger trees are allowed to persist (USDI-Fish and Wildlife Service, 2015). However, this mosaic of ecological elements can be difficult to directly survey. Thus, this former MIS also serves as a good focal species.

Strategy for monitoring Mexican spotted owls

Because we currently collect breeding territory occupancy information, as indicated by occupancy of Primary Activity Centers (PACs) for this species for proposed projects, we have baseline information across the ASNFs. Continual collection of PAC occupancy information will assist with project planning and monitoring of ecological conditions of mature forests. This information can be used to answer the following monitoring questions (additions in **bold**):

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
What is the status of Mexican spotted owls as a focal species?	Information on breeding Mexican spotted owl occupancy in areas where they are known to occur and surveys or inventory efforts where their occupancy status is unknown (or areas presumed to be abandoned) will allow us to make inferences regarding the overall status of this species in mixed conifer PNVTs. Conduct project and non-project area monitoring of Mexican spotted owl protected activity centers in accordance with species-specific protocols.	Annually

Northern Goshawk

The northern goshawk (*Accipiter gentilis*) serves as an indicator of ponderosa pine forests dominated by mature trees interspersed with patches of various successional stages. Because goshawks typically shift their breeding sites among several alternate nests, goshawk nesting typically indicates mature clusters of trees, often with a closed canopy, within about a 30 acre area, although this can vary (Reynolds, et al., 1992; Woodbridge & Hargis, 2006). Foraging occurs within a mosaic of vegetation structural stages interspersed with approximately of 20% each of old, mature, middle-aged, and young forests, 10% in the seedling-sapling stage, and

10% in the grass-forb-shrub stage (Reynolds, et al., 1992). The 60% of the stands that consist of older age classes should have relatively open understories with a minimum of 40–60% canopy cover (Reynolds, et al., 1992).

Ponderosa pine forests occur on every ranger district, as does this wide-spread resident species. Additionally, if northern goshawks are present in an area, at least one of the above ecological elements of mature forests is also likely present on the landscape. However, this mosaic of ecological elements can be difficult to directly survey. Thus, this former MIS also serves as a good focal species.

Strategy for monitoring northern goshawks

Because we currently collect breeding territory occupancy information as indicated by occupancy of post-fledgling areas (PFAs) for this species for proposed projects, we have baseline information across the ASNFs. PFA occupancy information should assist with project planning and monitoring of ecological conditions of mature forests. This information can be used to answer the following monitoring questions additions in **bold**):

Monitoring Questions	Monitoring Method and Indicators	Monitoring Interval
<p>What is the status of northern goshawks as a focal species?</p>	<p>Information on breeding northern goshawk occupancy in areas where they are known to occur and surveys or inventory efforts where their occupancy status is unknown (or areas presumed to be abandoned) will allow us to make inferences regarding the overall status of this species in the ponderosa pine PNVT. Conduct project and non-project area monitoring of northern goshawk post-fledgling areas in accordance with species-specific protocols.</p>	<p>Annually</p>

American Pronghorn

The American pronghorn (pronghorn) serves as a focal species for habitat connectivity for grassland PNVTs. A desired condition for all PNVTs is to move towards vegetative connectivity to facilitate species movement, and one objective for wildlife and rare plants is to improve wildlife connectivity by removing unneeded structures (USDA-Forest Service, 2015). Lack of habitat connectivity can limit the distribution of this species. For example, dense woody vegetation in historical grassland habitat can provide hiding cover for predators, potentially limiting pronghorn distribution because they may avoid these areas (Arizona Game and Fish Department, 2016a). Improving ecological integrity by moving these historic grasslands toward desired conditions will also improve habitat connectivity. Additionally, fences can reduce habitat connectivity, limiting pronghorn movements and expansion into suitable habitat.

Strategy for monitoring American pronghorn as a focal species

We will continue to partner with AZGFD to monitor the status of this species across the ASNFs. To monitor pronghorn as a focal species, ASNFs is most interested in pronghorn distribution. AZGFD collects location information and population estimates annually using simultaneous double count methodology (Arizona Game and Fish Department, 2013) during pre-hunt fixed-wing aircraft surveys. We will use this information to monitor grassland habitat connectivity.

Strategy for monitoring progress towards other grassland PNVT desired conditions

In addition to monitoring pronghorn as a focal species, we will also obtain AZGFD data to monitor population indices that may respond to changes in grassland habitat conditions. For example, pregnant or nursing females need abundant, high-quality forage to successfully carry a fawn to full-term and sustain a nursing fawn, and fawns need hiding cover (mainly grasses) as newborns (Arizona Game and Fish Department, 2016a). Dense tree and/or shrub cover can negatively affect recruitment. High recruitment into the population, as measured by a high fawn:doe ratio, would therefore indicate both the presence of suitable perennial herbaceous vegetation that provides food and cover for does and fawns and the minimal presence of tree and/or shrub cover, which minimizes predation on these population cohorts. Thus, pronghorn indices such as fawn:doe ratios can serve as an indicator of grassland habitat quality and our progress towards reaching desired conditions.

AZGFD makes every effort to obtain the best population data possible. Observed buck:doe and fawn:doe ratios are used to assess AZGFD's management units' age and sex ratios for population modeling. Biologists evaluate precision of such survey data using statistical confidence interval analysis. To improve precision, AZGFD may increase its sample size by increasing survey efforts and/or changing methodology (Arizona Game and Fish Department, 2013).

While we had initial concerns that this hunted species would not make an appropriate focal species because their presence/absence could be a product of behavioral changes related to hunting pressure, the metrics we have chosen are not influenced by hunting. Estimation of indices such as fawn:doe ratios and pronghorn distribution occurs prior to hunting activity, and hunters only harvest bucks. Annual harvest should be no more than 15-25% of the estimated bucks in the population, and this level of harvest does not have a population-regulating effect (Arizona Game and Fish Department, 2016a). Additionally, no hunting of the population on the Clifton Ranger District occurs. Thus, we expect hunting to have little, if any, effect on the usefulness of pronghorn as a focal species or as an indicator that we are moving towards other grassland desired conditions.

Survey information can be used to answer the following monitoring questions (additions in **bold**):

Monitoring Question	Monitoring Method and Indicators	Monitoring Interval
What is the status of American Pronghorn as a focal species?	To assess grassland PNVT habitat connectivity, obtain AZGFD population distribution data for American pronghorn populations.	Annually
Are management activities contributing to progress towards desired conditions for grassland habitat during the fawning period for American pronghorns?	Review AZGFD data for American pronghorns, including fawn:doe ratios and population trends.	Annually

In addition, we will continue to work with AZGFD and other partners to identify and implement projects that improve habitat for this species while simultaneously moving grassland habitats towards desired conditions. We will also monitor our progress toward the following objective in the forest plan (pg. 62):

- Annually, improve wildlife habitat connectivity by removing at least five unneeded structures (e.g., fence).

Thus, we will indirectly monitor grassland habitat connectivity by evaluating our ability to meet the objective above.

4. The status of select ecological conditions for species habitat

The 2012 Rule incorporates the “coarse-filter/fine-filter” approach for species conservation, which means that maintaining a diverse, healthy ecosystem will provide adequate habitat conditions for most native species (“coarse filter”) while specific measures beyond simply maintaining a healthy, diverse ecosystem (“fine filter”) may be required to maintain viable populations of certain species. Requirements to maintain ecosystem integrity and diversity (see required element 2 above) are intended to provide a “coarse filter” for conserving most native species in the planning unit. The 2012 Rule provides (36 CFR 219.9(b)) that the responsible official will determine whether these coarse filter measures are sufficient to “contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern with the plan area.” If the determination indicates that ecological conditions alone are insufficient to provide for any of these species, then the responsible official must include species-specific plan components (“fine filter”) that address identified insufficiencies in ecological conditions to provide for those species.

Section 219.12 allows the responsible official to choose a select set of ecological conditions to monitor. This selection is to be made after considering what information is needed the most for informing management and whether the agency is technically and financially capable of monitoring the conditions. Monitored conditions (indicators) should thus be relevant to important ecological conditions, relate to at-risk species (i.e. federally recognized threatened, endangered, proposed, and candidate species plus potential species of conservation concern—see [FSH 1909.12, 12.5](#)) (USDA-Forest Service, 2015c), and inform management actions which could be effective at improving the ecological conditions in question.

As noted above, the monitoring questions that relate to this required element should provide information about the efficacy of plan components to create or maintain ecological conditions which a) contribute to the recovery of federally listed species, b) conserve proposed and candidate species, and c) maintain a viable population of each species of conservation concern. Species of conservation concern (SCC) is a new concept in the 2012 Rule. SCCs are defined in the 2012 Rule: “a species of conservation concern is a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species’ capability to persist over the long-term in the plan area (36 CFR 219.09(c)).” Under the 2012 Rule, SCCs are selected during the assessment phase of the planning process. However, the ASNFs completed its plan under the 1982 Rule, which has no provision for SCCs. Consequently, the ASNFs have not yet selected SCCs. Instead, the forests identified a list of [forest planning species \(FPS\)](#) (WhiteTrifaro & Ward, 2013)

and wrote plan components to manage habitats and ensure the continued viability of the planning species. Forest planning species are species with potential risks to viability. Selection criteria for FPS are less restrictive than those for SCC. They can include (but are not limited to) those species that are listed, proposed for listing, or designated as candidate species under the Endangered Species Act. They may also include species that are not necessarily known to occur on the planning unit, if suitable habitat occurs there. Forest planning species were used to identify and provide for ecological conditions necessary for viable populations to persist, and for developing the Monitoring Strategy in the Revised Plan. In order to determine whether the 2012 Rule requirements for monitoring of ecological conditions is being met by ASNFs, the forests used the criteria provided in the Forest Service Handbook, FSH 1909.12, 12.5 (USDA-Forest Service, 2015c) to identify ecological conditions that support species with potential viability concern, so they can be monitored and managed. A detailed evaluation of the effects of the proposed forest plan alternatives on the forest planning species and their coarse and fine-filter habitat needs can be found in the [Wildlife Specialist Report—Viability](#) (WhiteTrifaro, 2014) and in the Final EIS (USDA-Forest Service, 2015a).

Monitoring Questions

Many of the current monitoring questions listed under required element 2 above also address specific (fine-filter) ecological requirements of species. Also, please see required element 3 for focal species and for some monitoring questions for species that address required element 4. An additional monitoring question that addresses ecological conditions of species follows (Plan, p. 143):

- Are habitats for threatened, endangered, sensitive, and other species for the forests being maintained or enhanced; meeting recovery objectives; moving toward desired conditions; and contributing to species viability?

5. The status of visitor use

Managed recreation was one of three primary revision topics identified in the [Analysis of the Management Situation](#) (AMS) (USDA-Forest Service, 2008; USDA-Forest Service, 2009; USDA-Forest Service, 2010) conducted for the plan revision effort. Approximately 2 million visitors use the ASNFs each year for relaxing, hunting, fishing, hiking, off-highway vehicle use, viewing natural features and wildlife, camping, boating, driving, picnicking, and large group gatherings. According to an economic analysis done for the ASNFs [Plan EIS](#) (vol. 1, p. 518), recreation activities provide the local economies of communities within and surrounding the forests with approximately 2,939 jobs and \$86.6 million in annual labor income (USDA-Forest Service, 2015a).

The following monitoring questions and plan objectives measure aspects of recreation on the forests, and thus meet the requirement. Therefore, no changes to the Monitoring Strategy are proposed for this required element.

Monitoring Questions

- Do recreational opportunities respond to forest users' desires, needs, and expectations?
- How are projects and programs affecting scenic integrity?
- Are eligible and suitable wild and scenic rivers being managed to protect and enhance the identified outstandingly remarkable values?

- Are designated wilderness and the primitive area being managed to maintain the wilderness values and character?
- Are recommended wilderness being managed to protect the wilderness values and character?
- Are designated wilderness and the primitive area being managed to maintain the wilderness values and character?
- Are recommended wilderness being managed to protect the wilderness values and character?

Relevant Objectives

- Within the planning period, work with the AZGFD, ADOT, and other partners to provide at least 10 new wildlife viewing opportunities. (Plan, p. 72)
- Within the planning period, reduce the developed recreation deferred maintenance backlog at plan approval by 10 percent. (Plan, p. 74) Annually, maintain at least 20 percent of the passenger vehicle and 10 percent of the high-clearance vehicle NFS roads. (Plan, p. 75)
- Annually, maintain at least 20 percent of NFS motorized trails. (Plan, p. 75)
- Annually, maintain at least 20 percent of nonmotorized trails. (Plan, p. 78)
- Annually, accomplish an average of five projects to enhance scenic resources (e.g., restore grasslands and aspen, remove unnecessary fences, close and rehabilitate unneeded gravel/cinder pits). (Plan, p. 85)

6. Measurable changes on the plan area related to climate change

The plan monitoring program must contain one or more monitoring questions associated with indicators to determine whether there are measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area. Taken together, the planning framework and these requirements will ensure that information related to climate change will be addressed in a consistent and strategic fashion. This monitoring requirement may relate to other monitoring requirements or to interacting stressors that individually or collectively may be affecting the plan area. Interacting stressors may include fire, insects, invasive species, herbivory, loss of spatial connectivity, disruption of natural disturbance regimes, geologic hazards and water withdrawals and diversions that affect the plan area, among others.

The primary consideration for evaluating responses to climate change lies with the ASNFs' ability to modify social, economic, and ecological conditions on the planning unit. Current conditions and trends described in the FEIS for the ASNFs land and resource management plan and alternatives address risks, vulnerabilities, and potential ecological changes that could result from climate change. The plan addresses potential climate change impacts that are most likely to affect ecological systems, goods, and services. Evaluation of climate change impacts may lead to recognition that some conditions may be difficult to maintain over time. Particular attention is given to ecosystems that are most at risk due to climate change and vulnerable ecosystem components, such as aquatic systems, grassland plant diversity, and transition and high-elevation ecosystems. Information from the evaluation of current conditions and trends was used to develop the social, economic, and ecological desired conditions in the plan, with monitoring questions subsequently developed to assess the plan's progress in meeting them. [Appendix A](#) of the ASNFs plan further describes the forest's overall approach for integrating

climate change with management through desired conditions, objectives, and management strategies:

- Enhance adaptation by anticipating and planning for disturbances from intense storms;
- Reduce vulnerability by maintaining and restoring resilient native ecosystems;
- Increase water conservation and plan for reductions in upland water supplies;
- Anticipate increases in forest recreation use, utilize markets and demand for small-diameter wood and biomass for restoration, renewable energy, and carbon sequestration; and
- Monitor climate change influences.

Plan components support and complement current climate adaptation strategies that include: sustaining functional ecological conditions, reducing the impact of existing biological stressors (e.g. insects, pathogens, invasive plants/animals), protecting forests from severe fire and wind disturbance, maintaining and enhancing species structural diversity, increasing ecosystem redundancy across the landscape (e.g. areal extent), promoting landscape connectivity, enhancing genetic diversity, and facilitating community adjustments through species transitions (Janowiak, et al., 2014)

The plan monitoring program incorporates provisions that should improve understanding of the relationships between key plan components and climate change. For example, information about water temperatures and stream flows associated with climate change can be useful for tracking variability within ecosystem condition and trends observed over a prescribed evaluation period. Monitoring the frequency and spatial extent of uncharacteristic wildfire occurrences and insect outbreaks would help the ASNFs assess how well management is mitigating for hotter, drier, and more fire-prone conditions, and whether existing management is promoting resilient ecosystems. Along similar lines, monitoring springs that are sensitive to variable precipitation and naturally more predisposed to the effects of prolonged drought would help the ASNFs to prioritize protection and restoration.

The draft Climate Change Vulnerability Assessment (CCVA) developed for the ASNFs (USDA-Forest Service, 2016) shows 17% of the plan area has low vulnerability, 16% of the plan area is moderately vulnerable, 25% is highly vulnerable and 12% is very highly vulnerable to climate change. The report further describes vulnerability by [Ecological Response Unit \(ERU\)](#)³, watershed unit, and ranger district across the forests. Within the tree-shrub component, frequent fire mixed conifer, ponderosa pine, pinyon juniper grasslands are all moderately to highly departed from reference conditions with both high resistance to, and resilience from disturbance events. Riparian systems, spruce fir forest and mixed conifer with aspen have low resistance to disturbance but are expected to be moderately to highly resilient to these events once they have occurred. Within in the herbaceous component of these systems, the majority of the forest area is moderately departed with low resistance to disturbance, and moderate to high resilience from disturbance.

³ Ecological Response Units are map unit constructs or technical grouping of finer scale vegetation classes from the National Vegetation Classification. Each ERU combines finer scale vegetation classes that share similar ecosystem processes and successional dynamics, as well as potential vegetation under historic disturbance regimes (Wahlberg, et al., 2014). Potential Natural Vegetation Types (PNVTs) are equivalent to ERUs and were the basic vegetation framework used in analyzing the Plan and EIS.

Monitoring Questions

Many of the monitoring questions support the ASNFs CCVA, plan desired conditions and adaptation strategies as recommended in GTR NRS-87 (Janowiak, et al., 2014).

Questions specifically assessing climate change effects include the following (additions in **bold**):

Monitoring Questions and Changes	Monitoring Method and Indicators	Monitoring Interval
<p>Are management activities moving vegetation communities and habitats closer to the desired condition identified at appropriate scales as compared to baseline conditions?</p>	<p>Review mid-scale vegetation assessment/percent change in developmental structural states, range analyses (transect data, photo plots, inspections), Forest Inventory and Analysis, Common Stand Exams, production and utilization surveys; Section 18 reviews of allotment NEPA; BAER assessments; fuels inventory; acres of aspen dominated and co-dominated forested PNVTs; and percent departure from desired condition by PNVT.</p> <p>Review data sources listed above for departure or PNVT changes not explained by mechanical treatment, wildfire, natural succession or other ground disturbing event, as compared to baseline mid-scale (2012).</p> <p>Review applicable indicators for all PNVTs: seral state diversity, ground cover, ecological status, patch size, disturbance regime (fire, insect, disease, flooding), coarse woody debris, snag density, fire regime condition class, riparian function assessment.</p>	<p>Every 5 years</p>
<p>Is long term water quality (temperature) being maintained in aquatic systems to meet State of Arizona water quality standards for designated uses? What temperature change is attributed to climate vs. mechanical/wildfire treatments? Are water temperature changes</p>	<p>Analyze forest stream temperature network data in comparison to available air temperature and streamflow data. Compare long-term trends in ADEQ monitoring data with forest monitoring data and CCVA predictions.</p>	<p>Every 5 years</p>

Monitoring Questions and Changes	Monitoring Method and Indicators	Monitoring Interval
correlated with climate vulnerability predictions for ASNFs watersheds?		
<p>Are insect and disease populations within reference conditions? Are invasive plant species' populations changing substantially? Are their population levels compatible with achieving vegetation desired conditions and management approaches? Are changes and levels consistent with regional changes and levels? What is the relationship between these stressors and climate vulnerability predictions?</p>	<p>Review forest health surveys and report, stand exams, project inspections and reviews, and noxious weeds and nonnative invasive species surveys and treatment reports.</p> <p>Compare ASNFs to Southwest Region insect and disease population levels and trends to determine if change can be attributed to general decline in forest health in high vulnerability ERUs.⁴</p>	<p>Annually, forestwide</p> <p>Every 5 years.</p>
<p>Has ASNFs' CCVA assessment by ERU, changed over the life of the forest plan? How do current climate patterns, over the life of the forest plan, compare to vulnerability predictions for the ASNFs?</p>	<p>Compare CCVA assessments over time to determine change in vulnerability by ERU, local unit and sub-watershed.</p>	<p>Every 5 years</p>
<p>Are forest and woodland stands adequately restocked within 5 years of final harvest or after fire-created regeneration openings? Are these restocked areas retaining species composition and density compared to baseline PNVT? Are stocking patterns correlated with climate vulnerability predictions?</p>	<p>Review annual reforestation needs report, stocking certifications, silvicultural prescriptions, timber/silviculture tracking database. Assess species composition and density in restocked areas relative to baseline PNVT range of variability. Differences may indicate change in climate conditions.</p>	<p>Every 5 Years</p>

7. Progress toward meeting the desired conditions and objectives

Most Monitoring Strategy questions for the ASNFs focus on attaining desired conditions, either explicitly (i.e. “desired conditions” is mentioned in the question) or implicitly (i.e. the indicator refers to one or more desired conditions). To avoid excessive duplication, general monitoring questions regarding moving current conditions towards desired conditions are not listed below. Many of the questions are also focused on some aspect of providing multiple use opportunities (water, wildlife, timber, forage, recreation), including several that are listed under other required

⁴ Ecological Response Unit (ERU) is equivalent to PNVT; ERU nomenclature has been updated.

elements. Questions not listed elsewhere in this section that relate directly to providing multiple-use opportunities are listed below.

The Forest Service Handbook (FSH 1909.12, 32.13f) makes it clear that this requirement includes monitoring questions focused on attainment of social, economic, and cultural desired conditions. National Forest lands are managed for sustainable yield of goods and services (including ecosystem services) that support human communities. The 2012 Rule provides guidance for ensuring that forest plans are focused on social and economic sustainability: “The plan must include plan components, including standards or guidelines, to guide the plan area’s contribution to social and economic sustainability, taking into account: (1) Social, cultural, and economic conditions relevant to the area influenced by the plan; (2) Sustainable recreation; including recreation settings, opportunities, and access; and scenic character; (3) Multiple uses that contribute to local, regional, and national economies in a sustainable manner; (4) Ecosystem services; (5) Cultural and historic resources and uses; and (6) Opportunities to connect people with nature” (36 CFR 219.8(b)). Social and economic sustainability are integrated throughout the ASNFs plan through emphasis on restoring and maintaining healthy ecosystems, water quality, soil productivity, sustainable recreation, and sustainable flows of economic goods and services.

The following monitoring questions meet the FSH requirement. Therefore, no changes to the Monitoring Strategy are proposed for this required element.

Monitoring Questions

- Has timber suitability classification changed on any forests’ lands?
- Are forest and woodland stands adequately restocked within 5 years of final harvest treatment or after fire-created regeneration openings?
- Are the forests’ infrastructure (e.g., recreation facilities, roads, trails) and their ability to facilitate administrative needs and attainment of desired conditions for administrative uses and recreational opportunities, including access, sustainable?
- Are the standards and guidelines prescribed being incorporated in NEPA documents and implemented in projects and activities?
- How well are the forests interacting and planning in cooperation with communities?
- Do the forests provide interpretive opportunities that describe natural resources and the Forest Service mission?
- Are outputs of goods and services being produced at a rate consistent with projections?

Relevant Objectives

- Over the planning period, a minimum of five MOUs are renewed or established with tribes associated with the ASNFs. (Plan, p. 93)
- Annually, prepare and offer up to an average of 122,000 CCF [29] from suitable timberlands resulting from sustainable harvest to provide wood products to businesses and individuals. (Plan, p. 95)
- Annually, provide up to 94,000 CCF (119,380 cords [30]) of firewood for personal and commercial use. (Plan, p. 95)
- Annually, provide an average of 5,000 permits for Christmas trees. (Plan, p. 95)

8. Management systems do not impair the productivity of the land

Managing National Forest lands in a way that does not substantially and permanently impair productivity is a requirement of the [NFMA](#). Productivity of the land is related to integrity and health of soils and to regeneration and productivity of timber and forage. Soil productivity and recreation impacts are addressed directly in the two questions listed below. Other questions that relate to productivity are listed elsewhere in this section, including those focused on timber restocking, timber suitability classification, trends for focal species and ecological indicators, and output of goods and services.

The following monitoring questions meet the requirement. Therefore, no changes to the Monitoring Strategy are proposed for this required element.

Monitoring Questions

- Are long-term soil health and productivity desired conditions being maintained or met?
- How are recreational activities (including off-highway vehicle use) affecting the physical and biological resources of the forests?

NEXT STEPS

In order to comply with the 2012 Rule requirements for public involvement, we posted a draft version of this white paper and a Proposed Administrative Changes document to the ASNFs planning [web page](http://www.fs.usda.gov/detail/asnf/landmanagement/planning/) (<http://www.fs.usda.gov/detail/asnf/landmanagement/planning/>) for a 30-day period of public review ending May 19, 2016. We received 14 comments and have published a Response to Comments which is also posted on the ASNFs' planning web page. The ASNFs has made an Administrative Change to the Land Management Plan in accordance with 36 CFR 219.13(c)(2) which documents the final changes made to the plan after consideration of comments received.

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