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FSH 1909.12 – LAND MANAGEMENT PLANNING HANDBOOK

CHAPTER 10 – THE ASSESSMENT

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Digest:

10 - Changes chapter caption from “Land Management Plan” to “The Assessment.” Revises the chapter in its entirety. Changes captions and sets forth new direction throughout the chapter.

10.5 - Establishes code, caption, and sets forth new terminology in “Definitions.”

10.6 - Establishes code, caption, and sets new forth new cited “References.”

14 - Establishes code, caption, and sets forth new direction for “Assessing Designated Areas.”

15 - Establishes code, caption, and sets forth new direction for "Assessments for Plan Amendments."

Table of Contents

This chapter describes the procedures for writing an assessment for development, amendment, or revision of land management plans. See FSH 1909.12, chapter 40 for a discussion of the planning framework (assessment, planning, and monitoring) of the planning rule.

10.5 - Definitions

Airshed. A geographic area that, because of topography, meteorology, and, or, climate, is frequently affected by the same air mass.

Carbon pool. Any natural region or zone, or any artificial holding area, containing an accumulation of carbon or carbon-bearing compounds or having the potential to accumulate such substances. Carbon pools may include live and dead above ground carbon, soil carbon including coarse roots, and harvested wood products.

Carbon stocks. The amount or quantity contained in the inventory of a carbon pool. For purposes of carbon assessment for National Forest System (NFS) land management planning, carbon pools do not include carbon in fossil fuel resources, lakes or rivers, emissions from agency operations, or public use of NFS lands (such as emissions from vehicles and facilities).

Critical load. The concentration of air pollution or total deposition of pollutants above which specific deleterious effects may occur.

Natural range of variation (NRV). Spatial and temporal variation in ecosystem characteristics under historic disturbance regimes during a reference period. The reference period considered should be sufficiently long to include the full range of variation produced by dominant natural disturbance regimes, often several centuries, for such disturbances as fire and flooding and should also include short-term variation and cycles in climate. “Natural range of variation” (NRV) is a term used synonymously with historic range of variation or range of natural variation. The NRV is a tool for assessing ecological integrity, and does not necessarily constitute a management target or desired condition. The NRV can help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions.

10.6 - References

Cleland, D.T.; Avers, P.E.; McNab, W.H.; Jensen, M.E.; Bailey, R.G., King, T.; Russell, W.E. 1997. National hierarchical framework of ecological units. In, Boyce, M.S.; Haney, A., eds. Ecosystem management applications for sustainable forest and wildlife resources. Yale University Press, New Haven, CT. pp. 181-200.

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Winthers, E.; Fallon, D.; Haglund, J.; DeMeo, T.; Nowacki, G.; Tart, D.; Ferwerda, M.; Robertson, G.; Gallegos, A.; Rorick, A.; Cleland, D. T.; Robbie, W. 2005. Terrestrial ecological unit inventory technical guide. Washington, DC: U.S. Department of Agriculture, Forest Service, Washington Office, Ecosystem Management Coordination Staff. 245 p.

11 - ASSESSMENTS

> **(1) Assessment. Assessments rapidly evaluate existing information about relevant ecological, economic, and social conditions, trends, and sustainability and their relationship to the land management plan within the context of the broader landscape. The responsible official shall consider and evaluate existing and possible future conditions and trends of the plan area, and assess the sustainability of social, economic, and ecological systems within the plan area, in the context of the broader landscape (§ 219.6).** (36 CFR 219.5(a))

The assessment phase should contribute to the planning phase by providing information for:

1. Identifying the need for change in the plan development, amendment, or revision process (FSH 1909.12, ch. 20, sec. 26); and

2. Developing plan components including desired conditions, objectives, standards, guidelines, and suitability of lands (FSH 1909. 12, ch. 20, sec. 27).

Assessments serve several purposes:

1. Identify and evaluate a solid base of available information relevant to the plan development, plan amendment, or plan revision, including:

a. Evaluate available information with the public and other interested parties relevant to the assessment requirements of 36 CFR 219.6(b); and

b. Develop an understanding of the conditions and trends of the assessment topics that is useful to making decisions about plan components and other content of the plan (36 CFR 219.6(a)(1)).

2. Build a common understanding of that information with the public and other interested parties before starting plan development, plan amendment, or plan revision.

3. Develop relationships with interested parties to facilitate public and government participation among government entities, Indian Tribes, private landowners, and other partners and interested parties.

4. Develop readiness of both the Agency and the public to focus on topics appropriate to a plan, plan revision, or amendment.

5. Develop a mutual understanding of the complex topics across landscapes that are relevant to planning on the unit.

An assessment can also provide information for a plan amendment, although other documentation may serve this purpose as well, such as a monitoring evaluation report or other source of new information indicating changed conditions in the plan area.

To complete the assessment, the responsible official shall rapidly evaluate readily available information that is relevant. The term "relevant" means the information must pertain to the topics under consideration at spatial and temporal scales appropriate to the plan area and to a land management plan. Relevance in the assessment phase is information that is relevant to the conditions and trends of the 15 topics in 36 CFR 219(b) or to the sustainability of social, economic, or ecological systems. If no relevant available information exists for the topic areas described in 36 CFR 219.6(b), or if there are gaps in existing, available information, there is no requirement to begin new studies to acquire or develop such information.

The term "available" means that the information is currently available in a form useful for the planning process without further data collection, modification, or validation. The assessment report should identify information gaps, which the responsible official could fill in through inventories, plan monitoring, or research.

In conducting the assessment, the responsible official should review the Paperwork Reduction Act (PRA)(5 CFR 1320) and ensure that methods for identifying information to meet the requirements of 36 CFR 219.6 and this handbook are consistent with the PRA (see, in particular, 5 CFR 1320.3(h)). Unless and until the appropriate PRA approval process for the collection of

information has been completed, responsible officials must not use any method of obtaining information for the assessment that is prohibited (absent approval) by the PRA.

The responsible official should engage the public and governmental entities early to encourage participation in the assessment process. The responsible official should manage the process so that the assessment report is promptly available to the public.

Responsible officials use the results of the assessment and monitoring to help identify the need for change when revising or amending plans. The responsible official has discretion to set the scale and scope of the assessment based on the scope of the action being contemplated and the requirements of 36 CFR 219.6.

This Handbook sets forth the degree of compliance by the use of verbs and by the imperative mood following FSM 1110.8. However, since it is impossible to foresee all circumstances, if the direction in this Handbook is not relevant to the local situation, the responsible official should explain why the direction is not relevant and then adapt the assessment appropriately to meet the requirements of 36 CFR 219.6.

The responsible official shall focus on rapidly identifying and evaluating existing, available, relevant information (hereafter referred to as "available information").

11.1 - Assessment Report for Plan Development and Plan Revision

The assessment report is the principal document that supports the development of a new plan or plan revision (36 CFR 219.6).

> **The responsible official has the discretion to determine the scope, scale, and timing of an assessment described in § 219.5(a)(1), subject to the requirements of this section.**
>
> **(a) Process for plan development or revision assessments. An assessment must be completed for the development of a new plan or for a plan revision. The responsible official shall:**
>
> **(1) Identify and consider relevant existing information in governmental or non-governmental assessments, plans, monitoring reports, studies, and other sources of relevant information. Such sources of information may include State forest assessments and strategies, the Resources Planning Act assessment, ecoregional assessments, non-governmental reports, State comprehensive outdoor recreation plans, community wildfire protection plans, public transportation plans, State wildlife data and action plans, and relevant Agency or interagency reports, resource plans or**

assessments. Relevant private information, including relevant land management plans and local knowledge, will be considered if publicly available or voluntarily provided.

(2) Coordinate with or provide opportunities for the regional forester, Agency staff from State and Private Forestry and Research and Development, federally recognized Indian Tribes and Alaska Native Corporations, other governmental and non-governmental parties, and the public to provide existing information for the assessment.

(3) Document the assessment in a report available to the public. The report should document information needs relevant to the topics of paragraph (b) of this section. Document in the report how the best available scientific information was used to inform the assessment (§ 219.3). Include the report in the planning record (§ 219.14). (36 CFR 219.6)

Assessment reports must be written in plain language and use appropriate graphics so that the responsible official and the public readily understand it. The assessment report is a summary of the evaluation of the most important information evaluated; it is not a decision document. The assessment report may include reference maps, tables, charts, or references to other information relevant to the plan area.

11.11 - Content of the Assessment for Plan Development and Plan Revision

The planning requirement at 36 CFR 219.6(b) describes the content of the assessment for plan development and plan revision.

(b) Content of the assessment for plan development or revision. In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following:

(1) Terrestrial ecosystems, aquatic ecosystems, and watersheds;

(2) Air, soil, and water resources and quality;

(3) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change;

(4) Baseline assessment of carbon stocks;

(5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area;

(6) Social, cultural, and economic conditions;

(7) Benefits people obtain from the NFS planning area (ecosystem services);

(8) Multiple uses and their contributions to local, regional, and national economies;

(9) Recreation settings, opportunities and access, and scenic character;

(10) Renewable and nonrenewable energy and mineral resources;

(11) Infrastructure, such as recreational facilities and transportation and utility corridors;

(12) Areas of tribal importance;

(13) Cultural and historical resources and uses;

(14) Land status and ownership, use, and access patterns; and

(15) Existing designated areas located in the plan area including wilderness and wild and scenic rivers and potential need and opportunity for additional designated areas. (36 CFR 219.6(b))

If no relevant information exists for these topic areas, or if there are gaps in available information, there is no requirement to begin new studies to acquire or develop such information. The assessment report should identify information gaps, which the responsible official could fill in through inventories, plan monitoring, or research.

Information sources such as the examples listed in 36 CFR 219.6(a)(1) and those listed in sections 13 and 14 should be reviewed for content that is useful for making decisions about plan components and other plan content.

The assessment report should include an evaluation of the relevant available information, including important conditions and trends and the sustainability of the social, economic, and ecological systems relevant for making decisions about plan components and other plan content. However, for some topics of the assessment the evaluation may be minimal. For example, designated areas, land status, or utility corridors may only require a map.

The assessment report should provide a clear base of information related to management concerns and potential plan components. The report should make important information about the plan area accessible to the public and the responsible official to inform the planning phase.

The responsible official should include the following in plan development or plan revision assessment reports:

1. Title page (title, names and addresses for further information, date of publication, abstract);

2. U.S. Department of Agriculture Nondiscrimination Statement (inside front cover);

3. A brief introduction with discussion of:

a. Purpose of the assessment report that describes how the assessment report is structured, including any appendices and appendices purpose;

b. Location of the plan area with county and State location and associated acres; map of plan area; and

c. Background of the plan area including history and distinctive features of the plan area with brief summary of:

(1) Important ecological influences on the plan area; for example, climate, dominant ecosystems, terrain, system drivers, or vegetation.

(2) Important social and economic influences on the plan area; for example: demographics, population trends, or relevance of NFS lands.

(3) Important contributions of the plan area to ecological, social, and economic sustainability and multiple uses. This description may contain an overview of key ecosystem services from the plan area and how communities benefit.

4. A brief discussion of resources managed within the plan area and how resources, budgets, and risk factors are influencing accomplishment of existing plan objectives;

5. Summary of how the best available scientific information informs the topics of the assessment with a brief description and citation to relevant, credible literature, and other pertinent available information (FSH 1909.12, ch. 40, sec. 41);

6. Summary of the available information evaluated in the assessment for the 15 topics of 36 CFR 219.6(b). The assessment should state the conclusions of the evaluation in a way that is helpful in identifying the need to change plan components. In general, for each of the 15 topics the summary may:

a. Describe or identify important information evaluated in this phase;

b. Describe the nature, extent, and role of existing conditions and reasonably foreseeable future trends within the plan area and in the broader landscape. Trends may imply a range of changes that are reasonably foreseeable in the future. Statistical analysis is not implied or necessary to identify and describe trends in the assessment phase. Trends may be described in broad terms such as increasing, decreasing, or remaining stable;

c. Describe the contribution that the plan area makes to ecological, social, or economic sustainability related to the topic; and

d. Identify information gaps as described in 36 CFR 219.6(a)(3).

11.12 - Public Participation for the Assessment

The responsible official shall provide opportunities to the public and governmental entities for participating in the assessment process (36 CFR 219.4(a)). It must be clear to the public when these opportunities will occur and how information or feedback is to be provided.

For additional information, see 36 CFR 219.4 and FSH 1909.12, chapter 40, section 43.

11.13 - Tribal Consultation for the Assessment

For information on tribal consultation see 36 CFR 219.4 and FSH 1909.12, chapter 40, section 44.

12 - ASSESSING ECOLOGICAL SUSTAINABILITY AND DIVERSITY OF PLANT AND ANIMAL COMMUNITIES

For information on assessments, see 36 CFR 219.5(a) and section 11 of this Handbook.

Sustainability is defined in FSH 1909.12, zero code, section 05. During the assessment process, the responsible official shall:

> **(1) Identify and consider relevant existing information in governmental or non-governmental assessments, plans, monitoring reports, studies and other sources of relevant information. . . .**
>
> (36 CFR 219.6(a))

The requirements for the content of the assessment are described in 36 CFR 219.6(b).

> **(b) Content of the assessment for plan development or revision. In the assessment for plan development or revision, the responsible**

official shall identify and evaluate existing information relevant to the plan area for the following:

(1) Terrestrial ecosystems, aquatic ecosystems, and watersheds;

(2) Air, soil, and water resources and quality;

(3) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change;

(4) Baseline assessment of carbon stocks;

(5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area. . . .

12.1 - Assessing Terrestrial Ecosystems, Aquatic Ecosystems, and Watersheds

It is important to recognize that the ecological integrity of the terrestrial, aquatic, and riparian ecosystems are inter-related with watershed condition, water quality, and water resources. Section 12.23 gives additional direction for assessing watershed condition and function.

The process for evaluating terrestrial ecosystems, aquatic ecosystems, and watersheds is iterative throughout the assessment, and is influenced by information provided by public and governmental participation.

12.11 - Terrestrial Ecosystems, Aquatic Ecosystems, and Watersheds Overview

Using available information, the responsible official should identify and evaluate the ecological integrity of terrestrial and aquatic ecosystems within the plan area (36 CFR 219.6(b) and document the evaluation in the planning record. Section 12.2 discusses watersheds.

The responsible official's approach to evaluating ecosystem integrity should involve evaluating available relevant information from a range of sources about terrestrial, aquatic, and riparian ecosystems within or relevant to the plan area. The approach should include:

1. Identifying the relevant terrestrial, aquatic, and riparian ecosystems to be evaluated (sec. 12.12), and the appropriate scale for conducting their assessment (sec. 12.13);

2. Rapidly evaluating the available information about those ecosystems, including information about the structure, function, composition, and connectivity of the evaluated ecosystems by:

   a. Selecting key ecosystem characteristics for each of the ecosystems being evaluated relevant to developing plan components for the ecological integrity of terrestrial, aquatic, and riparian ecosystems (sec. 12.14);

   b. Describing the Natural Range of Variation (NRV) for these key ecosystem characteristics, when such information is readily available (sec. 12.15a);

   c. When there is no information on NRV, describing an alternative context for evaluating ecological integrity for the key ecosystem characteristics based on a scientific and ecological understanding of the conditions that would sustain these key ecosystem characteristics (sec. 12.15b); and

   d. Describing the current condition and trends of the key ecosystem characteristics (sec. 12.15c).

3. Identifying possible system drivers and stressors (36 CFR 219.6(b)(3)) and evaluating their influences on key ecosystem characteristics (sec. 12.3);

4. Using the key ecosystem characteristics, describing the projected future status of ecosystem integrity, assuming management is consistent with the current plan (sec. 12.15d). This evaluation may:

   a. Describe the status of the key ecosystem characteristics by comparing the NRV of key ecosystem characteristics to current conditions; or

b. Describe the status of the key ecosystem characteristics by evaluating the current conditions based on a scientific and ecological understanding of the conditions that would sustain these key ecosystem characteristics when NRV is not available.

5. Identifying which of the following are true for each key ecosystem characteristic being analyzed:

a. The key ecosystem characteristic is functioning in a way that contributes to ecosystem integrity and sustainability;

b. The key ecosystem characteristic is not currently contributing to ecosystem integrity, but with changes to current plan direction, could do so in the future; or

c. The key ecosystem characteristic is not expected to contribute to ecosystem integrity in the future (sec. 12.15d).

12.12 - Identifying the Ecosystems to be Addressed in the Assessment

When identifying ecosystems for the assessment that are useful for making decisions about plan components, the responsible official should use existing Forest Service tools. Existing tools include the Watershed Condition Classification (USDA Forest Service 2011a), Terrestrial Ecological Unit Inventory Technical Guide (Winthers et al. 2005), Aquatic Ecological Unit Inventory, National Hierarchical Framework of Ecological Units (NHFEU) (Cleland et al. 1997), and other existing classification and assessment tools to guide this work (FSM 2060.3).

The responsible official may, at the responsible official's discretion, use other analytical tools to inform the selection of ecosystems including, for example, Coastal Zone Marine Spatial Planning, Landscape Conservation Cooperatives, or other tools created by other Federal and State agencies, communities, federally recognized Tribes, Alaska Native Corporations, and other entities. Finer spatial scales of the National Hierarchical Framework of Ecological Units or other appropriate national or regional assessments (for example, National Fish Habitat Action Plan (NFHAP) and Watershed Condition Classification Technical Guide (WCC) (USDA Forest Service 2011a)) may be appropriate depending on the specific issues or concerns being evaluated at various stages of the planning process.

Based on the above existing tools, the responsible official should consider:

1. The terrestrial, aquatic, groundwater, riparian, and atmospheric aspects of ecosystems that exist and operate at the broader landscape scale (sec. 12.13);

2. The variety of habitat types occurring within the plan area;

3. The presence of rare aquatic and terrestrial plant and animal communities; and

4. The amount, distribution, and connectivity of ecosystems, habitat types (FSH 1909.12, zero code, sec. 05), and plant and animal communities.

12.13 - Spatial Scales for Assessing Ecosystem Integrity

Ecosystem integrity may be considered at a range of spatial and temporal scales. Responsible officials should use existing tools (sec. 12.12) that identify a hierarchy of ecosystems and should identify ecosystems within those hierarchies that are relevant to developing plan components for the plan area. To select the appropriate scale at which ecological integrity should be assessed, the responsible official may consider:

1. The spatial and temporal scales of disturbance processes that impact the plan area;

2. The geographic ranges and habitats of at-risk species present within the plan area;

3. Scales at which the evaluation of key ecosystem characteristics identified in section 12.14 are relevant to developing plan components; and

4. Scales at which the distinctive roles and contributions of the plan area are relevant within the context of the broader landscape.

An area of analysis should be large enough to capture:

1. Broad-scale trends; and

2. The NRV in disturbance intensity, frequency, and areal extent.

The goal of evaluating information about ecosystem integrity at scales broader than the plan area is to understand the context of management for resources within the plan area. An understanding of the environmental context extending beyond the plan area should be useful in determining opportunities or limitations for NFS lands to contribute to the sustainability of the broader ecological systems, as well as the impacts of the broader landscape on the sustainability of resources within the plan area. In some instances, a unique role of NFS lands may become apparent at this scale.

12.14 - Identifying and Assessing Key Ecosystem Characteristics of Terrestrial, Aquatic, and Riparian Ecosystems

Key ecosystem characteristics include the dominant ecological characteristics that describe the composition, structure, function, and connectivity of terrestrial, aquatic, and riparian ecosystems that are relevant to addressing important concerns about the land management plan. Key ecosystem characteristics are identified, selected, and evaluated during the assessment phase, brought forward to inform the development of plan components, and may be useful for

monitoring progress towards maintaining or restoring ecological integrity. Key ecosystem characteristics may be added or modified during the planning phase.

Do not catalogue all possible characteristics of ecosystems, but develop a list of those characteristics that are important to establishing (or evaluating existing) plan components that would support ecological conditions necessary to maintain or restore the ecological integrity of terrestrial, aquatic, and riparian ecosystems in the plan area (36 CFR 219.8).

The responsible official should select key ecosystem characteristics for evaluation that appropriately match the scale and area of analysis. The responsible official should document the key ecosystem characteristics selected for evaluation and the rationale for their selection.

The process for identifying and selecting key ecosystem characteristics will be iterative throughout the assessment, and will be influenced by information provided by public and governmental participation.

Exhibit 01 shows a broad range of examples of potential key ecosystem characteristics that may be appropriate to a given evaluation, although the examples do not indicate the appropriate scale for consideration of each of the characteristics. See the definition of “ecosystem” in the Zero Code for additional detail on the definitions of each ecosystem characteristic.

12.14 Exhibit 01
Examples of Potential Key Ecosystem Characteristics for Composition, Structure, Function, and Connectivity

Composition	Structure	Functions (Ecological Processes)[1]	Connectivity[2]
● Distribution and extent of major vegetation. ● Presence and abundance of rare and unique habitat types, such as fens, bogs, and talus slopes/scree. ● Species richness, which is the identity and number of individual species native to – or characteristic of – the plan or evaluation area. ● Species diversity, including both richness and evenness. ● Species distribution. ● Presence and distribution of non-desirable invasive species.	● Vertical and horizontal distribution and size of trees and understory vegetation in selected vegetation types. ● Density, size, decomposition class, and distribution of dead wood. ● Fragmentation characteristics such as patch size, edge length, percent forest interior, amount and distribution of vegetation seral/structural stages, proportion of forest interior, and connectivity (such as, the five seral stages defined in the Fire Regime Condition Class process). ● Landscape patch adjacency and context, connectivity, and compatibility of nearby land uses. ● Stream habitat complexity.	● Types, frequencies, severities, patch sizes, extent, and spatial pattern of disturbances such as fires, landslides, floods, and insect or disease outbreaks. ● Ability of native species to move throughout the plan area, and cross into adjacent areas, to use habitat that fulfills their life cycle needs (for example, breeding, foraging, sheltering). ● Successional pathways, stand development of major vegetation types, longevity, and turnover of habitats.	● Fragmentation characteristics such as patch size, edge length, percent forest interior, amount and distribution of vegetation seral/structural stages, proportion of forest interior, and connectivity (such as, the five seral stages defined in the Fire Regime Condition Class process). ● Landscape patch adjacency and context, connectivity, and compatibility of nearby land uses. ● Distribution of stream diversions and impoundments. ● Extent of stream dewatering and channel alteration.

12.14 - Exhibit 01—Continued

Composition	Structure	Functions (Ecological Processes)[1]	Connectivity[2]
● Presence and distribution of species that have a significant effect on species diversity and ecosystem function (for example, keystone species and ecological engineers). ● Landforms, including those adjacent to stream channels, such as floodplains and inner gorges. ● Types and locations of wetlands, lakes, and ponds. ● Distribution and extent of major soil types and landforms.	● Riparian, wetland, and groundwater-dependent habitat structure. ● Locations of tributaries and tributary junctions. ● Lake morphometry including depth, width, and shoreline development. ● Soil texture, bulk density, and microtopography. ● Tropospheric ozone impacts to vegetation. ● Distribution of stream diversions and impoundments. ● Extent of stream dewatering and channel alteration.	● Fire regime condition class, as a measure of departure from the reference conditions in vegetation types and fire frequency and severity. ● Stream and lake temperature and nutrient regimes. ● Hydrologic flow regimes including time, duration, magnitude. ● Sediment transport including timing and duration. ● Biogeochemical cycling, including nitrate and phosphate concentrations, methylmercury, and acid neutralizing capacity. ● Rate of invasion by invasive species. ● Soil productivity.	● Watershed morphometry and hydrology attributes, such as elevation, aspect, drainage patterns, patterns of groundwater recharge and discharge, distribution of perennial, intermittent, and ephemeral channels. ● Ability of native species to move throughout the plan area, and cross into adjacent areas, to use habitat that fulfills their life cycle needs (for example, breeding, foraging, sheltering). ● Hydrologic flow regimes including time, duration, magnitude. ● Sediment transport including timing and duration. ● Rate of invasion by invasive species.

Examples of Potential Key Ecosystem Characteristics for Composition, Structure, Function, and Connectivity

Composition	Structure	Functions (Ecological Processes)[1]	Connectivity[2]
	● Watershed morphometry and hydrology attributes, such as elevation, aspect, drainage patterns, patterns of groundwater recharge and discharge, distribution of perennial, intermittent, and ephemeral channels. ● Quality, quantity, timing and distribution of water resources across watersheds and aquifers. ● Air quality as measured in concentration and deposition of pollutants over an area.		

12.14 - Exhibit 01—Continued
Examples of Potential Key Ecosystem Characteristics for Composition, Structure, Function, and Connectivity

[1] Including those not observed directly but inferred from appropriate indicators.
[2] Examples of connectivity are often redundant with examples of composition, structure, or function.

One or more of the following criteria should guide the selection of key ecosystem characteristics:

1. The characteristic is important to defining ecosystem integrity and meaningful in developing plan components. For example, the characteristic:

   a. Is important to the functions and ecological processes that create or maintain ecosystems and their associated services;

   b. Is important to defining representativeness (FSH 1909.12, zero code, sec. 05);

   c. Describes stressors and possible effects of stressors (sec. 12.3);

   d. Is important to defining redundancy (FSH 1909.12, zero code, sec. 05); or

   e. Is important to defining existing ecological integrity using biological or ecological indices.

2. The characteristic is measurable or can be mapped, and may be analyzed at the scale appropriate to the plan area or can be ranked and assessed by experts;

3. The characteristic should respond to direct or indirect manipulation or modification that is within the control of the Forest Service, or indicate something about the limits to Forest Service authority or the inherent capability of the land;

4. The characteristic describes ecological conditions needed for threatened, endangered, proposed, candidate, or species of conservation concern;

5. The relevant information is available; or

6. The characteristic is useful for serving multiple purposes of the assessment.

12.15 - Assessing Ecosystem Integrity

The assessment of ecosystem integrity to the extent there is available information involves the following steps:

1. Describing the ecological conditions of the key ecosystem characteristics that would sustain ecosystem integrity, using NRV information or an alternative approach when NRV information is lacking (sec. 12.15a and sec. 12.15b);

2. Describing the current ecological conditions relevant to the key ecosystem characteristics of these ecosystems (sec. 12.15c);

3. Comparing the present condition of the selected key ecosystem characteristics to those that would sustain ecosystem integrity to determine the status of each key ecosystem characteristic (12.15d); and

4. Describing any future trends or vulnerabilities relevant to the key ecosystem characteristics (sec. 12.15d).

12.15a - Describing the Natural Range of Variation (NRV)

The NRV is an analysis tool for assessing the ecological integrity of selected key ecosystem characteristics (FSH 1909.12, zero code, sec. 05 defines NRV). The NRV represents the distribution of conditions under which ecosystems developed. In this Handbook, the NRV approach is a tool for assessing ecological integrity and does not constitute a management target or desired condition. The NRV approach gives context for evaluating the integrity of current conditions, and identifying important compositional, structural, and functional elements that may warrant restoration. The responsible official may, however, use alternatives to the NRV approach for assessing ecological integrity as described in section 12.15b.

The responsible official should describe the NRV through review and synthesis of available information relevant to the plan area and selected key ecosystem characteristics of terrestrial, aquatic, and riparian ecosystems. Information may include scientific journal articles, historical records and photographs, early surveys, pollen and sediment records, tree ring analyses, or descriptions of reference areas. The responsible official may adapt the NRV analysis from another NFS unit and make adjustments to fit the local conditions. Refer to Wiens et al. 2012 for further discussion and examples.

When used, the NRV should be described as a range of conditions over the time period selected for analysis. Some conditions may have occurred frequently, and others may have occurred rarely. When describing the NRV, the responsible official may consider the following:

1. Determine the reference period. A reference period is the time period used to estimate the NRV under the relevant disturbance regimes within the plan assessment area. The time period may vary for different characteristics:

a. The temporal scale considered should be sufficiently long to include the full range of variation produced by dominant natural disturbance regimes. This often encompasses several centuries for such disturbances as fire and flooding;

b. The reference period should generally be a period to include the time before widespread European or European-American settlement; and

c. Human influences during the reference period should be described.

2. Characterize the NRV of disturbance regimes. Describe how key ecosystem characteristics are influenced by dominant disturbance regimes (defined in FSH 1909.12, zero code, sec. 05) that operate at spatial scales consistent with the plan assessment area and their variability. Descriptions of disturbance processes may include:

a. Type of disturbance;

b. Frequency and range in time intervals between disturbances;

c. Severity including the range of the area or patch sizes impacted and intensity of the disturbance;

d. Landscape pattern (including patch size distribution, connectivity, and association with the physical environment), and how patterns change temporally due to variations in disturbance frequency and severity; and

e. How disturbance regimes (such as insects and diseases, weather, flooding, and fires) influence the structure, composition, and successional states of terrestrial vegetation and aquatic and riparian systems.

3. Estimate the spatial distribution of conditions of selected key ecosystem characteristics, including one or more of the following approaches:

a. Apply an understanding of physical environmental influences and disturbance regimes on ecosystem development; or

b. Use the distribution of existing biological communities to make inferences about conditions that are likely to have existed in the past.

12.15b - Alternatives to the Natural Range of Variation Approach

In some situations, there is too little information for some of the selected key ecosystem characteristics to understand the NRV under historical disturbance regimes. In these cases, the responsible official should base the context for evaluating ecosystem integrity on a general scientific and ecological understanding of the conditions that would sustain these key ecosystem characteristics. This context for evaluation may include the following factors:

1. Representativeness (defined in FSH 1909.12, zero code, sec. 05);

2. Effects of stressors and how they are likely to have affected ecosystem integrity;

3. Redundancy (defined in FSH 1909.12, zero code, sec. 05);

4. Habitat associations of particular species or species groups with different home ranges, migration patterns, and/or habitat affinities; or

5. Existing biotic integrity, through the use of biological or ecological indices.

Several of these factors may be used in combination with each other.

12.15c - Current Condition and Trend of Key Ecosystem Characteristics and Integrity

When evaluating current conditions and trends of key ecosystem characteristics, the responsible official should consider:

1. The key ecosystem characteristics and associated physical, chemical, and biological processes that are functioning and would likely continue to function in a way that contributes to ecosystem integrity over time;

2. The key ecosystem characteristics and associated processes that have been altered, eliminated, or are declining or increasing in extent and/or quality, or may have declined or increased in the past, including changes in the spatial patterning;

3. The spatial distribution and types of existing and reasonably foreseeable barriers to ecological connectivity for terrestrial and aquatic organisms;

4. The key ecosystem characteristics or processes that are rare in the plan area or otherwise inherently vulnerable to future environmental change;

5. The key ecosystem characteristics or processes that may need to be maintained or restored through future projects or activities;

6. The current role or contributions of the plan area to the key ecosystem characteristics or processes relevant to the broader landscape;

7. The influences on key ecosystem characteristics or processes because of existing conditions, threats, or stressors from beyond the plan area; and

8. The future trend of those key ecosystem characteristics or processes under existing plan guidance.

To describe the current condition of riparian and aquatic ecosystems, the responsible official may consider describing:

1. The ecological connectivity, using the spatial distribution and barrier effects of obstructions to aquatic organisms and other biotic (transport or dispersal processes) and abiotic (sediment, nutrients, water, and material) passage; and

2. The stressors such as changes in flow regime and dewatering, channelization, invasive species, changes in sediment delivery to channels, herbivory, wildfire, and fuel buildup.

12.15d - Status of Ecosystem Integrity

The responsible official should document the status of ecosystem integrity in the assessment. Where information is available, the responsible official should consider the influence of climate change, and other large-scale threats and stressors, on the key ecosystem characteristics to evaluate their vulnerability to likely future conditions (sec. 12.3).

The responsible official should evaluate and document the status of ecosystem integrity for key ecosystem characteristics that are important to inform the development of plan components and other plan content. The evaluation should:

1. Compare the current conditions of the key ecosystem characteristics (sec. 12.15c) with the NRV information (sec. 12.15a), or evaluate if the current condition of the characteristic would sustain ecosystem integrity using an alternative approach when NRV information is lacking (sec. 12.15b). For riparian areas, overall riparian condition typically requires comparison to NRV or some historic condition. Stream, wetland, and water body classifications may be useful in identifying “like systems” for comparison with those of interest;

2. Describe the projected future status of the key ecosystem characteristic assuming management consistent with current plan direction;

3. Compare the projected future status of the key ecosystem characteristic to current conditions including effects of climate change;

4. Describe the proportional occurrence of the key ecosystem characteristic both beyond and within the plan area by:

   a. Comparing the occurrence of the characteristic in the plan area to the occurrence at the broader ecological scales to place the contribution of the plan area in a larger landscape context;

b. Identifying patterns in the occurrence of each key ecosystem characteristic in the plan area and identify deviations from historical conditions; and

c. Identifying key ecosystem characteristics that are over- or under-represented in the plan area, and those that are rare or under-represented in the larger area of analysis.

5. Identify whether the comparisons between conditions that sustain ecosystem integrity, current conditions, and projected future conditions indicate if one of the following are true for the key ecosystem characteristics being analyzed:

a. The key ecosystem characteristic is functioning in a way that contributes to ecosystem integrity and sustainability over time and is expected to continue to do so under current plan direction;

b. The key ecosystem characteristic is not currently contributing to ecosystem integrity, but with changes to current plan direction, could do so in the future; or

c. The key ecosystem characteristic is not expected to contribute to ecosystem integrity in the future due to threats or stressors that are not within the authority of the Forest Service, or are inconsistent with the inherent capability of the land.

12.2 - Assessing Air, Soil, Riparian Areas, and Water Resources

The responsible official shall evaluate available information about air, soil, and water resources that is important to inform the development of plan components and other plan content. For additional information see 36 CFR 219.6(b) and section 11 of this Handbook.

12.21 - Assessing Air

The responsible official shall identify and evaluate available information relevant to the plan area for terrestrial, aquatic, and riparian ecosystems, and watersheds as well as air, soil, and water resources and quality. (36 CFR 219.6(b))

The terms discussed in this section, “airshed” and “critical loads,” are defined in section 10.5. National scale critical load information is available from the Watershed Condition Classification Technical Guide (USDA Forest Service 2011a). In addition, regional staff may have developed more geographically refined critical load information appropriate for the plan area.

Using available information, including information available from governmental agencies and regional planning organizations that is important to inform the development of plan components and other plan content, the responsible official should at the airshed scale:

1. Identify the airsheds relevant to the plan area;

2. Identify the location and extent of known sensitive air quality areas, such as Class I areas, non-attainment areas, and air quality maintenance areas;

3. Identify emission inventories, conditions, and trends relevant to the plan area;

4. Identify the Federal, State, and Tribal governmental agency implementation plans for regional haze, non-attainment, or maintenance areas (including assessing whether Forest Service emission estimates have been included in the appropriate agency implementation plans); and

5. Identify critical loads when critical loads are relevant concerns in the planning process.

Based on the above information the assessment should characterize and evaluate the status of airsheds and air quality relevant to the plan area assuming management consistent with current plan direction.

12.22 - Assessing Soil

Using available information, that is important to inform the development of plan components and other plan content, at the plan area scale, the responsible official should:

1. Identify and evaluate available information on soils and sites, including geology and geomorphology, and other components of the terrestrial physical environment important to ecological integrity and soil quality (defined in FSM 2550.5);

2. Identify current inventories of soil conditions and improvement needs; and

3. Identify important attributes or characteristics of soils and sites that make them susceptible to loss of integrity resulting from specific uses, disturbances, or environmental change.

Based on the above information, the assessment should characterize and evaluate the status of soil resources and soil quality assuming management consistent with current plan direction.

12.23 - Assessing Water Resources

Using available information, the assessment should characterize and evaluate the status of watersheds and water resources (surface and ground water) and their role in sustaining the structure and function of terrestrial, riparian, and aquatic ecosystems within the plan area and the larger area of analysis assuming management consistent with current plan direction. In addition, the responsible official should consider the potential role of the larger area of analysis on the status of watersheds and water resources within the plan area. Watersheds relevant to the plan

area should include those non-NFS lands that contribute surface or subsurface water flows to the plan area, and those non-NFS lands that receive surface or subsurface water flows from the plan area.

When there is available information that is important to inform the development of plan components and other plan content, the responsible official should consider the following at the appropriate watershed scale:

1. The condition of watersheds relevant to the plan area, paying particular attention to the presence of impaired or contaminated waters within or adjacent to the plan area and the larger area of analysis. For NFS lands, the responsible official should consider the information generated through the Watershed Condition Classification Technical Guide (WCC) (USDA Forest Service 2011a), step A of the Watershed Condition Framework (WCF) (USDA Forest Service 2011b), and the designated WCF Priority Watersheds;

2. The quantity, quality, timing, and distribution of water across the plan area and the area of analysis, including for groundwater resources and groundwater-dependent ecosystems;

3. The historic context (such as NRV) for water resources under which the hydrologic systems developed;

4. The flow regimes needed to sustain the biotic and abiotic integrity of aquatic ecosystems;

5. The nature, extent, and role of existing and reasonably foreseeable future consumptive (most human uses) and non-consumptive uses (such as, for recreation, species habitat conservation, restoration, and so on) and water withdrawals, diversions, storage, and the associated infrastructure, paying particular attention to aquatic listed species and population centers in proximity to the area of analysis.

6. Characterize the nature and distribution of Federal and non-federal water rights across the plan area;

7. Any essential fish habitat designated by NOAA Fisheries.

8. The reasonably anticipated future patterns of perturbation (such as, influence of changing climate, flood, drought, altered precipitation, and evapotranspiration patterns) and reasonably foreseeable future water withdrawals and diversions, water storage facilities (surface and subsurface), municipal watersheds, sole source aquifers, and source water protection areas within the plan area and the area of analysis;

9. The effects of land use, projects, and activities, and other stressors on hydrologic and geomorphic processes and water resources; and

10. The ecological, social, and economic roles (both process and services) that water resources play in the context of the broader landscape.

12.24 - Assessing Riparian Areas

When there is available information, the responsible official should identify and evaluate riparian areas in the plan area for the assessment. This identification must be relevant to the development of plan components under 36 CFR 219.8(a)(3). The identification of riparian areas may be by one or more of the following methods:

1. Identify information on the location and extent of surface waterbodies, vegetation, geology, soils, geomorphology, topography, and other relevant information associated with riparian areas;

2. Identify vegetation indicators of riparian areas that include regionally distinctive riparian vegetation or the potential to support regionally distinctive vegetation;

3. Identify fluvial geomorphic indicator criteria for riparian areas that may include break in slope, evidence of fluvial deposition, high water marks, lack of upland soil formation, and lichen growth on rocks;

4. Identify riparian areas determined by 100-year recurrence interval flood stage where available and relevant to delineation of riparian areas in the plan area for the development of plan components; and

5. Identify existing site-specific riparian area delineations when available.

Also identify existing direction related to riparian area management, such as existing buffers or management areas. Based on the above information, the assessment should characterize and evaluate the status of riparian areas assuming management consistent with current plan direction.

12.3 - Assessing System Drivers and Stressors

The planning regulation at 36 CFR 219.6(b) requires that the responsible official shall identify and evaluate available information relevant to the plan area for:

> **(3) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change. . .**

12.31 - Consideration of System Drivers

When there is available information, the responsible official should identify and assess system drivers of key ecosystem characteristics of terrestrial, aquatic, and riparian ecosystems and watersheds and consider:

1. Natural disturbance regimes. The responsible official may:

   a. Describe the natural disturbance regimes during the reference period (such as NRV) (sec. 12.15);

   b. Compare the reference period regimes to the type and frequency of current natural disturbances; and

   c. Determine whether disturbance regimes have been disrupted to a degree that impairs ecological integrity.

2. Predominant climatic regimes. The responsible official may evaluate predominant climatic regimes by evaluating climate characteristics such as precipitation, temperature, growing season, or drought;

3. Broad-scale disturbance regimes. The responsible official may:

   a. Evaluate broad-scale disturbance regimes such as wildfire, wind, flooding, insects, and disease where applicable; and

   b. Identify uncharacteristic conditions, such as where fire exclusion results in reduced opportunity for re-establishing earlier seral stages or increased potential for a disproportionate amount of earlier seral stages.

4. Natural vegetation succession. The responsible official may:

   a. Identify human-caused changes in successional pathways that may maintain vegetation in an uncharacteristic age or size-class condition; and

   b. Consider scarcity and abundance of successional states relative to the reference period.

12.32 - Consideration of Stressors

FSH 1909.12, zero code, section 05 defines “stressors.” Examples of stressors include invasive species impacts, loss of spatial connectivity, disruption of natural disturbance regimes, and influence of climate change.

The responsible official should identify and characterize stressors that directly or indirectly degrade or impair key ecosystem characteristics and ecological integrity. When identifying and characterizing stressors the responsible official may consider the following:

1. Geographic extent;

2. Duration and return interval, if applicable;

3. Severity and trends in severity;

4. Environmental consequences, including whether the changes in conditions of key ecosystem characteristics related to stressors are approaching breaking points of ecosystems at which the pressures lead to abrupt changes in the ecosystem;

5. Reversibility (manageability); and

6. Cumulative and indirect effects of multiple stressors.

When there is available information, the responsible official may assess stressors by considering the following:

1. Stressors associated with irreversible conditions, beyond which ecosystems reorganize and transition to an alternate state;

2. Stressors not controllable through management of the plan area that may affect conditions within the plan area, such as influences of changing climate, alterations of precipitation patterns, changing land-use patterns adjacent to NFS units, water storage facilities, or hydropower facilities upstream or downstream from NFS units;

3. Influence of changing climate and other large-scale stressors on the key ecosystem characteristics, and their resulting vulnerability to likely future conditions;

4. The ability of ecosystems within the plan area to adapt to changes imposed by stressors while retaining their ecological integrity; and

5. Stressors and threats to riparian conditions, such as changes in flow regime, hydrograph timing, water withdrawals and dewatering, channelization, invasive species, changes in sediment delivery to channel, herbivory, water temperature or chemistry (such as heavy metals), wildfire, and fuels.

12.4 - Assessing Carbon

The responsible official shall identify and evaluate available information relevant to the plan area for baseline assessment of carbon stocks. (36 CFR 219.6(b))

A baseline assessment is an evaluation of the information available about current carbon stocks and recent changes in carbon stocks on the land and in harvested wood products.

The purpose of the baseline carbon assessment of 36 CFR 219.6(4) is to assess issues associated with climate change. Another purpose is to assess the role of carbon in maintaining the long-term site productivity in the plan area. The responsible official should use the assessment of carbon stocks to understand:

1. How the plan area plays a role in sequestering and storing carbon; and

2. How disturbances, projects, and activities influence carbon stocks in the past and may affect them in the future.

When there is available information, the baseline carbon assessment may consider the following:

1. Whether there are existing conditions and trends of forest vegetation (aboveground carbon pool) indicating the plan area is a carbon sink or carbon source;

2. The future trend of the plan area in sequestering and storing carbon under existing plan guidance: and

3. Potential opportunities to change plan components to influence these trends.

12.41 – Assessing Carbon Stocks

Using available information, the responsible official should assess carbon stocks. If information is available, the assessment many include the change over time (flux) of carbon stocks within those pools.

The identification of carbon stocks may be done on a plan area, a multi-plan area, State, or regional basis, or at a different appropriate ecological scale so long as the results can be separated by plan area.

Using available information, the responsible official may consider developing separate estimates for forest and non-forest (for example, grassland, shrubland) ecosystems.

Potential information sources include:

1. Forest Inventory and Analysis (FIA) program information and reports.

2. Soil surveys conducted by the USDA Natural Resources Conservation Service.

3. Timber cut and sold reports and stand exams.

4. Scientific literature applicable to the plan area.

5. Allometric equations or models (for example, Forest Vegetation Simulator, Northeast Decision Model).

12.42 - Assessing the Influences on Carbon Stocks

Using available information, the responsible official should identify those influences on carbon stocks that are under Forest Service management authority. Those influences may include disease, insects, growth, timber harvest, or wildfire. Consider using information evaluated according to section 12.3, regarding system drivers and stressors. Examples of potential information sources include:

1. Wildfire history maps and other information (for example, trends in burn severity).

2. Forest health monitoring information (for example, aerial detection maps of recent insect and disease mortality).

3. Timber harvest cut and sold report.

12.5 - Identifying and Assessing At-Risk Species in the Planning Process

The responsible official shall identify and evaluate available information relevant to the plan area for threatened, endangered, proposed, and candidate species and potential species of conservation concern present in the plan area. (36 CFR 219.6(b))

Based on available information, the responsible official shall identify and document the set of at-risk species and evaluate plan area ecological conditions for these species in the assessment. The set of at-risk species for planning purposes are:

1. Federally recognized threatened, endangered, proposed, and candidate species (sec. 12.51).

2. Potential species of conservation concern (sec. 12.52).

12.51 - Identifying Federally Recognized Species

As a part of the assessment and planning process, the responsible official shall coordinate with the U.S. Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries), as appropriate, to identify federally listed threatened and endangered species, species proposed for Federal listing, and candidate species that are relevant to the plan area and planning process.

12.52 - Identifying Potential Species of Conservation Concern

The regional forester is responsible for identifying the species of conservation concern (SCC) for a plan area and for determining that the identification of each SCC for a plan area is based upon the best available scientific information. (36 CFR 219.9(c))

> **(3) The regional forester shall identify the species of conservation concern for the plan area in coordination with the responsible official. (36 CFR 219.7(c))**
>
> **(b) Content of the assessment for plan development or revision. In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following:**
>
> **(5) . . . potential species of conservation concern present in the plan area. . . (36 CFR 219.6)**
>
> **(c) Species of conservation concern. 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 219.9)

In the assessment phase, the responsible official shall coordinate with the regional forester when identifying the potential SCCs relevant to the plan area and the planning process. The identification of potential SCCs for the assessment may be conducted in several ways including:

1. The regional forester and responsible official may jointly develop the list of potential SCCs for the plan area.

2. The responsible official may identify an initial list of potential SCCs for review by the regional forester, who may concur or request modifications.

3. The responsible official and regional forester may review and adjust a previously developed list of potential SCCs derived from plan area or multi-plan area studies or broad-scale assessments.

4. The regional forester may develop an initial list of potential SCCs for each plan area within the region and the responsible official may adopt and assess the species on this list or request modifications.

The list of potential SCCs must include the following:

1. Species with status ranks of G/T 1 - 2 on the NatureServe ranking system, which categorizes the viability status of species. See exhibit 01 for description of NatureServe Conservation Status Ranks. (http://www.natureserve.org/explorer/ranking.htm);

2. Species that have been petitioned for Federal listing and for which a positive "90-day finding" has been made; and

3. Species that are federally delisted within the past 5 years, and other delisted species for which regulatory agency monitoring is still considered necessary.

When developing the list of potential SCCs, consideration must also be given to:

1. Species with status ranks of G/T 3 or S 1-2 on the NatureServe ranking system, which categorizes the viability status of species.;

2. Species listed as threatened or endangered by the relevant States, federally recognized Tribes, or Alaska Native Corporations;

3. Species identified on other relevant Federal, State, federally recognized Tribes, or Alaska Native Corporations lists as being a high priority for conservation;

4. Species identified as SCCs in adjoining NFS plan areas (including plan areas across regional boundaries); and

5. Species where valid available information indicates the species are of local conservation concern due to:

a. Significant threats to populations or habitat from stressors on and off the plan area.

b. Declining trends in populations or habitat.

c. Restricted ranges (for example, narrow endemics, disjunct populations, or species at the edge of their range).

d. Low population numbers or restricted habitat within the plan area.

All potential SCCs must meet the following mandatory requirements for their identification as an SCC:

1. The species must be a native species in the plan area, with a plan area occurrence record for the species within the last 10 to15 years; and

2. The best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area. This information may be derived from the scientific literature, species studies, habitat studies, analyses of information obtained from a local area, and/or the result of expert opinion or panel consensus.

A species should not be identified as a potential SCC if:

1. The species is secure and its continued long-term persistence in the plan area is not at risk based on knowledge of its abundance, distribution, lack of threats to persistence, trends in habitat, and responses to management.

2. There is insufficient scientific information available to conclude that there is a substantial concern about the species capability to persist in the plan area over the long term.

3. Its occurrence is thought to be "accidental," well outside its current range.

The list of potential SCCs identified in the assessment may be further modified during the planning process before approval of the plan.

Document the rationale for identifying potential SCCs and the best available scientific information supporting the identification process in the planning record.

12.52 - Exhibit 01

NatureServe Conservation Status Ranks

NatureServe conservation status ranks are based on a scale of one to five, ranging from critically imperiled (G1) to demonstrably secure (G5). Status is assessed and documented at three distinct geographic scales-global (G), national (N), and state/province (S). The conservation status of a species or ecosystem is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = Global, N = National, and S = Subnational). The numbers have the following meaning:

1. Is equal to critically imperiled
2. Is equal to imperiled
3. Is equal to vulnerable
4. Is equal to apparently secure
5. Is equal to secure.

Infraspecific taxa refer to subspecies, varieties and other designations below the level of the species. Infraspecific taxon status ranks (T-ranks)The status of infraspecific taxa (subspecies or varieties) are indicated by a “T-rank” following the species' global rank. Rules for assigning T-ranks follow the same principles outlined above. For example, the global rank of a critically imperiled subspecies of an otherwise widespread and common species would be G5T1.

12.53 - Evaluating Relevant Information for At-Risk Species

Section 12.5 defines the set of at-risk species for planning purposes. The responsible official shall evaluate relevant available information on the set of at-risk species to understand the ecological conditions necessary to sustain them. Information may come from a variety of sources, including Federal and State agencies, literature, local information on occurrence and population status, sub-basin analyses, broad-scale assessment, and information available from local species experts and other organizations. The responsible official may consider the following types of information or other relevant available information:

1. Current taxonomy.

2. Distribution (including historical and current trends), especially species known from only a relatively few, discrete locations, and the status of those locations.

3. Abundance (including historical and current trends).

4. Demographics and population trends, including population effects resulting from hunting, fishing, trapping, and natural population fluctuations if available.

5. Diversity (phenotypic, genetic, and ecological).

6. Habitat requirements at appropriate spatial scales (fine-scale, home range, geographic range).

7. Habitat amount, quality, distribution, connectivity, status and trends.

8. Ecological function.

9. Important biological interactions and ecological processes, such as periodic fire, flooding, groundwater discharge, and so on.

10. Limiting factors.

11. Uncharacteristic natural events like severe wildfire or insect epidemics.

12. Effects of climate change and susceptibility to stressors caused by human disturbances or activities like air and water pollution, invasive species, trails, roads, and dams.

13. Endangered Species Act related information, for example biological opinions, critical habitat designations, and recovery plans

The assessment phase focuses on rapidly evaluating available information, not on developing new information, about ecological conditions or about individual species. In the assessment report, the responsible official should document information gaps relevant to at-risk species that may be filled in through inventories, plan monitoring program, or research.

12.54 - Optional Grouping of Species

In some cases, it may be more practical or efficient to group at-risk species for identifying and evaluating relevant information about them because they have similar ecological conditions and habitat needs. Grouping species acknowledges that the ecological needs of some species are similar enough to assess and evaluate them as a group. Grouping at-risk species in the assessment phase is strictly an analysis and evaluation tool that may be used to improve planning efficiency. If species are grouped for planning purposes:

1. Clearly describe the rationale for grouping species, including critical assumptions made and any uncertainties associated with including a species in the group.

2. Explain why assumptions are reasonable, and why the degree of uncertainty is acceptable.

As a basic approach, groupings may be based on vegetation type, successional stage of vegetation, stream size, valley bottom configuration, lake size, proximity or access to groundwater, or wetland type. Such groupings should consider the vegetation types, structural stages, hydrogeomorphic factors, and other key ecological conditions used by each species. Once groups are identified, ecological conditions for individual species in each group may be further described using attributes such as those enumerated under section 12.53.

12.55 - Status of At-Risk Species

The responsible official shall evaluate the status within the plan area of at-risk species considering the current plan direction, the available information (sec. 12.53), and the status of ecosystem integrity (sec. 12.15c). This process should address current species status and the ecological conditions needed to support the species. The assessment should identify influences on ecological conditions both on and off the plan area. This process should identify key risk factors that later may be used to inform the development of plan components.
This aspect of the evaluation process should compare the current ecological conditions to those that supported the historical persistence of the species within the plan area (such as NRV), and where possible, in the context of projected or potential future conditions. Use general ecological principles when little or no quantitative information is available regarding the ecological conditions required by the species.

The following general guidance applies to this evaluation process:

1. Relative to historical conditions (such as NRV), evaluate current and expected future ecological conditions within the plan area and the connection between ecological conditions (terrestrial and aquatic) and changes to species populations. Focus on the information and factors enumerated under section 12.53, including trends in the factors over time.

2. Evaluate human-related stressors (for example, roads, disturbance and displacement, dams, and so on).

3. Evaluate other threats and limiting factors or cumulative effects identified from existing assessments, environmental impact statements, final rules issued by NOAA Fisheries and FWS,or other sources.

4. Evaluate outcomes to species over a range of timeframes from short- to long-term.

5. Conduct the evaluation at the scale of biological populations. If the appropriate scale for the evaluation extends outside the plan area, consider effects of other land ownerships and actions outside of NFS lands.

Summarize the overall status of each at-risk species or species group with explanations of which key risk factors weighed most heavily in determining status. Describe the effect of key risk factors on species in simple terms such as the level of resulting vulnerability and the trend in that vulnerability. State the conclusions of the vulnerability status process for each species in a way that is helpful in identifying the need for change and in developing plan components that provide the ecological conditions necessary to sustain the species.

Document the resulting information and status evaluation in the planning record.

13 - ASSESSING SOCIAL AND ECONOMIC SUSTAINABILITY AND MULTIPLE USES

The planning rule contains specific requirements for the assessment of social and economic sustainability and multiple uses. See 36 CFR 219.5(a), 36 CFR 2195(b), and secs 11 and 11.11 of this Handbook.

Sections 13.1 through 13.9 describe considerations for assessing these topics. While these sections cover the topics individually, responsible officials are encouraged to integrate these topics together in the assessment and assessment report. An important source of information for the topics will be the Forest Service Natural Resource Manager (NRM).

NRM is both a database system and a national Forest Service staff. The staff is responsible for coordinating software development activities to meet critical Agency business needs. The NRM staff manages the NRM database system by the use of database tools for managing Agency data.

The NRM applications include the Forest Service Activity Tracking System (FACTS), the Infrastructure (Infra), the Natural Resource Information System (NRIS), and the Timber Information Manager (TIM) applications. The NRM staff provides tools for most of the Agency's natural resource business areas. Each section below discusses relevant elements of the NRM databases. The public may access information about NRM at: http://www.fs.fed.us/nrm/index.shtml. Forest Service employees may access support and training at: http://fsweb.nrm.fs.fed.us/.

13.1 - Assessing Social, Cultural, and Economic Conditions

The responsible official shall identify and evaluate available information relevant to the plan area for social, cultural, and economic conditions. (36 CFR 219.6(b))

When there is available information, the responsible official should:

1. Identify and evaluate the social, cultural, and economic context of the landscape to which the plan area contributes.

2. Identify and evaluate the important social, cultural, and economic influences on the plan area.

3. Identify and evaluate how the plan area influences key social, economic, and cultural conditions.

13.11 - Social, Cultural, and Economic Context

The responsible official may identify an area of influence to serve as the primary spatial scale to evaluate social, cultural, and economic conditions. The responsible official may solicit public input on the appropriate boundaries of the area of influence. This area of influence should be commensurate with the important influences of the plan area on social, cultural, and economic conditions. Social and economic information as well as some cultural information is often available at the level of counties, so the area of influence may be a set of counties. Readily available social, cultural, and economic information may be used to characterize the social, economic, and cultural conditions in the area of influence. This area of influence can be used later to describe social, cultural, and economic effects of the plan alternatives in the environmental impact statement (EIS) for a plan revision. This may include information such as:

1. Demographic data such as age, gender, and home ownership.

2. Health information and statistics, including disabilities.

3. Safety information about risks to the public related to the plan area.

4. Levels of education.

5. Important cultural traditions.

6. Communities (urban, rural, suburban) and their characteristics and values.

7. Concentration or dispersion of populations.

8. Important sectors to the economy.

9. Employment and unemployment.

10. Levels and sources of income (wages, transfer payments, and so on).

11. Household or per capita income.

12. Limited English proficiency levels.

The responsible official may choose to evaluate multiple areas of influence if there are different spatial areas for economic, social, or cultural influences of the plan area. The responsible official may also identify and evaluate other important social, economic, or cultural conditions influenced by the management of the plan area beyond the area of influence.

13.12 - Important Social, Cultural, and Economic Influences on the Plan Area

Using available information, the responsible official should briefly describe the types of social, economic, or cultural influences that are affecting the plan area. These may include:

1. Demands for specific resources, recreation opportunities, or other ecosystem services.

2. Social pressures for specific uses, environments, or management.

3. Cultural influences related to traditional uses of the plan area by various communities, Indian Tribes, and Alaska Native Corporations.

13.13 - How the Plan Area Influences Key Social, Cultural, and Economic Conditions

The key social, cultural, and economic conditions for the assessment are those conditions that are influenced by the management of the plan area and the likely components of the land management plan. Many of the social, cultural, and economic conditions identified in the social, cultural, and economic context may not be substantially influenced by the management of the plan area.

Using available information, the responsible official should identify and evaluate information about the plan area's relationship to these key social, cultural, and economic conditions such as:

1. Identifying the key social, cultural, and economic conditions influenced by plan area management and how management of the plan area influences these conditions.

2. Identifying trends affecting these key social, cultural, and economic conditions of the area(s) of influence or the broader landscape.

3. Opportunities of the plan area to contribute to social, economic, and ecological sustainability.

In identifying and evaluating key social conditions for purposes of the assessment phase, the responsible official may consider conditions such as:

1. Activities and traditions that connect people to the plan area such as recreation, education, and interpretation activities and opportunities.

2. Sense of place within the plan area.

3. Settlement patterns, land-use change, and land-use conflicts within or near the plan area.

4. Influence of the plan area in supporting community health and safety or adverse conditions to the public such as accidents, pollution or crime.

5. Other key conditions and trends described in sections 13.2 through 14.

In identifying and evaluating key cultural conditions for purposes of the assessment phase, the responsible official may consider conditions such as:

1. Activities, cultural events, and values of the community expressed about the plan area.

2. Historical legacies and cultural or artistic connections between the plan area and communities.

3. Location of and access to fishing, hunting, or plant harvesting areas within or near the plan area.

4. Other key conditions and trends described in sections 13.2 through 14, including section 13.8 about cultural and historic resources and uses in the plan area.

In identifying and evaluating key economic conditions for purposes of the assessment phase, the responsible official should consider conditions such as:

1. Direct economic contributions from Forest Service expenditures of the plan unit including direct employment and income of Forest Service employees, non-salary expenditures of the Forest Service, and payments to local governments (also indirect and induced economic impacts).

2. Direct contributions of ecosystem services and multiple uses in the plan areas as described in sections 13.2-14 and opportunities derived from recreational visitors that generate local business opportunities (also indirect and induced economic impacts).

3. Aesthetics of the plan area that may enhance the attractiveness of the area for residents or businesses.

4. Indirect and induced economic impacts generated by the direct contributions of plan area in items 1-3 of this list.

13.14 - Sources of Relevant Existing Information for Social, Cultural, and Economic Conditions

There are varieties of sources that may provide relevant information for the assessment (sec. 13.2 through 13.9). This includes both internal Forest Service information and information from external sources.

Internal sources include:

1. Economic Profile System - Human Dimensions Toolkit for general condition and trend data on employment, income, demography, and so on for counties, regions, or States. Free software is available at http://headwaterseconomics.org/tools/eps-hdt (Forest Service employees may access the software at http://fsweb.wo.fs.fed.us/em/HD/eps_hdt.htm).

2. Resources Planning Act assessment data and reports.

3. National Report on Sustainable Forests (http://www.fs.fed.us/research/sustain/).

4. IMPLAN (IMpact analysis for PLANning) to identify economic and social conditions (including jobs and income) affected by contributions of the plan area such as grazing, recreation, timber, and restoration.

5. Other social science or economic analysis from local Forest Service research stations.

6. Information on specific uses of the plan area described elsewhere within section 14 of this Handbook such as information specific to the timber and recreation programs (sec. 13.3 and 13.4, respectively).

External information sources include:

1. Reports produced or data evaluated by collaborative partners or special use permittees.

2. Local governments or non-governmental organizations for reports on social and economic relationships between plan-area management and local communities.

3. Community, county, or State economic assessments and reports.

4. Plans and associated documents of local counties and communities.

5. University publications or other similar academic studies.

6. Indian Tribes or Alaska Native Corporations for information on social, economic, and cultural conditions, local land use, and forest-tribal relations.

7. Relevant analysis or information offered for consideration by the public about social, economic, and cultural conditions.

13.2 - Assessing Benefits People Obtain from the NFS Plan Area

The responsible official shall identify and evaluate available information relevant to the plan area for benefits people obtain from the NFS planning area (ecosystem services). (36 CFR 219.6(b))

The responsible official should identify and evaluate key ecosystem services provided by the plan area that may be influenced by the land management plan. This evaluation should include the condition and trend of these key ecosystem services and the ability of the plan area to provide these ecosystem services in the future. The intent is not to identify all possible ecosystem services provided by the plan area but to identify those ecosystem services that are most important to people in the broader landscape and those that would be most affected by the land management plan. The key ecosystem services identified in the assessment are expected to be tracked further in the planning process.

Ecological, social, and economic conditions and trends on other lands within a broader landscape, as well as drivers or stressors outside the control of the plan area, are likely to affect the provision of and demand for ecosystem services. Those effects may complement, supplement, or hinder the capability of the plan area to contribute ecosystem services.

Using available information, the responsible official should identify and evaluate information about ecosystem services such as:

1. Key ecosystem services contributed by the plan area.

2. The geographic scale at which the plan area contributes to ecosystem services (for example, watersheds, counties, regional markets, or ecoregions).

3. The condition and trend of these key ecosystem services.

4. Drivers likely to affect future demand for and availability of key ecosystem services.

5. The stability or resiliency of the ecosystems or key characteristics of ecosystems that currently maintain the plan area's key ecosystem services.

6. Influence of non-NFS lands or other conditions beyond the authority of the Forest Service that influence the plan area's ability to provide ecosystem services.

Ecosystem services are the product of functioning ecosystems. As such, the assessment of terrestrial, aquatic, and riparian ecosystems and watersheds (sec. 12.1 and 12.2) will likely provide important information needed for an evaluation of ecosystem services provided by the plan area. Likewise, the evaluation of air, soil, and water resources (sec. 12.2); carbon (sec. 12.4); and topics covered in sections 13.3 through 13.9 provide relevant information about ecosystem services.

13.3 - Assessing Multiple Uses

The responsible official shall identify and evaluate available information relevant to the plan area for multiple uses and their contributions to local, regional, and national economies. (36 CFR 219.6(b))

Multiple-use management contributes a range of benefits and services which can include both tangible objectives and intangible benefits. The multiple-use mandate under the Multiple-use Sustained-Yield Act of 1960 (16 U.S.C. 528-531) and the National Forest Management Act of 1976 (16 U.S.C. 1600 et seq.) is not exclusive to a single resource or use, and the sustained-yield principle applies to all multiple-use purposes for which the national forests are administered. Recreation, timber, range, and other resources provide jobs and income to communities, help maintain social cultures, maintain long-standing traditions, connect people to the land, and contribute to the quality of life for many Americans. The following sections 13.31 through 13.35 describe how each of these identified multiple uses should be assessed. The scope of the assessment for each of these multiple uses should be commensurate with the importance of the use in the plan area.

13.31 - Outdoor Recreation

Section 13.4 addresses the identification and evaluation of available information for recreation settings, opportunities, access, and scenic character.

13.32 - Range

Range encompasses permanent forage producing rangelands and temporary or transitory forage producing conditions (such as after timber harvest or a fire) that may be used to sustain ungulate populations or to graze domestic livestock. If applicable to the plan area, the assessment should identify and evaluate how the plan area currently provides grazing forage for domestic livestock on both permanent rangelands and transitory range in forested landscapes. It should further evaluate the conditions and trends associated with productivity and use of forage to identify how rangelands and transitory forage range contributes to ecological, social, and economic sustainability.

Using available information, the responsible official should identify and evaluate information about range such as:

1. The current level of grazing activity in the plan area and within the broader landscape.

2. The current range condition in the plan area.

3. Trends influencing the range conditions.

4. Sustainability of the ecological conditions on which grazing depends.

5. The contribution of plan area grazing to social, economic and ecological sustainability.

Internal sources of information include:

1. Forest Service NRM database system.

   a. IWEB (within Infra) for summary, monitoring, and riparian condition data as well as role of plan area in context or broader landscape.

   b. Rangeland Inventory and Monitoring.

2. Assessment reports, either broadscale or finescale, that evaluate range conditions.

3. Monitoring information about range conditions or management of livestock.

4. Completed National Environmental Policy Act (NEPA) analyses.

5. Summarized information from,

   a. 2210 – Range Allotment Management Plan folders, and

b. 2230 – Permit Case File folders.

6. Local research station reports or analysis.

External information sources include:

1. Information describing rangeland and grazing conditions.

2. The conditions and trends in availability and balance of seasonal grazing on private and public lands and its social and economic role.

3. Community, county, and State agricultural and ranching economic assessments and reports.

4. Relevant analysis or information offered for consideration by the public about range conditions or management of grazing.

13.33 - Timber

Timber harvest and production can play an important role in attaining desired conditions for ecological sustainability and can contribute to social and economic sustainability. The assessment should identify and evaluate how timber harvest and production contributes to social, economic, and ecological sustainability. Using available information, the responsible official should identify and evaluate relevant information such as:

1. The current condition of forests in the plan area.

2. The current levels of timber harvest and production in the plan area and within the broader landscape.

3. The ability of timber harvest to affect forest resistance and resilience to stressors such as fire, insects, and disease.

4. The ability of timber harvest to maintain or restore key ecosystem characteristics identified in the assessment of ecological sustainability (sec. 13).

5. The current capacity and trend for logging and restoration services and infrastructure for processing wood within the broader landscape.

6. Key trends that drive the supply and demand for timber or the need for timber harvest in the plan area.

7. Contribution of timber harvest and production in the plan area for ecological, social, and economic sustainability.

Internal sources of information include:

1. Forest inventory data.

2. GIS data on forest cover type, forest health, fuels, or fire activity.

3. Forest management reports (available on the internet at (http://www.fs.fed.us/forestmanagement/products/index. shtml).

4. Watershed analyses or broad-scale assessments or data from the Watershed Condition Framework or Terrestrial Condition Framework.

5. Collaborative Forest Landscape Restoration Act proposals or data.

6. Forest health data such as insect and disease hazard maps.

7. The assessment of ecological conditions as described in sections 12.1 through 12.15c.

8. NRM, including Timber Information Manager for stewardship contracts and special forest product permits, special uses, grants and agreements, FS Veg, and FS Veg Spatial.

9. Research station reports on topics such as historical and current forest condition, forest resistance and resilience, restoration priorities, inventory and requirements of local sawmills, or forest health conditions.

External information sources include:

1. State or private reports on timber market and harvest trends on public or private lands near the plan area.

2. Reports on restoration opportunity, capacity, or obstacles.

3. State forestry reports or data on forest health.

4. Data on mill capacity and balance of supply to mills from private and public lands.

5. Relevant analysis or information offered for consideration by the public about forests or timber production.

13.34 - Watershed

The assessment should identify and evaluate the contribution of watersheds and water resources to social and economic sustainability. This evaluation can build on information developed to

support the assessment in section 12.23 that addresses ecological sustainability. Using available information, the responsible official should identify and evaluate relevant information such as:

1. The contribution of key watersheds, water resources, and water within the plan area to use and enjoyment by the public, both consumptive use including water withdrawals and diversions for agricultural, municipal, and commercial uses and non-consumptive use including water storage for flood control, hydropower, and recreation.

2. The conditions and trends related to water use and enjoyment in the plan area and the broader landscape.

3. Contribution of water use and enjoyment of water to social and economic sustainability.

Internal sources of information include:

1. NRM and other data management systems.

   a. Water Rights and Uses database.

   b. Watershed Condition Classification and Tracking database – indicators, priority selection rationale, and watershed restoration action plans.

   c. Infra – Dams, Water Systems, and Wastewater Systems databases.

   d. Range database – stockwater.

   e. Special Uses Data System – permits involving water withdrawals.

   f. National Information for Conservation Education database – project wet, fishing derby.

   g. Wildlife, Fish and Rare Plants Management System – National Fishing Day, fishing derby, water fowl hunting.

   h. National Visitor Use Monitoring Results – non-motorized water use (rafting, canoeing, swimming, and so forth), motorized water use, and fishing.

2. Designated Municipal Watersheds under FSM 2542.

3. The State and Private Forestry “Forests to Faucets” assessment.

4. Research and Development publications on water use, water withdrawals, visitor use, and so forth.

External information sources include:

1. Recent national water use assessments published by the U.S. Geological Survey every 5 years.

2. Federal agency data on power generation and flood control from the U.S. Department of Energy (DOE), Federal Energy Regulatory Commission (FERC), Bureau of Reclamation (BOR), and U.S. Army Corps of Engineers (USACE).

3. State agency data on fishing, hunting, boating, and swimming uses of water bodies.

4. State agency data on water withdrawals from groundwater and surface water.

5. Non-governmental organizations and academic publications on uses of water and recreation activities related to water.

6. Other relevant analysis or information offered for consideration by the public about water resources used or enjoyed by the public.

13.35 - Fish and Wildlife

The fish and wildlife of NFS lands are an important resource enjoyed by people in a variety of ways. Sections 12.1 through12.42 describe the evaluation of ecological conditions that support fish and wildlife. The evaluation process for identifying at-risk species is in sections 12.5 through 12.55. For purposes of this section, the focus of the assessment is on the contribution of fish and wildlife to social and economic sustainability. Using available information, the responsible official should identify and evaluate relevant information such as:

1. Fish, wildlife, and plant species commonly enjoyed and used by the public for hunting, fishing, trapping, gathering, observing, or sustenance.

2. The conditions and trends in the plan area associated with these species.

3. The contribution of the use and enjoyment of these species to social and economic sustainability.

Internal sources of information include:

1. NRM Wildlife Fish and Rare Plants database.

2. Publications from Forest Service-Research on the use and enjoyment of species on the national forests and grasslands.

External information sources include:

1. National Fish Habitat Action Plan (FWS) and species or habitat-specific assessments or action plans developed by other public agencies.

2. Migratory Bird Data Center (FWS) (https://migbirdapps.fws.gov/mbdc/databases/db_selection.html).

3. Federal fisheries management plans (NMFS) and multi-state coastal fisheries management plans (Pacific States Marine Fisheries Commission).

4. ESA-related documents, for example, biological opinions, critical habitat designations, and recovery plans (FWS, NMFS).

5. State Wildlife Action Plans.

6. Federal fisheries management plans (NOAA-Fisheries) and multi-state coastal fisheries management plans (for example, Pacific States Marine Fisheries Commission).

7. ESA-related documents, for example, biological opinions, critical habitat designations, and recovery plans (FWS, NOAA-Fisheries).

8. State Division of Natural Resources (Fish and Game).

9. NatureServe. (http://www.natureserve.org/)

10. Reports of organizations focused on the needs of particular species enjoyed by the public (Rocky Mountain Elk Foundation, Wild Turkey Federation, Trout Unlimited, and State native plant societies).

11. Conservation Success Index.

12. Center for Plant Conservation.

13. Other relevant analysis or information offered for consideration by the public about fish, wildlife, and plant resources used or enjoyed by the public.

13.4 - Assessing Recreation Settings, Opportunities and Access, and Scenic Character

The responsible official shall identify and evaluate available information relevant to the plan area for recreation settings, opportunities and access, and scenic character. (36 CFR 219.6(b))

Recreation contributes to social and economic sustainability and provides opportunities to connect people with nature. The focus of the assessment for recreation is to identify and evaluate information about recreation settings and the uses, trends and sustainability of recreation opportunities in the plan area, recreational preferences of the public, recreational access, and scenic character.

Using available information, the responsible official should identify and evaluate information about recreational settings, opportunities, access, and scenic character of the plan area such as:

1. The types of recreational settings in the plan area, Recreational Opportunity Spectrum (ROS), should be used to describe this and map these settings.

2. The types of recreational opportunities currently available in the plan area including their distribution and seasonal variation.

3. The existing and potential scenic character of the plan area, Scenery Management System (SMS), should be used to describe this and map scenic character.

4. The important recreational sites or areas in the plan area and their condition.

5. The compatibility or incompatibility of different recreation activities within the plan area, including any recreation user conflicts.

6. The nature, extent, and condition of trails, roads, and other transportation and other infrastructure to provide recreational access (see also sec. 13.6).

7. The opportunities within the plan area to foster greater connection between people and nature.

8. The conditions and trends that are affecting the quality of recreational settings and scenic character in the plan area.

9. Information about the sustainability of the set of recreation opportunities and scenic character, including the fiscal capacity for sustaining the opportunities.

10. Issues or dynamics, involved in social, cultural or economic conditions that may prevent or preclude, minorities and, other historically disadvantaged groups from seeking, accessing, (meaningful access), or participating in recreational activities typically, demanded by others.

In addition, the responsible official should evaluate how influences outside the plan area may influence the demand for recreation in the plan area or the ability of the plan area to meet those

demands. Using available information, the responsible official should identify and evaluate relevant information such as:

1. The preferences of the public and demand for specific recreation opportunities or settings.

2. The availability of recreation opportunities on other lands within the broader landscape.

3. The stated goals in approved plans or other published reports of Tribes, States, or local governments, for recreational opportunities in the plan area.

4. Social, cultural, and economic conditions or trends such as changing population demographics, traditional uses, or income levels that influence the demand for various types of recreation activities.

5. Emerging new or unique recreational trends or interests that may affect future demand for recreation in the plan area.

Based on the information above, the responsible official should evaluate the extent to which plan area meets the demand for recreational opportunities and the ability of the plan area to sustain these recreation settings, opportunities, access, and scenic character. The responsible official should evaluate how recreation contributes to social, economic, and ecological sustainability.

Internal sources of information include:

1. NRM.

   a. National visitor use monitoring.

   b. Wilderness and wild and scenic rivers.

   c. Infra (for information on trails, cultural properties, and recreation sites).

   d. Heritage.

2. ROS.

3. SMS.

4. Motor vehicle use map and travel management plan.

5. Recreation facility analysis.

6. Travel and tourism reports.

7. Local research station reports or analyses.

External information sources include:

1. State comprehensive outdoor recreation plans.

2. State or county land management planning and strategy documents.

3. National surveys on recreation.

4. Volunteered data from special use permittees.

5. Relevant analysis or information offered for consideration by the public about recreation or scenic character.

13.5 - Assessing Renewable and Nonrenewable Energy and Mineral Resources

The responsible official shall identify and evaluate available information relevant to the plan area for renewable and nonrenewable energy and mineral resources. In addition, the responsible official should coordinate with the Bureau of Land Management (BLM) regarding energy and mineral resources. (36 CFR 219.6(b))

Energy sources may include wind, hydropower, solar, biomass, geothermal, coal, oil, or natural gas. Mineral resources include locatable mineral deposits, leasable minerals, and mineral materials. Each type of energy or mineral development may require specialized expertise to understand the specific considerations of that type of development.

Using available information, the responsible official should identify and evaluate relevant information such as:

1. Current type, extent, and general location of energy and mineral activity and energy facilities in the plan area.

2. Potential of the plan area for energy and mineral activity.

3. Trends that affect energy and mineral activity in the plan area.

4. Known abandoned mines or mining related hazards in need of reclamation or restoration.

5. Existing energy transmission corridors and the potential need for new transmission corridors.

6. The contribution of energy and mineral activity in the plan area to social, economic, and ecological sustainability.

The responsible official may also identify and evaluate known geologic hazards such as landslides, rock falls, mud flows, debris flows, earthquakes, karst collapse, volcanoes, flooding, subsidence, and naturally occurring gases and minerals, such as asbestos, erionite, radon, and methane if they occur at a scale that would merit evaluation for a land management plan.

Internal sources of information include:

1. NRM and Infra.

   a. Minerals and geology information.

   b. Abandoned mines information.

   c. Locatable minerals information.

2. Local or analyses including research station reports and analyses.

External information sources include:

1. U. S. Geological Survey (USGS) reports on mineral presence trends, or hazards.

2. DOE information,

3. BLM data,

4. State geological survey reports

5. Utility company information on the need for utility corridors

6. Volunteered private reports and data, or

7. Relevant analysis or information offered for consideration by the public about energy and mineral resources.

13.6 - Assessing Infrastructure

The responsible official shall identify and evaluate available information relevant to the plan area for infrastructure, such as recreational facilities and transportation and utility corridors. (36 CFR 219.6(b))

Using available information, the responsible official should identify and evaluate information such as:

1. The infrastructure's contribution to social, economic, and ecological sustainability.

2. The location and condition of infrastructure within the plan area. This includes the forest road system, recreational infrastructure (including developed facilities, trails, resorts, and recreational residences), all facilities, and other infrastructure within and near the plan area, such as dams, water diversions, grazing infrastructure, communication towers, and bridges.

3. Infrastructure external to the plan area that may be relevant to management of the plan area. An example may be a major dam with influence on streams, rivers, and aquatic ecosystems.

4. Trends that may affect the condition or development of plan-area infrastructure.

5. Information about the sustainability of the infrastructure including fiscal capability to maintain existing infrastructure and the current backlog of infrastructure maintenance.

Internal sources of information include:

1. NRM databases such as Infra Engineering, Roads, Bridges, Buildings, Dams, Developed Recreation, Trails, Facilities, and Real Property Management.

2. The travel analysis report developed in support of the travel management rule, Subpart A.

3. Motor vehicle-use maps (products of the Travel Management Rule (36 CFR 212), Subpart B).

4. Unit recreation facility analysis report.

External information sources include:

1. Non-governmental organization reports on access, proposed utility corridors, facility use, or the condition or sustainability of the infrastructure.

2. Comprehensive plans of Indian Tribes, States, counties or cities or plans of these governments focused on recreation, infrastructure, or transportation.

3. Federal highway plans and projects.

4. Relevant analysis or information offered for consideration by the public about social, economic, and cultural conditions.

13.7 - Assessing Areas of Tribal Importance

The responsible official shall identify and evaluate available information relevant to the plan area for areas of tribal importance. (36 CFR 219.6(b))

Using available information, the responsible official should identify and evaluate information about:

1. Indian Tribes and Alaska Native Corporations associated with the plan area.

2. Existing tribal rights, including those involving hunting, fishing, gathering, and protecting cultural and spiritual sites.

3. Areas of known tribal importance that are in the plan area or affected by management of the plan area.

4. Conditions and trends of resources that affect areas of tribal importance and tribal rights.

The responsible official shall protect confidentiality regarding information that is culturally sensitive information to an Indian Tribe or Tribes as required by 36 CFR 219.1(e):

> **(e) During the planning process, the responsible official shall comply with Section 8106 of the Food, Conservation, and Energy Act of 2008 (25 U.S.C. 3056), Executive Order 13007 of May 24, 1996, Executive Order 13175 of November 6, 2000, laws, and other requirements with respect to disclosing or withholding under the Freedom of Information Act (5 U.S.C. 552) certain information regarding reburial sites or other information that is culturally sensitive to an Indian Tribe or Tribes.**

The responsible official should request information from Indian Tribes about these areas of tribal importance. A tribal relations specialist or local archaeologist, with access to the Forest Service Infra heritage database, may provide relevant available internal information. If available, memorandums of understanding with local Tribes may be helpful sources of information. The responsible official should also consider relevant tribal consultation reports and analysis from Forest Service research stations.

External information sources include:

1. Volunteered tribal reports;

2. Traditional ecological knowledge;

3. Relevant scientific analysis or relevant analysis or information offered for consideration by the public about areas of tribal importance; or

4. Tribal Forest Protection Act projects and documents may serve as a source of information for natural resources and areas of tribal importance.

Section 43 of FSH 1909.12, chapter 40 has additional information on tribal consultation for planning.

13.8 - Assessing Cultural and Historic Resources and Uses

The responsible official shall identify and evaluate available information relevant to the plan area for cultural and historic resources and uses. 36 CFR 219.6(b)). This includes identifying priority heritage assets within the plan area.

Benefits of cultural and historic resources include expanded knowledge and understanding of history, cultural, and spiritual connections to our heritage, scientific data about past cultures or historical conditions and similar matters, and tourism that benefits rural economies.

Using available information, the responsible official should identify and evaluate information such as:

1. The cultural, historical context of the plan area.

2. The cultural and historic resources, including heritage assets present in the plan area.

3. The condition of known cultural and historic resources, including historic properties in the plan area identified as eligible or listed in the National Register of Historic Places (http://www.nps.gov/nr/) and designated traditional cultural properties.

4. The trends that affect the condition of, or the demand for, cultural and historic resources or cultural uses.

5. The contribution of cultural uses or cultural and historic resources to social, economic, and ecological sustainability.

6. The relevant published documents from refereed journals and history societies.

Relevant available internal information may be produced by a local archaeologist, who is either a Forest Service employee or contractor with access to the Forest Service Infra database. Internal information may include a cultural resource overview.

External information sources include:

1. Memorandums of understanding, memorandums of agreements, programmatic agreements, management plans, or other agreement documents with State historic preservation offices or the Advisory Council on Historic Preservation.

2. Traditional ecological knowledge (for definition see FSH 1909.12, zero code, sec. 05) and tribal consultation reports.

3. Local knowledge offered for consideration by the public about cultural and historic resources and uses.

4. Forest archaeological and historical overviews or historic resources management plans.

13.9 - Assessing Land Status and Ownership, Use, and Access Patterns

The responsible official shall identify and evaluate available information relevant to the plan area for land status and ownership, use, and access patterns. (36 CFR 219.6(b))

The assessment should include information describing how land status, ownership, use, and access patterns influence the plan area and how management of the plan area may influence land use and access. Land ownership is the basic pattern of public and private ownership of both surface and subsurface estates. Land status is the zoning for private lands and formal management status of public lands (such as wilderness) for public lands. The status for public lands may include surface and subsurface estates and other specific restrictions that may apply to use of public lands by the Forest Service. Land use is the current use of land, such as residential, commercial, industrial, or agricultural use. Access is transportation access to or through the plan area, including pedestrian access from properties adjacent to the plan area.

Using available information, the responsible official should identify and evaluate information such as:

1. Existing patterns of land ownership, status, and use both within and near the plan area.

2. Trends affecting land status, ownership, and use with particular attention to trends within or near the plan area’s boundary.

3. Influence of the plan area on land ownership, status, and use within the broader landscape.

4. Access to the plan area for various modes of transportation and from urban and rural locations near the plan area.

5. Opportunities to provide open space connections with lands in other ownerships.

6. Trends of land status and ownership affecting access to the plan area and how these trends affect use of the plan area.

7. Influence of these conditions and trends of land ownership, status, use, and access on social, cultural, economic, and ecological conditions (for example, invasive species or wildland urban interface).

Internal sources of information include:

1. Infra lands database of NRM;

2. Transportation atlas, records, and analysis;

3. Travel management plans;

4. Motor vehicle use maps;

5. The Economic Profile System-Human Dimensions Toolkit government and land use reports (http://headwaterseconomics.org/tools/eps-hdt);

6. GIS layers; and

7. Information from the Resources Planning Act assessment (http://www.fs.fed.us/research/rpa/).

External information sources include:

1. Plans, reports, or other information from Indian Tribes, States, counties, or other local governments on land ownership, status and use, access, or transportation. This may include spatial data or maps maintained by these governments.

2. Relevant analysis or information offered for consideration by the public about land ownership, status and use, access or transportation.

14 - ASSESSING DESIGNATED AREAS

The responsible official shall identify and evaluate available information relevant to the plan area for existing designated areas located in the plan area including wilderness and wild and scenic rivers and potential need and opportunity for additional designated area. (36 CFR 219.6(b))

Designated areas direct specific kinds of management on areas within the plan area. The assessment also identifies designated areas and evaluates the potential need and opportunity for additional designated areas. The assessment does not require an inventory and evaluation of individual land areas within the plan area for potential designation. Before the responsible official invites comments on the proposed plan, an inventory and evaluation is required for wilderness (see FSH 1909.12, ch. 70), and an inventory of the eligibility of rivers for inclusion in the Wild, and Scenic Rivers System is required (see FSH 1909.12, ch. 80); but these inventories are not required during the assessment (36 CFR 219.7(c)(v) and (vi)).

Some categories of designated areas may be designated only by statute and some categories may be established administratively in the land management planning process or by other administrative processes of the Federal Executive Branch.

Sometimes two or more types of designated areas overlap each other. In these situations, the responsible official should recognize the overlapping management requirements of the multiple designations.

Using available information, the responsible official should identify and evaluate information about designated areas including:

1. Identify the locations, purposes, and types of established designated areas within the plan area. Use a map to identify these locations.

2. To evaluate the potential need and opportunity for designated areas, the responsible official should identify and evaluate available information to answer questions such as:

   a. Are there published documents that identify an important need or potential for a designated area? For example, a research report may indicate a need for an experimental forest within the plan area.

   b. Are there specific land types or ecosystems present in the plan area that are not currently represented or minimally represented within the wilderness system or system of research natural areas?

   c. Are there rare or outstanding resources in the plan area appropriate to specific types of designated areas?

   d. Are there known opportunities to highlight unique recreational or scenic areas in the plan area to provide for sustainable recreation opportunities?

e. Is there scientific or historical information that suggests a unique opportunity to highlight specific educational, historic, cultural, or research opportunities?

f. Has a need for specific designated areas been identified in the plans of States,

Tribes, counties and other local governments?

g. Are there known important ecological roles that could be supported by designation?

3. How do designated areas contribute to social, economic, and ecological sustainability?

Exhibit 01 of this section lists the types of statutorily designated areas and administratively designated areas that may be present or potentially designated in NFS plan areas; and the administratively designated areas that the regional forester may designate. This exhibit is not exhaustive as plan areas may have other types of designated areas either statutorily or administratively designated that exist because of specific legislation or other administrative action that is unique to the plan area. During the assessment, the responsible official should identify the designated areas established within the plan area.

14 - Exhibit 01

Designated Areas

Designated Areas
Statutorily Designated Areas
National Heritage Area
National Monument *
National Recreation Area
National Scenic Area
National Trails National Scenic Trails National Historic Trails
Wild and Scenic River
Wilderness, or Wilderness Study Areas
Highway Systems, Interstate and National
Administratively Designated Areas
Critical Habitat under ESA
Experimental Forest or Range
Inventoried Roadless Areas under 36 CFR Part 294
National Natural Landmark
National Historic Landmark
National Monument *
National Recreation Trails
Recreation Areas
Research Natural Area
Scenic Byway - Forest Service
Scenic Byway – National
Scenic Byway – National
Significant Caves
Regional Forester Designated Areas
Botanical Area
Geological Area
Scenic Area
Zoological Area
Paleontological Area
Historical Area
Recreational Area

* National Monuments may be congressionally or administratively designated.

15 - ASSESSMENTS FOR PLAN AMENDMENTS

(c) Plan amendment assessments. Where the responsible official determines that a new assessment is needed to inform an amendment, the responsible official has the discretion to determine the scope, scale, process, and content for the assessment depending on the topic or topics to be addressed. (36 CFR 219.6)

An assessment is not required to amend a plan (FSH 1909.12, ch. 20, sec. 21.2). However, the responsible official may determine that an assessment is useful, for example if a plan revision assessment has not been done or if conditions have changed to warrant a new or updated assessment. Plan amendment assessments may not be as broad or comprehensive as are assessments for plan development or revision, but should identify relevant available information and evaluate appropriate conditions and trends of social, cultural, economic, and ecological systems relevant to the issues of concern for the amendment.

A plan amendment assessment may be specific to a topic or focused on a portion of the plan area. In such a case, the scope of the assessment would be narrow and the scale would be small. In other cases, particularly for complex topics that cross plan area boundaries or involve multiple issues, the responsible official may conduct a more comprehensive assessment for an amendment.

The public notice and public and governmental participation requirements for amendment assessments are the same as the requirements for an assessment for plan development or revision (FSH 1909.12, ch. 40, sec. 43 and 44).