

SOUNDSCAPE MANAGEMENT PLANNING

INTRODUCTION

General Management Plans

Superintendents will address the preservation of soundscapes and the elimination, mitigation, or minimization of inappropriate sound sources or sound levels through NPS planning processes and operations policies. Soundscape management can be best addressed in appropriate sections of General Management Plans (GMP). Therefore, superintendents will incorporate soundscape management as a GMP topic. GMP direction for soundscape management will vary in accordance with the need as determined through the planning procedures listed below. Of the seven elements of soundscape management planning listed below, any or all may be incorporated into a GMP depending upon the need.

Soundscape Planning - Data Collection and Analysis

A separate soundscape management plan (SMP) could be developed as warranted by complexity or urgency of soundscape issues. An SMP would appropriately be tiered to a current, existing GMP. Conducted appropriately through NEPA processes, the GMP and SMP together will meet the following requirements:

- (1) Set soundscape management objectives or desired conditions;
- (2) Inventory soundscape conditions to determine natural and existing ambient sound levels, and to develop management standards for sound;
- (3) Determine which existing or proposed human-made sounds and sound levels are consistent with park purposes, and which are not;
- (4) Evaluate the impacts of existing or proposed human-made sounds and sound levels;
- (5) Develop alternative approaches or actions that could be taken to achieve desired conditions or otherwise mitigate impacts of inappropriate sound;
- (6) Develop a process by which future proposed sound sources may be evaluated as to prevent significant adverse impacts or impairment; and
- (7) Develop a monitoring or adaptive management process to validate standards and procedures and to ensure soundscape goals are being met over time.

Set Soundscape Management Objectives or Desired Conditions

The overarching principle in establishing soundscape objectives is the obligation to protect or restore the soundscape resource to the level consistent with park purposes, taking into consideration other applicable laws. This principle can take two forms: (1) where soundscape conditions are currently not adversely affected by inappropriate sound sources or levels, the management strategy must be to maintain or improve those conditions; and (2) where the soundscape is found to be degraded, the management

strategy is take affirmative action to promote progress toward the desired soundscape condition.

In the planning process, soundscape objectives must be established to define the desired future soundscape conditions of parks. These objectives must be consistent with park purposes and values as expressed in the Organic Act, establishment legislation, current management plans and in relation to other applicable laws such as the Wilderness Act, Endangered Species Act, or the National Historic Preservation Act.

Setting soundscape objectives is to be done by considering park management zones and the activities deemed to be appropriate within those zones. In addition, soundscape objectives should be wholly consistent with other park objectives (e.g. wildlife, cultural, historic, wilderness, or visitor experience) that may be associated with a zone type. Many park units have a variety of zone types in a spectrum from more developed to wilderness, and various increments in between. Appropriate resource management and maintenance activities, visitor activities and services, and permittee or concession operations will vary to some degree through the spectrum. The soundscape management objective will also vary in respect to the appropriate services or activities which would guide a selection of appropriate sound sources.

Inventory Soundscape Conditions

As needed for baseline resource inventory, soundscape management planning, development of interim management measures, commercial air tour management planning purposes, or for other plans (general management plans, commercial services plans, use management plans, etc.), superintendents will inventory and monitor park soundscapes. Procedures for inventory and monitoring are to be described in Reference Manual 47. The information provided from a soundscape inventory is essential to understanding the relationship between the natural soundscape, cultural soundscape, and other appropriate sources of sound, and the human component of the existing ambient soundscape. This information (1) makes it possible to better understand the resource that needs to be protected and the appropriate and inappropriate sound sources; (2) enables a park to refine acoustic objectives and associated standards for different parts of the park; (3) provides a structure for evaluating existing and proposed activities and their impacts; and (4) suggests where management actions can most effectively contribute to protecting park resources and improving the visitor experience consistent with park purposes. A soundscape inventory and the information and interpretation derived from it, as illustrated here, will directly carry over into a suitable monitoring program. Monitoring over time will allow measurement of progress toward desired soundscape conditions.

Determine Appropriateness of Sound Sources and Levels

Park purposes are defined in enabling legislation or proclamations, and in plans that are promulgated through a comprehensive public process. Park purposes may be highly varied, in the same way that activities appropriate to each park's purpose may be highly varied. Park infrastructure and activities may include transportation systems, use of ATVs and other recreation opportunities, visitor centers, maintenance activities, weapons-firing demonstrations, cultural events and religious rites, and many others. Such

elements within park units are often found to be appropriate even though they generate elevated sound levels for areas within the parks. However, when activities (whether inside, outside or above a park) generate excessive levels of sound, they can jeopardize the soundscape resource or the purposes for which the park was created. Some parks may have a range of objectives for managing the soundscape, concurrent with management zones, while others might have only a few. Clearly, there will be differences between park units based on establishment purposes. A national recreation area is likely to have different objectives than a park which is mostly designated or recommended wilderness.

The external soundscape environment is different for different park units also, as for an urban park unit compared to a large western park. In general, the more strongly related a sound source is to the purpose of the park, or the protection of its resources and values, the more appropriate it may be considered. Conversely, sound sources that are demonstrably not related to park purposes may be considered inappropriate. In either case, excessive sound levels may be deemed inappropriate. Excessive sound may be gauged on the basis of the type of sound and its audibility, its duration, the frequency with which it occurs, the time at which it occurs, and its amplitude. In soundscape analyses, a park will need to place a specific sound source within the context of all the other sound sources that affect the park.

Figure 1: Possibilities Matrix for Sound Sources and Levels

	Scale of Appropriateness in relation to park purposes/locations	
Scale of sound level: magnitude, duration, intensity, frequency of occurrence	Appropriate sound sources at lower relative sound levels	Inappropriate sound sources at lower relative sound levels
	Appropriate sound sources at relatively higher sound levels	Inappropriate sound sources at relatively higher sound levels

Defining Impacts on Park Soundscapes

Impacts of the full suite of sound sources on the soundscape resource must be evaluated in preparing a soundscape portion of a park GMP or soundscape management plan. This is in contrast to the soundscape resource as an impact topic when evaluating an existing or proposed use of the national park unit. The latter is provided for in Section E of this order.

In accordance with the CEQ regulations at 40 CFR Parts 1500-1508, direct and indirect impacts (environmental consequences) are defined in an environmental document by assessing their type, magnitude, intensity and duration. The significance of an impact is determined specifically by criteria provided in 40 CFR 1508.27, based on the outcome of these assessments. An assessment will take account of the short or long term nature of the impact, whether it is beneficial or adverse, whether an impact is irreversible or irretrievable, and, finally, its geographic and societal extent. Lastly, a resource impact is put in the context of all other past, present or reasonably foreseeable actions which affect the same resource.

To engage in a soundscape planning effort (GMP and SMP), superintendents must use the best science available to determine the appropriateness of non-natural sound levels. Sound levels are gauged in relation to objectives that are set specifically for soundscape management by zone within a park. Effects on the soundscape can have additional and related impacts on wildlife, aquatic and marine life, cultural resources, other resources and values, and visitor experience. Such impacts are defined under those resource headings in an environmental document for a GMP, and may be alluded to in an SMP. In order to make determinations about sound impacts, the "affected environment" must be characterized through descriptions of the following sound levels: (1) the natural sound environment; (2) the contribution of sound from existing appropriate sources; and (3) the contribution of sound from all other sources. In presenting the affected environment this way, the total existing ambient soundscape is described.

Superintendents must compare the sound sources at levels above the natural sound environment to soundscape objectives for the various zones in the park. In effect, this comparison represents the degree to which non-natural sound sources and levels are consistent with or deviate from park purposes/desired conditions. Deviations, or impacts, are to be described in terms that relate to significance as expressed in CEQ regulations. For soundscape management planning in many parks, the acoustic environment associated with natural conditions represents a highly suitable baseline for comparison of impacts caused by other sound sources.

Evaluate Alternative Management Actions

The assessment of existing sounds sources and levels in relation to desired soundscape conditions is the basis for developing alternative measures to reduce excessive levels of sound, or to maintain current management and prevent excessive sound. Measures can consist of the following:

- (1) Administrative actions to reduce or eliminate sources of noise entirely within the discretion of the superintendent;
- (2) Actions that may be implemented through concession permits or other special use activities approved by the superintendent;
- (3) Affirmative actions to engage with other jurisdictions or parties that control external sources of noise, and development of recommendations to those entities.

Figure 2: Potential Actions/Priorities Matrix for Sound Sources and Levels

Scale of sound level: magnitude, duration, intensity, frequency of occurrence	Scale of Appropriateness in relation to park purposes	
	Appropriate sound sources at lower relative sound levels	Inappropriate sound sources at lower relative sound levels
	Appropriate sound sources at relatively higher sound levels	

Where:

Priority 1: Use administrative or other means to mitigate sound levels
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Priority 3: Use administrative means to eliminate source or take affirmative action with other agencies to eliminate source or mitigate sound levels
Priority 4. Monitor periodically

Develop Procedures for Evaluating Future Proposed Actions

Analysis in the soundscape management planning process is predicated on existing sources of sound within the total ambient sound environment. In some instances it may be possible to incorporate reasonably foreseeable proposed actions that are developed in some detail. Since it is not possible to make definitive predictions of what may be proposed in the future, or of growth in current sources of impact, superintendents are to develop programmatic guidance for addressing changes in sound sources over time. Considering the total ambient sound environment, and the components of which it consists, the superintendent will express definitions for a range of impact levels. The definitions will be formulated in terms that may be compared to outputs from analysis tools (best available science) that can quantify impacts from a proposed sound source. The superintendent will need to consider a threshold for cumulative impacts on the total ambient sound environment. This structure will be applied to externally or internally generated proposals that could impact the park soundscape.

Develop a Monitoring/Adaptive Management Process

Superintendents must develop a monitoring or adaptive management process to validate standards and procedures and to ensure soundscape goals are being met over time. Soundscape conditions change, visitor use (and therefore, sound sources) generally grows, public demand and values change, and resource sensitivities change. Technical developments can improve sound sources or make them less desirable. Measurement methods, equipment, and analysis tools may improve. Monitoring is necessary to test management performance against soundscape objectives, and to validate the effectiveness of measures for reducing sound levels. Adaptive management allows a superintendent to make adjustments based on changed conditions or improved methodologies. Adaptive management should be prescriptive by listing available tools or measures to be applied if the standards are exceeded. A contingency should be included for adjusting soundscape standards in light of monitoring data that is demonstrated to be statistically reliable.

Final Soundscape Management Plans

A resultant plan, based upon the seven planning steps outlined in the previous section, and as assessed through a NEPA decision making process, will select a course of action to:

- (A) Prevent or mitigate inappropriate park-generated sound or sound levels (including those associated with visitors or concessioners);
- (B) Articulate the process to be used in evaluating potential future sources of sound;
- (C) Articulate the standards by which impacts of ongoing sound sources are to be monitored, and list management actions that would be used contingent on monitoring results; and

(D) Engage, through partnerships or cooperating agency relationships, with those responsible for other sound sources that adversely impact parks and explore what can be done to mitigate or prevent them.