

Peer Review Guidelines for Natural Resource Management Proposals

Prepared by Team VIII of the
Natural Resources Strategic Planning Group

September 1994

Department of the Interior
National Park Service

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Acknowledgements

Portions of this paper are taken from or based on guidelines in use by several National Park Service regions, especially the North Atlantic Region, the Mid-Atlantic Region, the Southeast Region, and the Western Region. Some parts are borrowed from NPS-77.

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INTRODUCTION AND DEFINITIONS

Policy

This paper was produced by Team Number VIII, which is a working group formed in 1992 under the framework of *The Strategic Plan for Improving the Natural Resource Program of the National Park Service*. Sound management and interpretation of National Park Service resources is complex and requires a breadth of scientific understanding. The National Park Service therefore is best served by involving the broader scientific and technical community, as well as park managers, in its review of all proposed natural resource management projects (which includes research projects). This paper proposes guidelines and suggestions for these reviews.

Prior to funding or initiating a project, it is the policy of the National Park Service to conduct a thorough peer review of 1) all research and monitoring design proposals, and 2) other natural resource management activities deemed appropriate (see the criteria for review in this paper). This policy also extends to all research and monitoring design activities conducted in a park by the National Biological Survey, other agencies, or universities on behalf of the National Park Service.

The peer review process presented in this document is designed to ensure a consistent and conscientious review of all major natural resource management activities for the National Park Service or within its jurisdiction, regardless of funding sources. Peer review of major natural resource management projects is essential to enhance the professional stature of the National Park Service's natural resource programs and to ensure accountability of the resource management program.

The review process described in this paper is intended to fit into and complement the existing procedures for resource management planning already in use in parks and regions, and should not duplicate any of those efforts.

Although this policy focuses on the critical involvement of peer review prior to initiating resource management projects, it is also recognized that project planning is a continuous process and that peer review is necessary throughout the life of a project. We recognize the value of a review and reporting process for ongoing natural resource management projects; however, this topic is beyond the scope of this paper.

What Is Peer Review?

Peer review refers to the critical evaluation of the technical merits of a proposal by impartial subject-matter experts who are not directly associated with the proposal. Open exchange of views and ideas between reviewers and project managers can be highly beneficial, and informal peer review may be solicited by project managers at any point.

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To promote additional objectivity, it often is desirable to include a "blind" review as well, in which one or more reviewers remain anonymous to the project managers or principal investigators (hereinafter referred to collectively as project managers). Individuals who are carrying out the technical aspects of projects (as opposed to coordinating the work of other technical experts) should not handle blind reviews for their own projects.

Reviewers may be scientists, resource managers, and/or colleagues from the National Park Service, the National Biological Survey, a university, or other organizations with specialists in the topic. Each reviewer submits separate comments to the National Park Service, and the review process must be handled so as to avoid interaction among the individual reviewers. Their recommendations can help strengthen a proposal and also promote constructive dialogue between reviewers and a project manager.

What is Management Review?

The technical and scientific peer review process outlined here does not eliminate the need for review of proposals by management officials. Since management review procedures are not included in these guidelines, it is recommended that such procedural guidelines be prepared and implemented at the regional and/or park levels.

By definition, management review refers to the review of proposals by park management to:

- ensure that proposed activities are compatible with Park Service policies and regulations;
- ensure that proposed activities are pertinent to park management needs; and
- ensure that all personnel, logistical (e.g., housing, permits, and transportation), and supplementary (e.g., equipment and supplies) needs from a park are identified and approved prior to the commencement of a project.

Natural Resource Management Defined

Natural resource management is the function by which the National Park Service strives to understand natural processes and human-induced effects; mitigate the potential and realized effects; monitor for ongoing or future trends; protect existing natural organisms, species, populations, communities, systems, and processes; and interpret these organisms, systems, and processes to the park visitor. This function can be broken down into six major activities: research, mitigation, monitoring, protection, interpretation, and administration.

Protection, interpretation, and administration activities normally will not require peer review as outlined in these guidelines. Judgment should be exercised to identify exceptions. (NPS-77)

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Research Defined

Research is investigation aimed at the discovery and interpretation of facts, the revision of accepted theories in light of new facts, or the development of practical applications of such new revised theories. (NPS-77)

Monitoring Defined

Monitoring is the systematic collection and analysis of resource data at regular intervals, in perpetuity, to predict or detect natural and human-induced changes, and to provide the basis for appropriate management response. (NPS-77)

Mitigation Defined

Mitigation is the maintenance of the existing form and integrity of natural systems or system components, consistent with park management objectives, in the face of harm or potential harm from human activities within or outside the park. Mitigation is also the conversion of a resource, altered by human activity, to a more functional or natural state consistent with management objectives. As such, mitigation encompasses preservation and restoration activities. (NPS-77)

Technical Assistance

Scientists and other professionals often provide detailed technical assistance on resource issues, including technical reports and advice used to support park managers in their decision-making. A park's chief of resource management or resource management specialist can work in conjunction with the regional chief scientist and/or the regional chief of resource management to determine the level of peer review and oversight necessary for a project. These same persons will normally interpret reports for use by the park superintendent and other managers. In some instances a superintendent will be technically qualified to play an active role in the reviews and interpretations, which further strengthens the process.

THE PEER REVIEW PROCESS

Introduction

Each region and park in the National Park Service generally follows a process of 1) identifying, describing, and setting priorities for natural resource management issues, which are documented in an approved resources management plan, and 2) identifying required management actions (e.g., research, monitoring, mitigation, etc.) in project statements to address the issues. Current National Park Service policy requires that any proposal be based on a park's resource management plan. Once funds are available for any given issue or activity, the final steps are 3) obtaining a workplan or proposal which outlines the requirements (including deliverables), 4) reviewing submitted proposals and selecting an investigator or project manager, and 5) implementing that action.

Criteria for When to do Peer Reviews

Professional judgement is needed to determine whether or not peer review should be required. At the present time in the National Park Service, staffing restraints will dictate that only selected proposals can be peer reviewed. Resource management specialists in the park, in conjunction with their colleagues in the regional office, should make this determination. They need to analyze the following questions in order to make their decision. Peer review is generally beneficial for all projects. However, peer review is most important when a project being proposed:

- involves significant funding,
- involves significant experimentation,
- clearly will be controversial,
- involves new technology that is on the cutting edge and may have applicability to other similar projects,
- has potential risk to certain aspects of the resource, and/or
- has broad implications beyond the project itself.

These criteria also can be quantified within individual parks, for example, to put a figure on "significant funding" by a park's standards.

Natural resource management projects that generally do not require peer review are those that are unlikely to be controversial, involve routine management practices, and/or pose no major impact on the resource. Also a NEPA review may substitute for a peer review in some cases. When in doubt it is better to conduct reviews. When preparing project statements for resource management plans, it may be useful to identify those potential projects where peer review will eventually be desirable.

Again, these guidelines obviously allow for professional judgment.

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The Peer Review Process

The peer review process begins when a proposal has been submitted by the project manager to either the park superintendent, regional chief scientist, or regional chief of resource management responsible for the park or parks involved. In rare cases of complex proposals that span regions, the proposal could be sent to the Associate Director, Natural Resources. Project managers may include National Park Service scientists or resource managers or other resource professionals from inside or outside the government.

The proposal, which may also be referred to as a study plan, inventory and monitoring plan, or protocol, should be peer reviewed in accordance with the following peer review process prior to funding and execution:

- a. The proposal will be assigned to a designated technical representative who will provide technical oversight and ensure quality performance throughout the project. The regional office staff for resource management should work with the park superintendent and staff to agree on the best qualified designated technical representative, determining the appropriate designated technical representative on a case-by-case basis. In parks with strong natural resources expertise, a park resource management specialist may be the most appropriate designated technical representative. For other parks the regional office staff or some other unit may need to provide the designated technical representative.

Normally, the designated technical representative will also serve as the contracting officer's technical representative or government technical representative, which helps to simplify the review and contracting process.* The designated technical representative must 1) ensure that an independent, critical review is conducted of the proposal or work, 2) determine if reviewer comments are valid, and 3) ensure that valid comments are incorporated into the project proposal or report.

- b. Based on the judgment of the designated technical representative, one or more highly qualified individuals with technical expertise in the specific appropriate discipline will be asked to provide peer review of each relevant proposal. Two or more reviewers is preferable. Reviewers may be from within or outside the Park Service and a mixture may be desirable; however, reviewers *may not* have direct involvement with the project. The designated technical representative may obtain recommendations for names of

* Some regions or parks may wish to have a proposal's contracting officer's technical representative/government technical representative be a separate individual from the designated technical representative, to isolate reviews from contracting per se and provide additional impartiality in the review process. The advantage of having two individuals is obviously offset by the disadvantage of more complexity. We recognize these options, but in this paper, we assume that typically the designated technical representative and the contracting officer's technical representative/government technical representative are the same individual.

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appropriately skilled reviewers from the regional chief scientist or regional chief of resource management, or others, in addition to using competent reviewers known to the designated technical representative and park staff. The reviewers must carry out their tasks independently, without interaction among themselves.

- c. Peer review will ensure that the technical merits of the methods, the scientific techniques, data analysis, conclusions, and management recommendations have been adequately addressed. Projects requiring significant data analysis should receive additional review by a statistician. The designated technical representative should prepare objective rating criteria (suggestions are in "Proposal Evaluation and Review") and distribute a rating form to each of the reviewers.

An alternative peer review may be accepted whenever it can be demonstrated that a reputable scientific body has already completed a review process on a proposal. Documentation of this review should be included in the designated technical representative's project file.

- d. No project may be initiated without the approval of the park superintendent. Concurrent with the peer review, the designated technical representative should ensure that management staff has ample opportunity to review the project. The park superintendent and staff should assess the impacts of the project and weigh these against the potential benefits to the park. Park resource management staff should review the technical and practical aspects of the proposal. The superintendent must ensure that all environmental and cultural resource compliance requirements are addressed and should designate a park liaison for the duration of the project.
- e. Reviews must be performed in a timely manner, given the necessity to obligate funds within a given fiscal year and the short time usually available for obligating funds. Enough time must be allowed for the development of cooperative agreements or other contracting instruments, including solicitor review. It therefore is critical that reviewers be selected who can provide fast turnaround as well as a scientifically sound review.
- f. Proposals solicited through the competitive procurement or cooperative agreement process will be subjected to a technical review process selected by the contracting officer upon recommendation of the contracting officer's technical representative/government technical representative. Typically, the peer review panel and the technical review panel are one and the same.
- g. The designated technical representative will be responsible for negotiating revisions to the proposal as recommended by both management and peer reviews and will ensure that the park is notified of these revisions (in the case where the designated technical representative is not a park employee). A record of the reviews and project revisions will be kept on file.
- h. Upon agreement to all appropriate changes and modifications, the designated technical representative and superintendent will both acknowledge approval of the project in

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writing. A sample "Project Approval Form" is in Appendix B. Approval by the superintendent means that the project meets management needs of the park and that all necessary clearances and consultations** have been satisfactorily completed. The superintendent has the final authority to either approve or reject a project.

- i. In those cases where proposals are rejected, the designated technical representative should write a brief explanation of the reasons for the rejection and be prepared to supply proposers with reviewer comments if requested.

** Including those in the National Environmental Policy Act, Endangered Species Act, National Historic Preservation Act, Native American Graves Protection and Repatriation Act, and American Indian Religious Freedom Act.

PROPOSAL EVALUATION AND REVIEW

The designated technical representative should consider the following factors as he/she solicits peer review comments or prepares rating criteria.

- Statement of the problem: Is the problem and its relevance to park management clearly stated?
- Objectives and hypotheses: Are project objectives or research hypotheses clearly stated and logically derived from the problem statement?
- Literature review: Is the literature review adequate and does it reflect current scientific understanding of the issue?
- Research and monitoring design: For research and monitoring activities, is the sampling and experimental design appropriate and sufficient to meet study objectives and ensure statistical validity?
- Field and laboratory methodology: Are field and laboratory methodologies clearly and completely described and sufficient to meet project or study objectives?
- Statistical analysis: Are analytical and statistical procedures sufficiently identified and appropriate?
- Project management: Is planning and project management (e.g., staffing, budgeting, scheduling) clearly described, logical, and likely to ensure that the project objectives will be met?
- Communication of results: Are reports, publications, technology transfer, and other means to share results adequately identified and programmed?
- Project costs: Are the funds requested for each budget category and for each project phase reasonable and acceptable?
- Investigator's or Manager's qualifications: Does the principal investigator or project manager have a level of recognized authority, experience, and past record of success in this field to adequately accomplish project objectives?
- Interdisciplinary aspects: Is the combination of scientific and technical disciplines proposed sufficient to adequately measure and test the hypothesis or to meet project objectives at hand?
- Overall: In general, is the proposal presented clearly and will it produce scientifically sound results?

APPENDIX A: SUGGESTED PROPOSAL GUIDELINES

Proposals present justifications, descriptions, and cost and time requirements of the work to be done. Proposals must be specific enough to serve as "blueprints" for the actions proposed. Step-by-step plans for the implementation must be spelled out in advance, with the level of detail being commensurate with the complexity and scope of the project and the needs of management. In effect, the intent is to make sure proposals provide sufficient information for management evaluation, decision-making, and tracking.

With this in mind, the following suggestions may be used for a proposal format. Any or all of the following can be described and required in a scope of work, which generally ensures the National Park Service that the proposal will include the desired information.

Cover Page

The cover page must contain the following information.

- Title of proposal
- Current date
- Principal investigators/project managers
- Institution/organization
- Proposed starting date
- Estimated completion date
- Total project budget, including funding support requested from the National Park Service
- Signatures of principal investigators/project managers and other appropriate institutional officials

Abstract

The abstract should contain a short summary of the proposed project, including reference to major points in the statement of problem, objectives, and method components.

Statement of Problem

This section should provide a clear, precise summary of the problem to be addressed and the need for its solution. This section should include statements of the importance, relevance, timeliness, universality, and contribution of the research. The statement of problem should explain why the project needs to be done within the particular unit(s) of the National Park System and how the unit(s) or the System itself will benefit.

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Objectives

A very specific indication of the proposed outcomes of the project should be stated as objectives to be met or hypotheses to be tested. This section should also provide a brief summary of what information will be provided at the end of the study and how it will be used to solve the problem. These statements should flow logically from the statement of need and directly address the management problem.

Background

The background section summarizes what is known about the problem using pertinent published and unpublished references, including descriptions of similar projects being conducted in the region and relationships of the proposed study or mitigating action to relevant theory or management issues. This normally should require a "Literature Review" section as well.

Scope and Methods

This section should describe as precisely as possible how the objectives will be met or the hypotheses/questions tested. It should include a detailed discussion of the methodologies, experimental designs, and anticipated statistical analyses that will be used for each aspect or phase of the project. As much as possible, the overall protocol for the project, actions to be taken, the number of samples, description of databases, measures taken to ensure quality control of data, a schedule of work, and all project-related impacts to park resources, visitors, and staff need to be presented.

Collections

The proposal should clearly identify the collections, if any, which need to be made for the purposes of the project. Describe the kind (species), numbers, sizes, and locations of animals, plants, rocks, minerals, or other natural objects to be collected. For those collections to be permanently retained as voucher specimens, identify the parties responsible for cataloging, preserving, and storing. Also identify the proposed repository. The designated technical representative and proposal author should be familiar with National Park Service collection/curation guidelines and ensure that proposed actions are consistent with these guidelines. (See more details below under "Labeled Natural History and Associated Project Documentation Specimens.")

Deliverables

Reporting requirements of research or other work conducted under contract, cooperative agreements, or interagency agreements generally will be established in the agreements themselves after a proposal has been approved for funding. Proposals, however, often indicate the number, time schedule, and content of hard and electronic (e.g., WordPerfect and dBase) copies of reports and other products that will be prepared and delivered to the Park

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Service. The number should reflect the needs of the park and the regional office. This discussion should indicate how many months after the project is initiated (or the actual anticipated date) that each deliverable will be submitted to the National Park Service. The proposal should also specify that deliverables will be submitted or presented to the Park Service's technical representative unless otherwise agreed upon by all parties. This section should also specify any review process required prior to acceptance of the deliverables.

Appropriate deliverables may include:

Reports: This section should describe what reports will be written and the timing of such reports. Five types of reports are often proposed (or required in scopes of work): 1) progress reports, 2) draft final report, 3) final report, 4) *Park Science* article, and 5) submission to the Investigator's Annual Report. In addition, investigators and project managers are encouraged to publish the findings of their investigations in professional, scientific journals. Under some circumstances, investigators may be required to publish reports in such journals.

Oral presentations: Three types of oral briefings should be considered: pre-study, annual, and close-out presented to park staff and other appropriate individuals. Frequent dialogue between project personnel and park staff is an essential element of a successful natural resource management project. Therefore, investigators and project managers should also consider conducting periodic informal briefings with park management staff throughout the study whenever an opportunity arises.

Labeled Natural History Specimens and Associated Project Documentation: Permanent collections also require identification of storage locations where long-term maintenance of materials is possible.

Other deliverables: Other appropriate deliverables may include the following.

- Maps, charts, and photographs.
- Raw data and/or databases.
- Draft and final monitoring protocol handbooks.
- Training for park staff.
- Capitalized equipment purchased with project funds.
- Data in GIS-compatible format.
- Interpretive and educational materials.

Budget: The proposal should include a budget that reflects both funding and assistance that will be requested from the National Park Service and, when appropriate, provided from other sources. The budget should also be organized by major budget categories and, when appropriate, divided into years or phases. Appropriate budget categories are as follows.

Personal services: Identify salary charges for principal investigator(s), project manager(s), and all other personnel connected to the project. Indicate length of involvement (hours or months) and pay rate charged for services. Also itemize fringe benefit rates and costs for each person.

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Travel: Provide separate estimates for field work and meetings. Indicate the number of trips, destinations, estimated miles of travel, mileage rate, air fares, days on travel, and daily lodging and meals charges.

Equipment: Itemize all equipment to be purchased or rented and provide a brief justification for each item costing more than \$1,000. For proposals funded under National Park Service agreement or contract, the National Park Service reserves the right to transfer the title of purchased equipment with unit cost of \$1,000 or more to the federal government following completion of the study. These items should be included as deliverables.

Supplies and materials: Purchases and rentals should be itemized as much as is reasonable. Avoid large miscellaneous amounts.

Curation: Identify funding requirements for the cataloging, preservation, and storage of all collected specimens that will be permanently retained.

Data processing: Estimate costs for data processing and analysis needs that have not already been covered in "personal services" above.

Printing and copying: Include costs for preparing and printing the reports and other deliverables.

Subcontract or consultant charges: All such work must be identified in the budget and supported by a subcontractor's proposal also in accordance with these guidelines.

Indirect charges: Identify the indirect cost (overhead) rate and charges and the budget items to which the rate is applicable.

Literature cited: List all reports and publications cited in the proposal.

Curriculum vitae: Attach curriculum vitae for each principal investigator or project manager.

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APPENDIX B: SAMPLE PROJECT REVIEW FORM

NAME OF PARK (S) _____

RESOURCE MANAGEMENT PLAN STATEMENT NO. _____

TITLE OF PROJECT _____

NAME/AFFILIATION OF PROJECT MANAGER(S)

RECOMMENDED [] NOT RECOMMENDED []

Peer review of the above-named proposal has been completed. Assurance is hereby given that the proposal and its review have met the National Park Service's Natural Resource Management Project Peer Review requirements [if the project is approved].

Designated Technical Representative

Date

APPROVED [] REJECTED []

I have reviewed the above-named proposal to determine if it meets management needs of the park. If approved, assurance is hereby given that necessary environmental and cultural resource clearances (e.g., NEPA, Endangered Species Act, NHPA, Native American consultation where appropriate) have been passed (or will be before the project begins).

Superintendent

Date