

**ANALYSIS AND DEVELOPMENT OF A PROJECT EVALUATION PROCESS**

by

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## EXECUTIVE SUMMARY

The Bonneville Power Administration (BPA) has responsibility, assigned by the Pacific Northwest Electric Power Planning and Conservation Act of 1980, for implementing the Columbia River Basin Fish and Wildlife Program of the Northwest Power Planning Council (NPPC). This program is to enhance, protect, or mitigate the fisheries and wildlife losses attributable to hydroelectric dam construction or operation. One aspect of this responsibility is the overall evaluation of project proposals and of ongoing and completed projects in the Program. Various evaluation processes have been used by federal and state agencies and private research institutes, and BPA desires to build on experiences of these groups so that BPA evaluations will be highly accurate, professional, and widely respected. The BPA has asked the Oak Ridge National Laboratory (a Department of Energy multipurpose laboratory in Tennessee with environmental research and assessment projects nationwide) to review processes used by other agencies and programs and to recommend evaluation and oversight processes for BPA.

ORNL staff interviewed nearly 40 federal, state, and private agencies, organizations, or Indian tribes in the Northwest and nationally (Table 1). The following types of information were sought: (1) descriptions of evaluation systems in use at the agency for selecting and reviewing projects; (2) the agency's views regarding desirable attributes of a BPA evaluation system; and (3) insights as to the time, staff, and other costs associated with implementing the agency's system, and especially as to the number of projects that an agency project officer can reasonably be expected to manage. A summary of the individual interviews and the strengths and weaknesses of existing evaluation is included in Appendix A.

A conceptual framework for the total evaluation process was obtained from the emerging social science of evaluation planning (Sect. 1.4). This framework introduces current thinking about evaluation, guides the ordering of the desirable attributes of an evaluation system suggested by agency personnel, and outlines the organization of specific recommendations to BPA, included in Sect. 2. The framework is used loosely in the summary recommendations below.

We recommend that BPA follow seven standard steps of an evaluation process explicitly:

- Determine evaluation purpose(s).
- Decide on evaluation audience.
- Define objectives or criteria.
- Identify sources of proof.
- Describe the evaluation evidence.
- Evaluate methods or devices for obtaining evidence.
- Select methods of analysis and interpretation.

An organization can benefit from using this common core of evaluation steps to clarify its specific needs, to plan an approach, and to decide upon directions to take. Also, demonstration that it has proceeded along these logical lines lends credence to the organization's program.

## Evaluation Purpose(s)

There are a number of different reasons for conducting an evaluation:

1. **Context Evaluation** - Evaluation of the broad program policy, needs, objectives, strategies, goals, priorities, and groups to be involved.
2. **Input (Proposal) Evaluation** - Evaluation to define and select appropriate project designs for achieving program objectives, often as outlined in specific project proposals.
3. **Process Evaluation** - Evaluation during a project to monitor activities.
4. **Product Evaluation** - Evaluation to measure and interpret results at the conclusion of a project.

An evaluation for any one of these four purposes should contain the remaining six of the standard steps introduced above. These four evaluation purposes form the major umbrella under which to consider BPA's needs and to make recommendations in Sect. 2.

**Audience:** We recognize four components of a "strategic constituency" whose legitimate concerns need to be accommodated at each stage in BPA's evaluation process:

1. The agencies and tribes and their public supporters (environmental groups, commercial fishermen, sports fishermen, etc.), who form the resource advocacy;
2. The utilities and their public supporters, who form an advocacy for cost effectiveness;
3. Various governmental groups, who independently or under political pressure form an advocacy for fair and careful implementation of the explicit or implied provisions of the Northwest Power Act and BPA's authorizing legislation (including the Council, which will advocate proper implementation of its adopted measures); and
4. Groups that conduct the work, including agencies, tribes, universities, consultants, and national laboratories, who are an advocacy for proposal solicitation and evaluation processes that are fair and objective for all applicants and that do not exclude them from participation.

The constituencies are not mutually exclusive nor does any one have a monopoly on virtue. It is especially important to recognize in advance that agencies and tribes, as well as many university groups and laboratories, exercise a dual role, as resource advocates and as potential applicants for funds.

## Context Evaluation (Policies, needs, goals, objectives, priorities)

Although this evaluation stage is largely the province of the Northwest Power Planning Council in collaboration with agencies, tribes, and the public, the political process applied at this level may be insufficiently complete or detailed to allow the direct solicitation of project proposals by BPA. BPA should, in principle, be the "audience," yet it must be an evaluator as well for those topics that are less well defined, in order to procure specific pieces of work.

We recommend that this functional ambiguity be clarified by the Council explicitly delegating to BPA mutually agreed upon topics that the Council will not develop in detail sufficient for solicitation of proposals. Such delegation would require that agencies, tribes, and the public participate in the BPA planning efforts in a manner equivalent to that required of the Council. To fulfill this need, we recommend that a Fish and Wildlife Advisory Committee be established by BPA to advise staff in its annual planning for the transition between the Council's objectives and measures and the specific topics and projects BPA will pursue in the coming year (Figure 1). Although envisioned as possessing a reasonably high level of technical expertise, the Advisory Committee membership should also explicitly represent, and be selected by, the various BPA constituencies according to a preestablished membership formula.

## Input Evaluation (Proposals)

Proposal solicitation, review, and contract award are clearly BPA's responsibilities. Our recommendations regarding these processes embody each of the evaluation steps introduced earlier and can be summarized as follows:

- A set, annually based time schedule is to be followed (Table 2).
- Most work is to be sought through an annual program guidance document and proposal solicitation that includes a small category of undefined "exploratory research." This document is to be prepared by the BPA staff and reviewed by the Advisory Committee (see above).
- BPA and the agencies, in consultation with the NPPC, are to establish which categories of work, if any, must be conducted by certain agencies for reasons of law, land control, etc.
- Desired evaluation evidence in the form of quantifiable evaluation criteria is to be specified in the solicitation in as much detail as possible (Appendix C).
- There is to be a discrete time for issuing annual program guidance and solicitation of proposals and a single due date for proposal submission.
- The solicitation is widely distributed to potential applicants in agencies, universities, consulting firms, national laboratories, etc.
- Proposals are to be accepted only in a standard format which is to be described in the solicitation.
- Preproposal discussions between a potential applicant and the BPA project officer are encouraged as a first step toward eliminating inappropriate proposals and toward focusing proposals on high-priority areas.
- Proposals are to be received in a BPA administrative office that checks for needed proposal components.

- There may be two (or more) paths for evaluation of project proposals, one oriented to evaluation of ideas and approaches that characterize research (emphasized here) and the other to evaluation of costs and likely performance that characterize specific, well defined jobs. The second may be handled most efficiently by the standard contract bidding process.
- Technical Review Panels, selected primarily for technical expertise but also representing both the several constituencies and expertise from outside the region, are to provide BPA project officers with assistance in evaluating technical content of proposals.
- An internal Administrative Review Team is to select projects.
- The Fish and Wildlife Advisory Committee is to review the planned award package; BPA will make the final decision.
- All applicants are to be notified of the award package, and unsuccessful applicants are to be provided summaries of comments justifying their rejection.
- There are to be post-selection negotiations with successful applicants to refine the proposed work into a mutually agreeable work statement.

### Process Evaluation (Ongoing Work)

Monitoring of ongoing work generally takes three forms: contacts between the agency project officer and the principal investigator, periodic progress or topical reports, and formal outside reviews. A primary audience is the project officer who must be kept abreast of both technical progress and administrative matters, such as the rate of expenditures. Of most long-range importance, however, is the recipient of new information. We recommend close agency-contractor contacts, short (2-3 page) and frequent (e.g., monthly) letter progress reports from the contractor, and predetermined topical reports (or data sets, manuscripts, etc.) in lieu of detailed progress reports. Evaluation criteria and evidence should be adequately detailed in the proposal and work statement or explicitly modified by mutual consent. Long-lasting projects or contractors that have a sequence of related projects should be reviewed on site by BPA staff and a Technical Review Team that would provide written documentation of performance, based on presentations, discussions, and tours (Appendix D).

### Product Evaluation

End product evaluation is the most neglected of existing agency evaluation procedures, but the Fish and Wildlife Program requires such scrutiny. Each BPA constituent wants an indication of a project's success from its own perspective. BPA is perhaps the most immediate audience, for it must determine whether the topic of the work should be pursued further.

Two levels of objectives are important for product evaluations: determining whether the contractor adequately carried out the goals and objectives of the work, as conceived in the proposal and contracted for in the work statement, and determining whether the type of work done actually led to benefits to the resource commensurate with expectations and costs. The first level is amenable to review by the project officer or a review team based on criteria established in the contract. Evaluation procedures similar to those used for reviewing ongoing work would also apply at a project's conclusion. Determination of the long-term value of a project is generally best approached as a separate research project, subject to all of the foregoing evaluation criteria or steps.

## Implementation

Several components are critical for effective implementation of the recommended evaluation process. They are (1) the BPA project officer, (2) the Advisory Committee, (3) the technical review panel, and (4) guidance documents.

The BPA project officer has major responsibility throughout the process: when (s)he is overworked (as appears to be the case now), -the process will 'falter' and perhaps fail. Most agencies interviewed did not have a clear accounting of the time and effort needed by their staffs to do a good job. Work load depends heavily on the type of project undertaken and the organization's administrative approach. Average project workloads in combination with other administrative duties are less than 10 projects and \$0.5-1.0 million in organizations with roles comparable to the BPA Fish and Wildlife Program. Maximum workloads of 10 projects per fulltime officer and \$1 million are recommended for BPA. Formal procedures, outside peer reviewers, and guidance documents should make work easier and more efficient. To maintain a moderate-sized and stable BPA Fish and Wildlife Division staff, management contractors having extensive expertise should be selected to oversee and assist with selected topical areas.

The Fish and Wildlife Advisory Committee and the technical review panels are to have distinctly different compositions and roles. The Advisory Committee is to represent the constituencies; that is, to be assigned membership according to a fixed representation formula and to provide policy views related to the technical program. The technical review panels are to provide a high level of technical expertise in judging concepts, approaches, and research plans; they should do so from a broad background and perspective of the several constituencies from which they come. This important distinction can be maintained when administered with care and diplomacy.

Guidance documents at several stages of the evaluation process can aid efficiency and effectiveness. They should be prepared based on good examples from other agencies. An example (for project site evaluations) is provided in Appendix D.

## ABSTRACT

The Bonneville Power Administration has responsibility, assigned by the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501; 16 USC 839), for implementing the Columbia River Basin Fish and Wildlife Program of the Northwest Power Planning Council. One aspect of this responsibility is evaluation of project proposals and ongoing and completed projects. This report recommends formalized procedures for conducting this work in an accurate, professional, and widely respected manner. Recommendations and justifications are based largely on interviews with federal and state agencies and Indian tribes in the Northwest and nationally. Organizations were selected that have evaluation systems of their own, interact with the Fish and Wildlife Program, or have similar objectives or obligations. Perspectives on aspects to be considered were obtained from the social science of evaluation planning. Examples of procedures and quantitative criteria are proposed.

## 1. INTRODUCTION

**"Concern about grants and the mechanism by which they are awarded seems to be as integral a part of the research enterprise as scientific experimentation itself."**

**Barbara K. Culilton  
(Science, 21 September 1984)**

### 1.1 PURPOSE

**The Bonneville Power Administration (BPA) has responsibility, assigned by the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Public Law 96-501; 16 USC 839), for implementing the Columbia River Basin Fish and Wildlife Program of the Northwest Power Planning Council (NPPC). This program is to enhance, protect, or mitigate the fisheries and wildlife losses attributable to hydroelectric dam construction or operation. One aspect of this responsibility is the overall evaluation of project proposals and evaluation of ongoing and completed projects in the Program. Various evaluation processes have been used by federal and state agencies and private research institutes, and BPA desires to build: on their experience so that BPA evaluations will be highly accurate, professional, and widely respected. The BPA has requested the Oak Ridge National Laboratory (ORNL) (a Department of Energy multipurpose laboratory in Tennessee with environmental research and assessment projects nationwide) to review processes used by other agencies and programs and to recommend evaluation and oversight processes for BPA that meet these objectives.**

### 1.2 ORGANIZATION OF THE STUDY

**The following steps were taken by ORNL in conducting the study. These steps specifically address items requested by BPA in the project statement of work.**

#### 1.2.1 Entrance Interview

**The general organization of the study was presented to BPA Division of Fish and Wildlife and invited guests from other agencies in a seminar on October 22, 1984, in Portland. The objective of the meeting was to fine-tune the approaches and perspectives applied. At that time, study methods and sample criteria were outlined for assessing "project evaluation" processes or systems of other agencies and for reviewing proposals and accomplishments of projects. The discussion provided valuable background and an introduction to the diversity of viewpoints regarding the evaluation process.**

#### 1.2.2 Agency and Tribe Interviews

**A major portion of the study plan involved a survey of various federal, state, and private agencies and Indian tribes to obtain views concerning evaluation processes and criteria that may be mutually agreeable. Numerous agency representatives were interviewed in person; some were interviewed by telephone because of scheduling constraints and long travel time (Table 1).**

**Table 1. Agencies, organizations, and tribes interviewed  
(For name, address, and telephone number of contact  
person and a summary of the interview,  
see Appendix A)**

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**Coeur d'Alene Tribe**  
**Columbia Intertribal Fish Commission**  
**Colville Tribe**  
**Confederated Tribes of the Umatilla**  
**Electric Power Research Institute, Ecological Studies Program**  
**Enhancement Planning Team (Salmon and Steelhead Conservation and Enhancement Act)**  
**Hudson River Foundation for Science and Environmental Research**  
**Idaho Department of Fish and Game, Bureau of Fisheries**  
**Idaho Department of Fish and Game, Bureau of Wildlife**  
**Kalispell Tribe**  
**Maryland Power Plant Siting Program**  
**Montana Department of Fish, Wildlife and Parks**  
**National Institutes of Health, Division of Research Grants**  
**National Science Foundation, Ecosystem Studies Program**  
**Northwest Power Planning Council, Staff**  
**Oregon Department of Fish and Wildlife, Fisheries Research and Development Section**  
**Pacific Marine Fisheries Commission**  
**Pacific Northwest Utilities Conference Committee, Fish and Wildlife Committee**  
**Sea Grant College Program Oregon State University**  
**U.S. Army Corps of Engineers, Fish Passage Development and Evaluation Program**  
**U.S. Department of Energy, Global Carbon Cycle Program**  
**U.S. Department of Energy, Short Rotation Woody Crops Program**  
**U.S. Environmental Protection Agency, Exploratory Research Grants Program**  
**U.S. Environmental Protection Agency, Western Fish Toxicology Station**  
**U.S. Environmental Protection Agency, Acid Deposition Program**  
**U.S. Fish and Wildlife Service, Ecological Services Division, Boise Field Office**  
**U.S. Fish and Wildlife Service, Federal Aid in Fish and  
Wildlife Restoration Program**  
**U.S. Fish and Wildlife Service, Regional (Planning Office, Division Offices)**  
**U.S. Fish and Wildlife Service, National Fishery Research Center, Seattle**  
**U.S. Forest Service, Intermountain Forest and Range Experiment Station**  
**U.S. Forest Service, Region 6**  
**U.S. National Marine Fisheries Service, Northwest and Alaska Fisheries Center**  
**U.S. National Marine Fisheries Service, Saltonstall-Kennedy Grant Program**  
**U.S. National Marine Fisheries Service, Federal Aid Coordination Office**  
**U.S. National Marine Fisheries Service, Operations Branch**  
**Upper Columbia United Tribes, Fisheries Center**  
**Warm Spring Tribe**  
**Washington Department of Fisheries**  
**Washington Department of Game**

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Three types of information were sought from the agencies and tribes: (1) descriptions of evaluation systems in use at the agency for selecting and reviewing projects, (2) views of those being interviewed regarding desirable attributes of a BPA project evaluation system, and (3) insights as to the time, staff, and other costs associated with an existing or envisioned project evaluation and oversight system, including the number of projects that can be reasonably managed by an agency project officer. Processes, evaluation criteria, and ranking systems used by agencies and tribes in assessing proposals and projects, and their constructive views, were summarized (Appendix A) along with names, addresses, and telephone numbers of the persons contacted or the persons with whom the agency or tribe wishes further contact to be made. The summary was sent to each principal agency representative for review, concurrence, or modification to ensure that evaluation processes are reported accurately and are characteristic of that agency's (or unit's) typical usage.

### **1.2.3 Conceptual Framework for an Evaluation Planning Process**

Evaluation of projects and programs is not unique to fish and wildlife fields, and useful analogs were sought from other areas. In particular, a conceptual framework for the total evaluation process was sought. Such a framework could serve as a guide for organizing the desirable attributes of an evaluation system suggested by agency personnel and for developing recommendations to BPA. A summary of recent thinking in "evaluation science" was prepared by way of introduction (Sect. 1.4).

### **1.2.4 Attributes for Assessment of Project Evaluation Processes**

A summary set of desirable attributes was prepared for assessing the project evaluation processes of other agencies. The attributes were based on initial criteria prepared by ORNL and others after discussions with BPA staff, interviews with the agencies, organizations, and tribes, and review of the general evaluation guides described in Sect. 1.4. Individual attributes in the set were given trial weights and possible numerical scores for use in quantitative scoring in relation to the purposes of this report. Because the objective of this work was to glean useful evaluation schemes from the aggregate of all other agency practices rather than to conduct a formal grading of the agencies, the numerical scores were only used internally. Differing missions of various agencies often made direct numerical comparisons of evaluation processes difficult or irrelevant. The attributes and a tabulation of those used by each agency interviewed are given in Appendix B. The table provides a perspective of general trends in agency approaches.

### **1.2.5 Strengths and Weaknesses of Agency Systems**

Using the attributes established above, we reviewed each agency's evaluation system and identified its strengths and weaknesses. These were briefly listed at the end of each agency summary (Appendix A) and can be seen in the table in Appendix B.

### **1.2.6 Recommendations for BPA**

From the aggregate of agency evaluation processes and with some innovation on our part, based on agency suggestions and general knowledge about evaluation planning, we developed and recommended a process (Sect. 2) and criteria (Appendix C) for possible use by BPA. Our recommendations include the most desirable and germane attributes we identified. Recommendations are paired with commentary that justifies and explains the recommendations based on all information received in the project. Alternative approaches are also discussed.

To the extent possible, we have suggested ways in which our recommendations can be implemented by BPA within constraints of funding, manpower, and overall BPA procurement procedures. Of particular interest to BPA staff are the work loads of agency project officers who direct proposal review, project selection, and project oversight, and a recommended level for BPA.

### **1.2.7 Exit Interview**

Our recommendations will be discussed with BPA staff and other agencies in a series of seminars that will be scheduled at the close of the project. The objective of these seminars is to continue the dialogue on the best system for BPA to employ.

## **1.3 ORGANIZATION OF THIS REPORT**

The report has been organized to enhance readability. Major points, including tasks of the study, an overview of the conceptual framework of evaluation planning, and recommendations (with explanatory commentary), are in the main text. Supportive details, such as the synopses of agency and tribe interviews, a summary of evaluation attributes and the agencies that use them, specific criteria for use with certain evaluation steps, and examples of evaluation guidance documents, are given in the appendices.

Recommendations for BPA are organized according to a general outline of an evaluation process, described in Sect. 1.4. This report structure assembles the various aspects of an evaluation in a consistent order under several purposes. Although brevity was the goal in giving recommendations and their justifications in the text, an executive summary has also been provided that indicates the major features of the suggested BPA evaluation process.

#### **1.4 PERSPECTIVES IN DEVELOPING AN EVALUATION PROCESS\***

This section of the introduction provides a general perspective for the evaluation process. Its relevance to BPA's specific needs will be apparent in Sect. 2, where the framework outlined here in general terms is used to organize recommendations and their justifications. Evaluation itself is becoming a science, and the concepts have been derived from, and apply to, a much broader context than that of the BPA program

##### **Y.4.1 Standard Steps in an Evaluation Process**

There are several standard steps in developing an evaluation process:

- Determine evaluation purpose(s).
- Decide on evaluation audience.
- Define objectives or criteria.
- Identify sources of proof.
- Describe the evaluation evidence.
- Evaluate methods or devices for obtaining evidence.
- Select methods of analysis and interpretation.

Use of this common core of evaluation steps to clarify an organization's specific needs, to plan approaches, and to decide upon directions to take can benefit an organization. Demonstration that an organization has proceeded along these logical lines lends credence to the organization's program

##### **1.4.2 Determination of Evaluation Purpose(s)**

Evaluation can be done for a number of different reasons and thus can take a number of different forms. A thorough evaluation process such as the one envisioned for BPA will proceed through each of the following stages:

1. **Context Evaluation** - Evaluation of the broad program situation to help make policy decisions about needs, objectives, strategies, goals, priorities, groups to be involved, etc.
2. **Input Evaluation** - Evaluation carried out to help define and select appropriate project designs for achieving program objectives. This type of evaluation looks at costs, benefits, alternative resources, methods, materials, etc., often as outlined in specific project proposals.

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\*Adapted from talks by R. Jimmerson, Associate Professor, Washington State University, Pullman, Washington, and William S. MacKay, Consultant, Nebraska Department of Education, presented at the 1984 Joint Meeting of the Evaluation Research Society and Evaluation Network, San Francisco, California, July 11-13, 1984.

3. **Process Evaluation** - Evaluation carried on during a project to monitor activities to ensure that they will achieve objectives and to alter the direction, define new objectives, modify approaches, etc., if necessary.
4. **Product Evaluation** - Evaluation carried out to measure and interpret results at the conclusion of a project to determine (a) if the participants' needs were met, (b) if the problem was solved, (c) if the project was efficient, (d) if recipients of results were satisfied, (e) what directions new programs might take, etc. Regardless of which type of evaluation is done, the process involves: (a) establishing standards or criteria, (b) gathering evidence about the criteria, (c) making judgments about what the comparison of criteria and evidence revealed, and (d) relating the judgment to a desired action.

An evaluation for any one of these four purposes should include the remaining six of the standard steps introduced above. In Sect. 2, these four evaluation purposes form the major umbrella under which to consider BPA's needs and to make recommendations.

#### 1.4.3 Decision on the Evaluation Audience

For whom are we doing the evaluation? Who will be interested in it? The audience will usually include one or more of the following: oneself, an administrator or supervisor, an advisory board, a researcher, project participants, and the concerned public. Each of the four stages in an evaluation process, however, should have a more narrowly defined audience and a clear perspective of the actions(s) that should or could be elicited from the audience. Different approaches or information may be needed for interactions with the several potential audiences.

#### 1.4.4 Definition of Objectives and Criteria

**Objectives** are the results expected from the program or project. **Criteria** are generally definitions or subdivisions of objectives and may be defined as a standard, norm, or judgment selected as a basis for quantitative and/or qualitative comparison. Objectives and criteria serve as the primary basis for selecting **evidence**.

In deciding on criteria for determining the value of a project, it is helpful to think about the following program characteristics:

- **Quality**--How good is it?
- **Suitability**--Does it meet program needs and expectations?
- **Effectiveness**--What does it accomplish? How well does it meet specific project objectives?
- **Efficiency**--Accomplishments vs resources used, including competence of the staff.
- **Importance**--How valuable is it to those who participate or receive the results?

#### **1.4.5 Identification of Sources of Proof**

Only those people who are involved in a project or its results can provide proof of its success or failure. The term "strategic constituents" has been applied to the most important individuals, groups, or organizations that affect or are affected by a project, and to those who will be the most appropriate sources of information about its success.

The people who provide the proof of success or failure must be representative of all those "strategic constituents." Proof or evidence from a nonrepresentative group is no better than no evidence at all and often is misleading. The size of the sample depends upon the facilities and time available to collect the evidence, the need for statistical accuracy, the uniformity or complicated nature of the constituency, and the plans to analyze the information collected. In short, one should ask: Who can provide reliable and useful evidence?

#### **1.4.6 Description of Evaluation Evidence**

Evidence is an outward sign, indication, or effect which provides proof of the extent to which things, actions, or qualities we seek are present. In general, it is important to identify the understanding that strategic constituents have of the organization or project:

1. What do they expect from the organization or project?
2. What is the role of the organization or project in relation to the constituents and vice versa?
3. What does the organization or project actually provide to its constituents?

The meaning of effectiveness is defined for any particular organization or project through this process. This description will necessarily be different for each project or organization, because each has a different set of constituents, with different needs and expectations. Also, the definition of effectiveness will change as the constituents and their needs change. Therefore, the evaluating group and the project participants must monitor these changes so they can react effectively.

#### **1.4.7 Evaluation Methods or Devices**

The method or device used in obtaining evidence must be appropriate for the project objectives, the kinds of information being collected, the resources you have to collect it, and the characteristics of the people from whom evidence is being collected. No single evaluation method is appropriate for all evaluation purposes outlined in Sect. 1.4.2.

In selecting an evaluation method or measuring device, these five criteria should be met:

1. **Validity**--The method or measuring device should correctly address the objectives of the project or organization and the purpose of the specific evaluation.

2. **Reliability**--The method or measuring device should include a sample of people or of subject matter that represents the population from which it was drawn.
3. **Objectivity**--A method or measuring device is objective if equally competent people ask a question, interpret the answers, and get similar results.
4. **Practicability**--A method or measuring device must be practical to use in terms of time, costs, and resources available.
5. **Simplicity**--A method or measuring device must be easy to understand, tabulate, and summarize.

#### **1.4.8 Analysis and Interpretation**

Analysis is the ordering of data or findings in a manner such that they yield answers to questions; interpretation is the process of searching out the meaning of our answers, of new "intelligence." We must anticipate analysis and interpretation of evidence before an evaluation is undertaken. Ideally, the analysis will objectively order the judgments derived from comparing pre-established criteria and evidence. A numerical system of weighing the importance of several criteria and then assigning relative values to alternative judgments about each criterion provides one possible system of analysis. Interpretations should be guided by the explicit needs of the evaluation.

#### **1.4.9 Conclusion**

Organizations and projects are part of a complex, interconnected information and action system that generally dictates several discrete steps in any evaluation process. All organizations and projects affect and are affected by a set of individuals, groups, and organizations--the strategic constituents. Characteristics of excellence, effectiveness, and quality that lead from evaluations are subjective, value-laden, but important constructs. Their meaning varies from one individual to another, and there is no universally applicable set of criteria for judging them. Evaluation criteria can be best established by tailoring them to the project's strategic constituents, in which expectations, roles, and functions of interactions are clearly determined. The mechanisms of evaluation will differ according to the role of the evaluation in the continuum of making decisions about needs, evaluating proposed projects, evaluating the ongoing process, and evaluating the product at completion. All methods should pass the tests of validity, reliability, objectivity, practicability, and simplicity.

## 2. RECOMMENDATIONS

The following recommendations are offered and discussed in an order that corresponds to stages of the overall evaluation process just described. Unless indicated, the recommendations are for implementation by BPA or its contractors. The attributes of each step in an evaluation process (Sect. 1.4.1) are discussed and justified separately and are then followed by a recommendation. A concluding section considers general aspects of implementing the evaluation process. The executive summary condenses the most salient features of the recommendations.

### 2.1. CONTEXT EVALUATION (PROGRAM POLICIES, NEEDS, GOALS, OBJECTIVES, PRIORITIES, ETC.)

In general, the Northwest Power Act designates the NPPC as being responsible for evaluating the "context" of the Fish and Wildlife Program. The Council, in collaboration with state and federal agencies, the tribes, and the public, is to establish the goals, objectives, and priorities of the program of fisheries restoration needed following major losses attributed (in part) to hydroelectric power generation. The BPA is the "evaluation audience," for it is designated by the law to implement results of this planning effort.

In practice, however, the political process applied at the Council level can be expected to result in objectives that are often insufficiently explicit or incompletely prioritized to allow direct solicitation of project proposals by BPA. This lack of definition has left BPA with an unclear role in "context evaluation," and the necessity of being an evaluator as well as an audience in this stage of an overall Fish and Wildlife Program evaluation plan. This ambiguity or its effect on the remainder of the process was noted repeatedly by the staffs of agencies, tribes, BPA, and the Council. BPA has attempted to fill the gap in guidance by holding topical workshops and other consultative activities, but the form and authority of recommendations have been uncertain.

There are two alternative solutions: (1) enhance the detail of all the Council's goals, objectives, and priorities to the point that they match specific projects BPA could fund, or (2) have the Council explicitly delegate some of the more detailed planning activities in certain typical areas to BPA (i.e., in specific areas for which the Council sees only a general political mandate, such as basic research in reducing predation on juvenile salmon). If the second alternative is selected, then the requirements for participation by agencies, tribes, and the public would apply to BPA planning efforts in a manner equivalent to that required of the Council.

This report will not resolve this question. Clarification of the planning roles is, however, fundamental to the entire project evaluation process. Maturation of the Fish and Wildlife Program along either direction would be feasible. Provision for explicit delegation of some planning and prioritization to BPA may be a practical necessity to accommodate the need for BPA's detailed decisions about project selection and oversight. Should this be done, then procedures would need to be developed for BPA to accomplish this role in a manner consistent with the Act.

**Recommendation 1: BPA should work with the NPPC to delegate explicitly to BPA responsibility for developing project objectives and priorities in sufficient detail for project solicitation and review in areas where this will not be accomplished by the Council.**

**Recommendation 2: An Advisory Committee should be established by BPA to oversee BPA planning that makes the transition between NPPC objectives and measures and the specific topics and projects to be pursued by BPA. The Advisory Committee should have membership assigned to the several BPA constituencies (Sects. 2.2.1 and 2.5.2).**

## **2.2 INPUT EVALUATION (PROPOSALS)**

This phase of the overall evaluation is clearly the responsibility of BPA. In it, proposals to conduct specific pieces of work for achieving program objectives must be sought, evaluated, and selected. To accomplish this task, each of the standard steps outlined in Sect. 1.4 should be followed; that is, Identify the evaluation audience, define specific selection objectives and criteria, Identify the sources of proof that criteria are met, describe the evaluation evidence, evaluate and select methods for obtaining the evidence, and establish an evaluation method that includes analysis and interpretation.

### **2.2.1 Audience**

There is a "strategic constituency" that needs to be accommodated by the BPA proposal evaluation process. Discussions with BPA and Council staffs, agencies, and tribes have helped form an opinion regarding that constituency. It has four major and somewhat overlapping facets:

1. The agencies and tribes and their public supporters (environmental groups, commercial fishermen, sports fishermen, etc.), who form the resource advocacy;
2. The utilities and their public supporters, who form an advocacy for cost effectiveness;
3. Various governmental groups, who independently or under political pressure, form an advocacy for administrative procedures that ensure fair and careful implementation of the explicit or implied provisions of the Northwest Power Act and BPA's authorizing legislation (including the Council, which will advocate proper implementation of its adopted measures); and
4. Groups that conduct the work, including agencies, tribes, universities, consultants, and national laboratories, who are an advocacy for proposal solicitation evaluation purposes that are fair and objective among all applicants and do not exclude them from participation.

A prudent agency will recognize and accommodate each of these diverse constituencies in its proposal evaluation process. Despite first appearances, the

first three "oversight" types of constituencies are not mutually exclusive. Nor does any one of them have a monopoly on virtue. The fourth group is the audience that receives the most direct procedural attention. It is especially important to recognize in advance that agencies and tribes, as well as many university groups and laboratories, exercise a dual role as resource advocates and as potential applicants for funds. This overlap requires special attention.

Actions expected from these facets of the constituency vary. The following hypotheses suggest possible different directions. Resource advocates can be expected to pressure BPA for acceptance of resource-enhancing projects whether or not they are cost effective or are mandated by the Council (thus exacerbating the lack of clarity in Council and BPA roles). They may be critical of BPA selections that do not include "pet" resource projects (differentiated by region, species, technique, etc.). They will often include or even emphasize work based on goals that are poorly amenable to objective analysis or would fare badly when so analyzed. If the evaluation process is sufficiently poor, they can be expected to petition first the Council and then Congress to change the funding mechanisms so that the resource goals can be attained.

Cost-effectiveness advocates can be expected to be alert to projects that fail to show distinct benefits rapidly and to urge their termination, to strongly weight the priorities of otherwise good projects by potentially inappropriate cost-benefit guidelines, and to favor strict objectivity in evaluating project proposals untempered by resource advocacy (especially when such advocacy is emotionally based). They could appeal directly to the electricity rate payers, urging that these consumers seek political redress if the project selection process fails their test of cost effectiveness.

Advocates of fair and careful administrative implementation procedures will scrutinize the process of proposal solicitation and evaluation based on real or perceived inadequacies. Their forum will generally be legal proceedings or public hearings in which the motives for such scrutiny are often hidden behind the legal technicalities. These advocates are often stimulated by complaints registered by one or more of the other three constituencies.

Groups having the potential to conduct the work can be expected to respond to a just and fair proposal evaluation procedure by submitting high-quality proposals that yield generally high-quality work. When the process is viewed as deficient, they may register complaints while still participating or they may fail to participate. Funding is a strong incentive, but the very best sources of innovative ideas may be lost when disgruntled talent either gives up on the process intentionally or fails to find a modus operandi that lets them enter the funding cycle.

**Recommendation: BPA's proposal evaluation process should be organized and implemented in a manner that accommodates the major legitimate concerns of all four facets of the constituency as nearly and as explicitly as possible.**

### **2.2.2 Specific Objectives and Criteria**

The attributes of quality, suitability, effectiveness, efficiency, and importance (Sect. 1.4.4) can be evaluated (predicted) from the material in a

well-prepared proposal. Applicants will provide the material to meet such evaluation criteria most effectively when they know in advance what the criteria will be. A desire for an open approach to BPA's formulation and use of criteria for attaining these attributes was expressed by most of those interviewed. They seemed to appreciate the interviews as one mechanism to provide input to BPA's selection of criteria and a system for implementing them; they would like to see more such opportunities. At a minimum, they want awareness of the criteria at the time they develop proposals. The "administrative procedure" facet of the constituency generally seeks explicit selection criteria, because such criteria minimize potentially disruptive subjectivity in awarding funds. When clear criteria for costs are included in the efficiency criteria, the cost-effectiveness advocates are generally supportive. Resource advocates are able to judge and compare suitability (direction toward needs and expectations) and importance of projects to the attaining of resource goals when these criteria are formulated clearly and addressed in the proposal.

Many proposal evaluation systems of other agencies give only the general guidance that these attributes are to be judged by reviewers. Typically, the proposal solicitation and cover letter accompanying a proposal under review include the instruction that reviewers are to consider certain questions in their evaluations, with one-sentence questions covering these or similar attributes. Much latitude is allowed for interpretation of the questions and judgment about how well they are met by the proposal. In some cases, numerical weighting is given to the individual attributes, such as a maximum numerical score for each item (e.g., 10 or 20) that totals a maximum of 100 for the entire list.

Although such general guidance may be appropriate for narrowly circumscribed topics or agencies in which the mission is well established, it seems inadequate for the needs of BPA at this early stage in its implementation of the Fish and Wildlife Program. Detailed criteria can be useful for the educational and guidance functions they perform for all parties as well as for serving administrative needs.

Some criteria are generally applicable to all projects, whereas others must be fashioned to meet the needs of specific project types (e.g., laboratory research vs construction of spawning habitat in tributary streams) or specific program goals (e.g., increasing the numbers of outmigrants vs increasing availability of traditional native fisheries). Implicit in many agency evaluation systems is a two-stage process in which general criteria are provided by the agency for all proposals and more specific criteria are developed for detailed evaluations within topical areas. The more detailed criteria originate with an evaluation team assigned to the specific proposal solicitation.

**Recommendation: Attributes of quality, suitability, effectiveness, efficiency, and importance should be formalized in quantifiable criteria of two forms: one form general and applicable to all Fish and Wildlife Program projects and the other form developed by an ad hoc evaluation team specific for the type of proposal being solicited. The necessity for the latter form and the number of specific criteria will depend on the uniqueness of the proposal solicitation. Suggested general criteria for evaluating proposals in a form capable of being quantified (Sect. 2.2.6) are given in Appendix C.**

### **2.2.3 Sources of Proof**

Actual agency practices show two primary opinions regarding who can provide reliable and useful evidence about the overall technical value of a project. Some agencies consider their internal administrative staff to be most appropriate; others believe that they must sample their constituency (or multiple constituencies) in order to develop a defensible verdict in conjunction with staff review. It is primarily the internally funded, smaller programs in agencies with a high level of unique, internal expertise that proceed with only the agency's administrative review. For most large programs with a generally high level of accountability, participation in review of proposals by the constituency outside the agency (peer review) is the norm. The size and complexity of the BPA program, the distribution of technical expertise inside and outside the agency, and the level of accountability and oversight that the constituency applies to BPA all argue for using outside peers as well as staff as important sources of proof.

Exactly who among the outside peers is selected is critical for establishing the credibility of the evaluation. The set of reviewers must be representative of all of the strategic constituents, as discussed in Sect. 1.4.5. The proper technical expertise, however, must be paramount. The need for a good, representative mix argues for a technical review panel consisting of not fewer than four members (to cover the constituencies described in Sect. 2.2.1). One agency interviewed routinely solicits outside peer reviews of proposals from about 12 persons.

**Recommendations: BPA should use technical reviewers from outside the agency to provide an independent appraisal that will assist its staff in proposal evaluation. These reviewers should be selected primarily for their technical expertise but also to informally represent the views of each of the four major facets of the constituency outlined in Sect. 2.2.1. Experts from outside the Northwest should be included, as well as any others who warrant special consideration.**

### **2.2.4 Evaluation Evidence**

At the proposal evaluation stage, evidence to judge adequacy must be provided in the text or supporting documents of the proposal, and some subjective evidence must be retrievable from the collective experience of the reviewers (e.g., experiences with the productivity of the staff). As noted for evaluation criteria, proposers are able to provide evidence most effectively when they know the type that is desired and the form in which it is preferred. The applicant agencies that were interviewed want guidance from BPA concerning the evidence that would be needed and actually used in evaluations. Requiring all proposals to provide evidence in detail beyond that actually used in evaluations is wasteful of everyone's time and can lead to misleading estimates.

To the extent possible, needed projects identified by the Council should be analyzed by both the Council and BPA staffs for those features of a proposal that would meet the technical needs as well as administrative or other needs of the agency. This analysis would yield a list of criteria and acceptable evidence that would be described in a proposal solicitation and form the basis of proposal evaluation and selection.

As discussed for the criteria that the evidence needs to meet, there can be some evidence with generic attributes and some that will be specific to projects or project types. General forms of evidence include a text that clearly describes information to meet the criteria listed in Appendix C, vitae of proposed staff including lists of previous publications germane to the topic of the proposal and emphasizing unique qualifications, summaries of the proposed use of resources (people, funds, facilities, etc.) often on standard agency forms, description of the capabilities or unique facilities of the proposing institution, a summary list of deliverables, and timing of the project milestones.

**Recommendation 1: BPA and Council staff should meet and agree on the evaluation evidence required for each measure proposed by the Council so that a list of criteria and acceptable evidence can be published in a proposal solicitation as the basis for proposal evaluation and selection.**

**Recommendation 2: BPA should develop a standard proposal format for the Fish and Wildlife Program that (1) includes clear directions concerning the type of information needed and the form in which it is to be presented and (2) provides for both the usual criteria and evidence and the criteria and evidence specific to projects or project types.**

### **2.2.5 Evaluation Method**

Few aspects of proposal evaluation cause more concern among all facets of the constituency than the impression that there is no clear and uniformly applied methodology. Fairness is questioned when solicitations, timing, review criteria, level of detail, and other features seem to differ among various projects and project officers of the agency and when the methods used are cloaked in a degree of actual or perceived secrecy. Most of the large agencies interviewed have well-established evaluation timing and methods, which are described thoroughly in public documents such as the Federal Register or agency pamphlets. It would seem to be in the best interests of BPA to establish a clear and uniform methodology, which is publicly discussed and which meets the criteria (Sect. 1.4.7) of validity, reliability, objectivity, practicability, and simplicity. Some of the attributes of a suitable methodology for proposal review have already been described; this section suggests a time frame and administrative steps for implementation. Recommendations are summarized on a fiscal year calendar in Table 2 and as a flow chart in Figure 1.

#### **2.2.5.1 Timing**

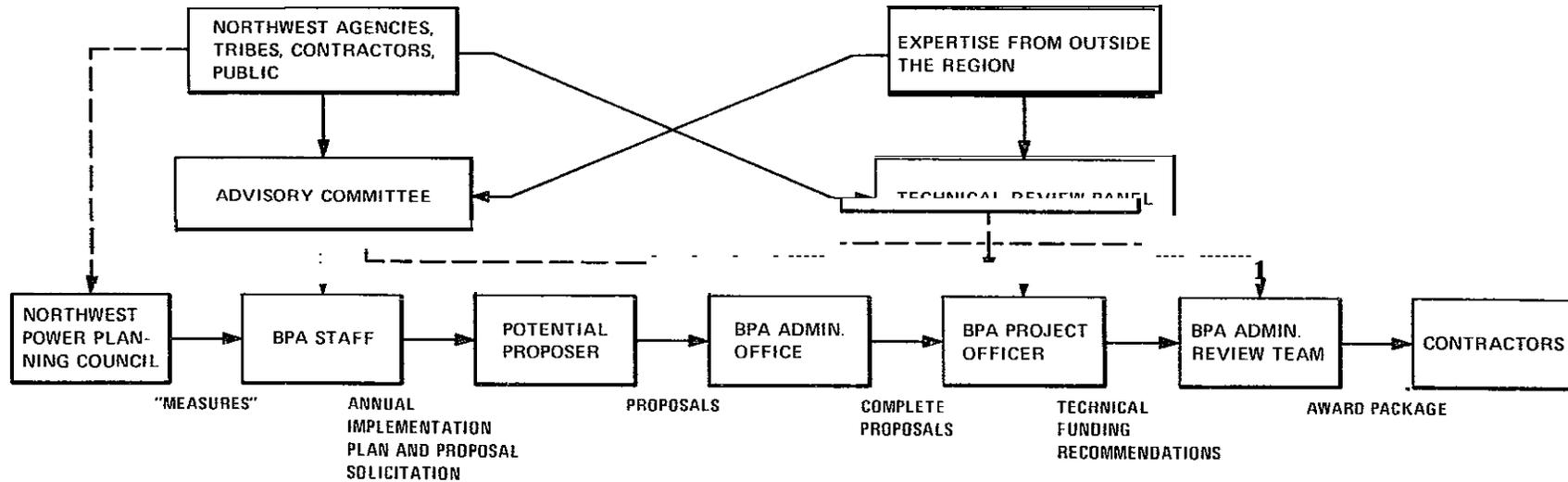
Evaluation of new project proposals can proceed most effectively when enough time is allowed for orderly solicitation, review, selection, and authorization to take place. Experiences in other agencies indicate that 9 to 14 months is a normal and adequate lead time between solicitation of proposals and inauguration of the work. This timing might differ among various types of projects, but there is value for office organization in establishing a uniform time frame (or purposely offset timing on a staggered schedule regardless of project complexity). In cases of projects that require protracted periods of detailed planning or design, the preliminary work is best treated as falling within the scope of a project's work and begun on a normal schedule of project initiation.

**Table 2. Proposed project proposal flowsheet**


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<b>October 1</b>	<b>Receipt of annual measures from NPPC for the following fiscal year (existing list plus amendments).</b>
<b>October-December</b>	<b>BPA staff, in consultation with NPPC staff, refines measures into an annual BPA program implementation plan containing priority projects and selection criteria suitable for proposal solicitation. (Two categories: construction projects and research, each with different procedures).</b>
<b>January</b>	<b>Advisory Committee and NPPC review of BPA annual implementation plan.</b>
<b>February</b>	<b>Publication of annual program guide and solicitation for proposals for construction projects and research. (For job-oriented projects, use existing BPA procurement procedures for construction contracts. For research-oriented projects, follow procedures outlined below.)</b>
<b>February-April</b>	<b>Project officers select peer review teams in topical areas designated in solicitation. Project officers respond to questions from potential applicants and screen out inappropriate ideas.</b>
<b>April 1</b>	<b>Proposal deadline (before major field season starts).</b>
<b>April 1-15</b>	<b>Administrative office checks proposal.</b>
<b>April 15</b>	<b>Proposals distributed by project officers to topical review teams.</b>
<b>April 15-May 10</b>	<b>Review teams review topical proposals.</b>
<b>May 10</b>	<b>Proposal reviews returned to project officers.</b>
<b>June 1</b>	<b>Project officers rank acceptable proposals and summarize team comments.</b>
<b>June-July</b>	<b>Meetings of internal BPA Administrative Review Panel. Advisory Committee and NPPC review of proposed award package.</b>
<b>August</b>	<b>Notification of awards and rejections. Postselection negotiation. Administrative Review Panel (aided by technical reviewers, if necessary) further considers troublesome proposals through oral presentations.</b>
<b>October 1</b>	<b>Obligation of funds for the fiscal year.</b>

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**Figure 1. Schematic view of the recommended proposal development and review process, beginning with policies and "measures" designated by the independent Northwest Power Planning Council and culminating in contract awards. Three tiers are envisioned: (1) the constituencies and outside sources of expertise, (2) the two advisory bodies through which they provide BPA with advice, and (3) the line flow of responsible groups and the products they provide each other. Tiers are linked by membership (M) or by reviews and advice (A).**

Recommendation: A proposal evaluation schedule should be established that solicits proposals approximately 9 months to one year in advance of project initiation.

#### **2.2.5.2 Review of BPA's Proposed Annual Implementation Plans**

The BPA will be able to implement the NPPC measures, including periodic amendments, most effectively when there is concurrence that the NPPC statements have been converted appropriately to specific annual project requirements. These requirements include designating projects for high priority consideration and indicating the selection criteria suitable for soliciting proposals. Although it might be desirable to have representatives of all the BPA constituencies actually participate in the transition from Council measures to BPA project needs, that seems unworkable. An alternative is to have the transition developed by BPA Division of Fish and Wildlife staff, in consultation with NPPC staff, and reviewed by a BPA Fish and Wildlife Advisory Committee (Sect. 2.1) and the NPPC. It is to the advantage of all parties to develop a consensus; the default position is a BPA administrative decision.

The composition of the Fish and Wildlife Advisory Committee should be representative of the several BPA constituencies (for further discussion of this Committee, see Sect. 2.5.2). High technical competence would be a requisite. Membership should rotate to ensure fresh ideas, with each member serving a defined term (e.g., 3 years), and terms staggered to ensure continuity. The Committee objectives should be clearly specified as advisory review, consensus modification, and approval of staff recommendations. Because it is advisory, failure to develop consensus means that the BPA Administrator acts on his/her own best judgment.

Recommendation: A staff-developed annual program plan that translates NPPC measures into annual project requirements and that is suitable for solicitation of proposals should be reviewed by a special BPA Fish and Wildlife Advisory Committee and the NPPC to develop concurrence.

#### **2.2.5.3 Standard Solicitation and Proposal-Preparation Period**

Potential applicants for BPA Fish and Wildlife Program funds will be best able to respond to BPA needs for high-quality proposals when the times of solicitation and due dates are firmly established and well understood. This point was made repeatedly by agency staffs. The BPA is also most capable of making justifiable comparisons between either alternative proposals for the same objective or proposals addressing a range of alternative objectives when the full array of proposals is available at the same time. Burdensome responses by project officers to erratic arrivals of unsolicited proposals can be eliminated by rigid adherence to the proscribed timing. An explicit category of exceptions to solicitation timing could be valuable, however, to accommodate "emergency" work necessitated by unforeseen events (e.g., natural disasters or outbreaks of disease). This category should not represent a large proportion of total program funds.

**Recommendation: All work funded by BPA Fish and Wildlife Division, with the exception of a small amount of money designated to an "emergency response fund," shall be proposed by applicants in response to a timed annual agency solicitation in which a proposal due date is designated. Solicitation is recommended as early as feasible, but at least 9 months prior to initiation of work, with the proposal due date being 6 months in advance.**

#### **2.2.5.4 Priority Guidance in Proposal Solicitation**

Applicants will be most likely to propose work that matches the goals and objectives of the Columbia River Fish and Wildlife Program and its near-term priorities when those goals, objectives, and priorities are clearly described in the annual solicitation. Other agencies have found this approach to be effective in guiding applicants to the most germane projects and in reducing the number of proposals that must be reviewed and rejected for contextual reasons. Solicitations can indicate general areas of particular agency interest in the current year and specific topics that will receive highest-priority consideration. Preferred approaches could be indicated or left to the applicant. To avoid overregimentation of proposed ideas and discouraging innovative thinking, a special category of "exploratory research," which would not exceed a set percentage of the total solicitation budget, is advantageous.

**Recommendation: The annual solicitation should include goals, objectives, and priorities especially established by the agency for the year of concern as guidance for narrowing the breadth of topics proposed. A separate category of "exploratory research," not exceeding 5% of the annual budget, should be included to encourage submission of novel ideas.**

#### **2.2.5.5 Potential Applicants**

The Fish and Wildlife Program will receive the greatest benefit for expenditures when the best and most qualified individuals or teams are selected to conduct the work. This means that BPA must thoroughly explore alternative applicants and must contact all possible sectors, e.g., state and federal agencies, universities, consulting firms, national laboratories, etc. The fact that some agencies have "proprietary rights" to some areas of investigation due to restricted land access, legal status, etc., should not preclude wide solicitation for most other projects.

Some agencies make use of the Federal Register to either print the annual program guidance and proposal solicitation or to announce its availability. If certain types of projects are limited to certain categories of applicants, they so specify. The major drawbacks to such wide advertisement are the large number of proposals that may be submitted and the instability that could be created for staff and funding in the traditional agencies.

Innovative approaches to managing the fish and wildlife resources of the basin are desired; thus, broad solicitation and competition among traditional teams (where appropriate) may be necessary.

**Recommendation 1: Through consultation among BPA, the Council, and the agencies, the types of project that must be handled by agency personnel should be determined and justified.**

**Recommendation 2: Annual program guidance and proposal solicitations should be advertised widely for most projects, using a mechanism such as the Federal Register or a mailing list that includes a wide variety of potential applicants.**

#### **2.2.5.6 Standard Format for Proposals**

Applicants will be most likely to submit administrative materials and evidence that matches the project evaluation criteria when proposals are solicited in a standard format. Such a standardized approach also minimizes staff time expended in searching texts for the needed evidence. The ability of an applicant to accommodate an established format is often a useful guide to overall organization and project performance. The more organized agencies that were interviewed gave some explicit guidance on format, and some provided forms. Many specify length, which need not be great. It will be necessary to further explore BPA contracting needs in order to suggest a specific format.

**Recommendation: BPA should use a standardized format for proposals, including length. To the extent practicable, the format should be simple. It should include proscribed forms for cover and budget sheets so that necessary administrative information can be located quickly. A checklist of administrative items should be published in the solicitation.**

#### **2.2.5.7 Preproposal Discussions**

Applicants who have a clear understanding of program needs will submit the most germane proposals. Also, preparation of a full proposal that does not fit the perceived agency needs is wasteful of investigator time unless it is specifically addressed to exploratory funding. Requests for emergency funds should still be perceived to meet agency needs. These problems are met by some agencies through review of preliminary or outline proposals. Other agencies, however, feel that a preproposal stage of selection gives unfair advantage to those investigators already in the system and that it constitutes merely another step requiring the project officer's time. They also point out the difficulty in evaluating the potential quality of work when only sketchy outlines are available. These agencies encourage direct contact of project officers by potential applicants.

The advantages of a preproposal stage can be met by direct discussions with the agency project officer. These would occur after there has been a solicitation of proposals to meet specific and prioritized needs for the coming year. The solicitation can invite such discussions. Questions about the intent of solicitations can be answered directly on a case-by-case basis, and the proposer's ideas can be focused to address pertinent goals and objectives by the project officer without commitment to later funding. Care must be taken, however, that this contact does not constitute "lobbying" in favor of the proposal prior to its objective review.

**Recommendation: Discussions between potential applicants and the project officer (at the applicant's initiative) after proposals are solicited should be encouraged to focus proposals on high-priority agency (and Council) needs for the coming year.**

#### **2.2.5.8 Receipt of Proposals**

Proposals can be administered most effectively when they are received in a standard place where they can be checked to see that administrative requirements described in the solicitation are met. This task need not involve the technical project officer in the agency and can best be handled by an administrative officer. Proposals that do not include the required items can be returned for completion without technical judgment. This mechanistic treatment of proposal receipt should be nearly transparent to the applicants (except for correcting deficiencies).

**Recommendation: Proposals should be checked by an administrative officer prior to transfer to the technical project officer to ensure that all required components of a proposal are included.**

#### **2.2.5.9 Public Access to Proposals**

In one instance, an agency sought public review and comment for all proposals. Availability was advertised, and all nonproprietary information was placed in a public reading room (proprietary information such as salaries was omitted). Although many of the potential applicants that were interviewed wanted to know more about the kinds of projects being evaluated in any one year, most would not like to see their proposals open for public scrutiny until after acceptance by peer and agency review.

**Recommendation: An annual solicitation of proposals by BPA should adequately define the subject areas of interest for the year so that agencies and the public can be aware of work to be done. Public scrutiny of proposals prior to contract award is not recommended.**

#### **2.2.5.10 Review Teams**

As discussed earlier (Sect. 2.2.3), it is important that major facets of the Fish and Wildlife Program constituency be included in the technical review of proposals. This would be the second principal stage of their involvement, the first being their input to the goals and priorities established through the auspices of the Northwest Power Planning Council. At this second stage, the technical expertise and perspectives of individuals within the constituency are being sought rather than any official positions. An internal agency group, however, needs to make the final decisions regarding funding following receipt of technical evaluations. This decision involves internal administrative questions as well as technical considerations. A two-panel approach to reviews is used (explicitly or implicitly) by several agencies to accommodate both technical peer review and agency decision-making.

Most agencies using technical peer panels designate an evaluation team leader (generally the agency project officer who will oversee the work once funded). He/she then selects a team of external reviewers, which includes members of defined constituencies and individuals with special expertise in the topic regardless of affiliation (See Sect. 2.5.3 for further discussion of the review team). Team size and organization may need to vary according to the complexity of projects. This team makes the technical evaluation of groups of proposals in the topic category, using criteria established prior to solicitation and their own professional judgment. Written, often anonymous, reviews are the norm (although the team makeup is known); team meetings may be necessary for some topics. Most agencies provide for contact between the team leader and the applicant for clarification of technical matters; review team members are not to be in direct contact with applicants. Because BPA's funding covers several disparate topics, several technical teams will probably be needed.

An administrative officer, not the technical project officer, heads the administrative review team. The technical project officer now becomes an advocate for those proposals judged by his/her team to be technically superior. The administrative review team includes representatives of other organizational facets within the agency (e.g., finance) who have reviewed the proposals for meeting administrative criteria. Generally, this team can arrive at a decision about projects to fund in all of the technical areas. In cases where the team has difficulty deciding among competing proposals, some agencies provide for a meeting of the technical team leader, peer reviewers, administrative team members, and applicants for oral presentations and further questioning.

Recommendation: A two-panel system for evaluating and selecting proposals to fund should be established to accommodate the needs for (1) technical expertise in proposal review, (2) inclusion of the perspectives of various constituencies, and (3) internal administrative discretion based on agency priorities and available funds. The panels should be organized as discussed above.

#### 2.2.5.11. Preaward Inspection of Facilities

For some types of work, it may be advantageous for BPA staff to inspect personally a potential contractor's facilities. This inspection would provide assurance that the contractor could actually accomplish the proposed work in an acceptable manner. Facilities that might need verification would include the life support system for organisms (tanks and water supply), control systems for disease organisms or hazardous materials, specialized experimental devices and field sampling equipment. Generally, contractors that have a history of acceptable work for BPA or other fish and wildlife agencies would not need such an inspection; new contractors could require additional attention.

Recommendation: Preaward inspection of a contractor's facilities should be maintained as an option in the BPA project evaluation process, although it would not be a mandatory, standard procedure.

### **2.2.5.12 Support and Justification for Contract Awards**

**Challenge of an award is a possibility for which the agency should be prepared. A recognized system for documenting selection processes and supporting material can avert frivolous challenges and decrease the likelihood of adverse judgments. The larger funding agencies interviewed consider this "paper trail" to be essential.**

**Recommendation: A file should be maintained on each proposal that includes team membership, written reviews from each technical review team member incorporating the quantitative scoring of preselected criteria; a summary sheet from the team leader that incorporates all oral, written, and ranking information by the evaluation team and a summary of comments and justifications used by the administrative team in making the final award decision. Summaries (in a standard format) of pertinent information (excluding names of reviewers) should be mailed to applicants, both successful and unsuccessful, for their information at the conclusion of the selection process, and the full file should be kept at the agency in case of challenge.**

### **2.2.5.13 Postselection Discussion with Successful Applicants**

**The proposal selected may need to be adjusted to match technical or administrative needs (e.g., the level of available funds) following selection decisions. A period of negotiation is thus necessary before the offerings in a proposal are translated into a statement of work and a contract. These negotiations will usually include both the technical project officer and a representative of the administrative team**

**"Postapproval" proposal modification is a necessary option, but hopefully one that would not be routinely exercised. Some agencies expressed strong reluctance to alter a proposed research approach or protocol that a scientist or team had carefully put together. Their attitude seemed to be that if it was accepted by the peer review system, then it should go forward as proposed. Investigators also expressed skepticism about too much agency "fiddling".**

**Recommendation: Flexibility in decision-making should allow for negotiations between successful applicants and the agency to take place to modify the proposal as necessary to form a contract.**

### **2.2.5.14 Postselection Discussion with Unsuccessful Applicants**

**Applicants will be most likely to come forward with improved proposals following subsequent solicitations when they receive timely notification of the outcome of proposal review and constructive comments. Uncertainty need not prevail until the list of funded projects is circulated. Personal contact by letter (and often by telephone as well) is the normal avenue for timely notification by major funding agencies. Constructive comments not only ease the shock of rejection, but also can focus the applicants' attention on areas judged to be weak, unconvincing, or otherwise lower in ranking than competitors' proposals so that their subsequent attempts can be improved. Questions about resubmittal in a subsequent year are best dealt with at the time of rejection;**

generally it is not desirable to encourage resubmissions unless deficient areas are to be upgraded.

**Recommendation: Unsuccessful applicants should be contacted individually shortly after funding decisions are made to notify them of the result and to offer constructive comments on their proposals. No proposal should be accepted that is the same as one submitted in a previous year.**

#### **2.2.5.15 Practicability of a Single Method**

The broad variety of projects supported by the Columbia River Fish and Wildlife Program makes the application of any one evaluation system difficult. If the detailed evaluation requirements of every type of project were applied to all, the overall system would be exceedingly cumbersome. Other agencies with missions similar to BPA's in the Fish and Wildlife Program have established categories of contracts or "program elements" that allow for flexibility. The categories differ among agencies.

A valuable distinction can be made between projects that are "job" oriented and those that involve research. In the former, tight specifications can be prepared, bids solicited, and selection made largely on the basis of cost and administrative questions. Examples of such projects could be design and construction of screening systems or habitat modifications. In research-oriented projects, there is more a competition of ideas than of costs, necessitating more careful review for technical merit and comparison of divergent approaches to similar goals. On the other hand, the distinction between job-oriented and research-oriented is less clearly defined when all projects are viewed in the context of "adaptive management," which has been adopted in the latest amendments to the Fish and Wildlife Program. In this approach, all projects have a "scientific" thrust; all have a hypothesis that an action will provide a benefit, and the work is a test of that hypothesis. Proper evaluation establishes whether the hypothesis is supported and the action should be pursued further.

**Recommendation: Two paths for procurement should be established, one to accommodate the job-oriented projects (for which BPA's existing bidding procedures and administrative guidelines may be adequate) and the other to accommodate research-oriented investigations (for which a new procedure, emphasizing technical evaluation, is added to internal administrative review).**

#### **2.2.6 Analysis and Interpretation**

To the extent feasible, well-publicized criteria that can be scored quantitatively by both applicant and the BPA evaluation team are preferred for forthright analysis and interpretation. The burden is thus placed heavily on the early phase of developing such standards and criteria and the scoring system for them. Such a quantitative system was not seen in use by other agencies; it may be deemed too cumbersome and complex. Regardless of the amount of effort expended setting up such criteria and their scoring system, there will always be a need for some subjective judgment. The most important consideration for analysis and interpretation is that such subjectivity be identified and supported by a narrative.

**Recommendation; Analysis and interpretation of proposal evaluations should follow quantifiable criteria established at the stage of project proposal solicitation and should be supplemented by a narrative if firm criteria are inappropriate or insufficient.**

### **2.3 PROCESS EVALUATION (ONGOING WORK)**

The monitoring of ongoing work generally takes three forms: contacts between the agency project officer and principal investigators, periodic progress or topical reports, and formal onsite reviews. Relative emphasis and timing vary among the agencies interviewed.

Most agencies stressed the importance of a close working relationship between the agency project officer and the principal staffs conducting the work. Frequent, informal contacts were judged most effective in keeping the agency informed and the project on target. Whenever feasible, there should be site visits by the agency person when work is under way.

Formal, written progress reports are almost always needed for the record, but their length and frequency vary markedly among agencies. There was nearly universal concern among funding agencies and investigators that too much emphasis is placed on such reporting. Investigators find report preparation burdensome, and project officers often have no time to read detailed reports. Often, this emphasis is detrimental to open literature publication or data analysis for designated users, the two products generally considered paramount for long-term benefit. Short, frequent letter progress reports coupled with predetermined reports, data sets, or manuscripts that address project deliverables are generally preferred by investigators and several agencies.

When projects or a sequence of related projects continue for more than a few years in a research group, an onsite review is often appropriate. Some agencies have specific requirements designated by the national office that their field facilities be reviewed at established intervals by a team of agency and outside reviewers. Whereas annual (or more frequent) progress reporting emphasizes the general conduct or specific details of the work, the site review allows an in-depth evaluation that emphasizes overall productivity and significance.

#### **2.3.1 Audience**

The type of progress reporting and evaluation used varies with the specific audience being addressed. Project officers in the agency are the first audience of concern for progress reporting. They must be kept abreast of the work as it is progressing so they can represent the agency in responding to technical or administrative problems. Such response should come quickly in consultation with the contractor to ensure the best use of public funds. A hidden audience for progress reports to the agency is often the project staff itself who may not otherwise see the various aspects of their work brought together. There are often substantial benefits in enhanced project coordination when agency reporting is frequent and current.

The facets of the BPA constituency described in Sect. 2.2.1 (resource advocates, cost-effectiveness advocates, procedural advocates, and the contractor community) are all part of the audience for progress evaluations to some degree. Resource advocates are the audience for the technical results of progress, and are often the intended recipients of the technical reports, data sets, and manuscripts. They are also the audience for detailed technical progress or final reports (when these are used), and detailed onsite reviews. Cost-effectiveness and procedural advocates are primarily concerned that short-term reporting procedures and effective project oversight are in place to catch problems. They are clearly a functional part of the audience for onsite reviews. Contractors are directly involved in their own evaluation, and the contractor community as a whole seeks assurance that reporting and evaluation requirements are equitable for all projects.

Recommendation: Progress reporting should be required with a specific audience and their expected response in mind, and the type of report should be tailored to the intended recipient.

### 2.3.2 Objectives and Criteria

It is just as important for everyone to have a clear understanding of the objectives and criteria for progress evaluations as it is for evaluating proposals. Nonetheless, few agencies have shown much concern for this aspect other than for formal onsite evaluations. A common response was the belief that clear objectives written into proposals and incorporated in contractual work statements will carry over to the oversight process. The major objective of oversight is thus seen as ensuring that the proposed objectives are met. Some specific criteria for formal site reviews are suggested in Appendix D; they generally parallel criteria for proposal evaluation (Appendix C).

Recommendation: Progress reports and review requirements should be given careful consideration for their objectives and criteria when a project is initiated and when special reviews (e.g., on-site) are undertaken. These criteria should be explicit and capable of being analyzed quantitatively, if desired.

### 2.3.3 Sources of Proof

As in proposal evaluations, the various facets of BPA's constituency need to be represented in the project oversight process. At the stage of short-term progress reports, the agency's project officer should try to represent each facet. More detailed data reports might be evaluated most successfully by technical peers who would be sent the reports and asked to comment. All facets of the constituency can provide important information to the agency in formal onsite reviews. Both review of reports and onsite reviews will involve a selected set of individuals representing the constituency (Appendix 0, Sect. 0.4, provides sample guidance for selecting team size and composition).

Recommendation: Except for short-term progress evaluations that are handled by the project officer, expert opinion should be sought from representatives of major facets of the constituency.

### **2.3.4 Evaluation Evidence and Methods for Obtaining it**

The introduction of Sect. 2.3 noted three principal types of evidence used by the agencies: project officer contacts, periodic progress or topical reports, and formal onsite reviews. Evidence of each type has utility for certain evaluation objectives and audiences and is most effective when sought in a form that explicitly matches those objectives and audiences.

Evidence from personal contact will be information in many oral and observational forms. The project officer can use the objectives and criteria of both the project and the evaluation procedure to prompt his/her request for information. In most cases, special situations will dictate the sort of evidence pursued (e.g., the project may be experiencing technical difficulty, cost overruns, or staffing problems).

Written progress reports are most effective when they are short and focused, and may simply summarize information already given orally. They are useful for documenting the work conducted, the relationship and importance of the work to project objectives, and the resources used (usually money, staff time, and critical materials).

Project deliverables in the form of topical reports (that may document specific actions), data sets, manuscripts for open literature publication, etc., form a major set of evidence that a project is being well conducted and is on schedule. These deliverables are nearly always more effective than detailed progress reports at specified intervals (e.g., annual reports).

Evidence from onsite reviews (conducted at intervals of about 3 years) is generally in the form of a team evaluation report. Brevity is desirable, but the report must contain sufficient detail to be meaningful to nonparticipating but knowledgeable readers. A standardized format includes (1) general observations of overall project status, performance achievement, and any problems; (2) a response to evaluation criteria, both general and specific to the project, that are agreed upon in advance by the evaluation team; (3) special issues, identified prior to the evaluation, that need attention; and (4) problem situations and the attention recommended for their correction. Appendix 0 (Sect. 0.7) provides sample guidance for an evaluation report. Evidence used by the evaluation team in developing its report include: (1) copies of the project's proposal or work statement, published papers and manuscripts, the latest progress report (preferably written as a summary for the review); (2) impressions obtained in presentations and tours during the visit; (3) discussions among the peer panel members regarding views of the work by those not involved in it; and (4) statements about the agency's goals and objectives for this topic (either written or as presented by an agency representative).

The magnitude of effort required of members of an evaluation team (1-2 days of reading plus 1-2 days on site) necessitates compensation for expenses and time. Agencies handle this in two ways: (1) reviewers are selected from among agencies that already receive agency funds, thus allowing reviewers to charge expenses and salary to the existing agency account; and (2) a review budget is established, usually with a designated contractor other than the one being

reviewed, for payment to reviewers. Special interagency agreements are generally necessary for transfer of funds between federal agencies.

**Recommendation: In general, project oversight evidence should consist of (1) information exchange in the close personal contacts between the agency's project officer and the contractor's principal investigator; (2) short (e.g. 2-3 pages). frequent (e.g., monthly) letter progress reports from the contractor to the project officer documenting work conducted, relationship to project objectives, and resources used; (3) copies of predetermined topical reports, data sets, manuscripts, etc., that address project deliverables; and (4) a report from an on-site evaluation team (when such a review is conducted), which is based on the written evidence plus on-site presentations, discussions, and tours.**

### **2.3.5 Analysis and Interpretation**

Analysis and interpretation of progress is difficult because the mixture of subjective and objective evidence is tempered by the provisional nature of most information. The overall objective of progress evaluation is to ensure a competent, if not superior, result for the funds expended. Intermediate steps, such as short-term objectives and progress reports are merely means to help ensure that desirable end. At times, such near-term indicators can be misleading or totally in error when the broader perspective is taken. In research, especially, many hypotheses and their tests are proposed and then are discarded as more knowledge is gained; not following expectations written in a proposal should not be deemed failure but rather a productive narrowing of alternatives. The basic tenet of adaptive management, a philosophy adopted by the Council in its latest amendments, is the unpredictability of many actions related to natural resources and the flexibility to learn from experiences, those expected and unexpected, favorable and unfavorable. The broader judgment, at least that available during a project's lifetime, is best made by a group of peers representing the various facets of BPA's constituency and using all available evidence.

**Recommendation: To the extent possible, goals, criteria, milestones, and deliverables written into proposals and work statements should be used for objective analysis of the project's progress. These should be tempered by reasonable judgment, however. For broader perspective, all evidence for long-term projects should be evaluated on site by an evaluation team consisting of representatives of all facets of BPA's constituency.**

## **2.4 PRODUCT EVALUATION**

Although end product evaluation is almost uniformly missing from existing agency evaluation plans, effective evolution of the Fish and Wildlife Program would seem to require such scrutiny. Questions posed in Sect. 1.4.2, such as whether the needs of participants were met (here meaning both BPA and contractors), whether the problem was solved, whether the project and its approach were efficient, and whether the recipients of the results were satisfied, need to be answered before a funding agency can rationally decide what directions new programs might take. For some categories of work, a special research or monitoring project may be necessary to evaluate the results (e.g., habitat improvement).

#### 2.4.1. Audience

All of BPA's constituents, as well as BPA itself, have a major interest in whether a project yielded benefits. The whole of BPA's Fish and Wildlife efforts, especially its administration of the Northwest Power Act funds, will be judged ultimately by how those constituents view the results of completed projects. Resource advocates will look for actual increases in the resource, as indicated by various population measures. Cost-effectiveness advocates will calculate the cost of a unit gain in the resource, if any, and be critical of expensive but unproductive projects. Procedural advocates will certainly question a program that lacks a project evaluation system or has a deficient one. Potential or existing applicants for funds will be quick to criticize poor performance by competitors. The program will be better served by a formal, objective evaluation than by its alternative--subjective opinion based largely on accumulated complaints.

The immediate audience, however, is BPA's Division of Fish and Wildlife which must make funding decisions regarding similar types of work. Work judged ineffective should be replaced by alternative approaches with more promise; ineffective contractors should be replaced by others or provided information that fosters improvement.

Recommendation: Product evaluation should be part of most project evaluation plans, and it should include representation from all major facets of the BPA constituency.

#### 2.4.2 Objectives and Criteria

Two levels of objectives are apparent when agencies refer to project evaluation: (1) determining whether the contractor adequately carried out the goals and objectives of the work, as conceived in the proposal and contracted for in the work statement; and (2) determining whether the type of work done (its topic, approach, etc.) actually led to benefits to the resource commensurate with expectations and costs. The scope of the evaluation needs to be established at the outset.

With even more validity than in evaluations of ongoing work, a product evaluation should be able to measure the quality of the work--whether it met program needs and expectations, the actual accomplishments and how well they met specific project objectives, whether resources used were commensurate with the benefits, and how important the results were for those who needed them. Criteria used in evaluating the proposal and the ongoing work are still germane; added emphasis should be placed on judgment of value.

Recommendation: Specific objectives and criteria for evaluating a given project at its conclusion should be developed, based largely on the objectives and criteria established at the outset in proposals, work plans, and evaluations of the work as it was under way.

#### **2.4.3 Sources of Proof**

The broadest possible sampling of the constituency is desirable for evaluating end products. An evaluation team comparable to that used in onsite review of work in progress could be designated for review of the project after completion (see Appendix D for guidance in selecting an onsite review evaluation team).

Recommendation: Product evaluations should include a broad sampling of the constituency, formed into a carefully selected evaluation team

#### **2.4.4. Evidence**

All of the the project's deliverables, financial statements, and previous evaluations constitute the evidence of the success or lack of success of the project. Most projects have uncompleted analyses and manuscripts that should also be considered. Although the evaluation team would be similar in makeup to that for a site review of ongoing work, emphasis would be on detailed review of reports by individuals.

Recommendation: Projects should be evaluated on the basis of the fullest record available of accomplishments, problems, resources used, etc.

#### **2.4.5 Evaluation Method**

An evaluation team comparable to that established for onsite reviews of work under way (see Appendix D) can most effectively evaluate the results of a completed project. The one agency interviewed that does such evaluations finds that they can best be accomplished by soliciting written reviews of printed material from team members individually. The reviews are coordinated in a team report by the agency project officer. When the team shows wide variation in their assessments, it may be necessary to convene a team meeting to discuss alternative views and reach a consensus. Because review of extensive project material is time consuming (2-3 days of work, generally), payment is offered and expenses are paid to any meetings. If the evaluation must be extensive and involve additional research, then it is most appropriate to issue a separate contract for the evaluation study.

**Recommendations: Project evaluations should be conducted by an evaluation team generally led by the agency project officer and composed of individuals representing the major constituencies of BPA. The team reviews all printed materials available from the project, including the agency perspective, and the project officer prepares an evaluation report to the BPA Director of Fish and Wildlife. Time and expenses of reviewers are to be compensated. Major evaluations involving actual research should be funded as separate projects.**

#### **2.4.6. Analysis and Interpretation**

The caveats discussed for analysis and interpretation of ongoing work apply equally as well for completed projects. More will be known, and perspectives on success may be clearer, but judgments will still be provisional. The value of projects, especially of research, often becomes clear only after many years. The stated intent of the postproject evaluation will more strongly dictate the analytical steps and how results are interpreted than will any other type of evaluation. Quantitative measures are likely to be less appropriate or more difficult to obtain. Subjective judgment of value becomes more important. For BPA's purposes, the critical interpretation is whether the type of work and the contractor should be pursued further.

**Recommendation: Qualitative judgments of value by recognized experts and members of BPA's constituency that are based as much as possible on preselected criteria can form the basis of project evaluations at the completion stage.**

## **2.5 IMPLEMENTATION**

### **2.5.1 Project Officers**

BPA can implement a complex Fish and Wildlife Program most effectively when it has sufficient staff of technically competent project officers and an administrative staff capable of processing the necessary paperwork. What constitutes "sufficient" staff is a matter of concern within the agency and among contractor staff who must deal with the BPA Division of Fish and Wildlife. Current BPA project officers in the Division of Fish and Wildlife feel overburdened with the current level of project assignments and other agency duties. Contractors cite several points of evidence from their perspectives that the BPA staff is overburdened, their working arrangements inefficient, or both: (1) little followup from planning workshops and meetings, (2) lack of feedback from proposals, (3) inadequate oversight or BPA interaction during project performance (e.g., progress reports do not seem to be read after much effort is expended writing them), (4) turnover of BPA staff that results in lack of continuity. The consistency of comments from agencies and groups interviewed suggests that these symptoms are not individual gripes but represent a pattern that requires attention and remedial action.

The process just discussed and recommended should increase efficiency but it also requires considerable attention from agency staff. A formalized approach should become reasonably efficient with experience, but the question of available staff time remains germane. Many tasks occur with higher than average intensity

In short periods of time (e.g., preparing solicitations, reviewing proposals). Agencies were questioned about the work load assigned to project officers, and the nearly uniform response was that it varied according to the type and complexity of the projects. Those willing to be quantitative provided monetary and project number guidance that may be useful to BPA (Table 3). Some agencies are good analogs of BPA's program of laboratory and field projects (e.g., Corps of Engineers, Maryland Power Plant Siting Program, Hudson River Foundation), whereas others are less appropriate analogs (e.g., NIH and EPA, in which project officers are strictly office administrators).

Skill, experience, and educational level of BPA technical project officers are a large factor in determining their effectiveness. Potential applicants rebel at technical judgments made by persons who they perceive as inexperienced and not knowledgeable. There seem to be two solutions: (1) employ (or select for temporary, rotating assignments) only highly qualified project officers (for research projects, this is generally a Ph.D. degree or equivalent and 10 years or more of experience in the field of BPA responsibility) whose judgments may be acceptable to constituents, or (2) employ staff with moderate qualifications (e.g., Masters degree level or equivalent with 5 years of experience) and supplement their background with technical peer review panels. Although both solutions are represented among the agencies interviewed, the second seems to be the most workable for BPA. A highly qualified, senior technical person in the Division of Fish and Wildlife is desirable, however, to train and oversee less experienced project officers.

Some agencies (e.g., Maryland Power Plant Siting Program, Department of Energy Global Carbon Program, and Fuels from Biomass Program) have elected to delegate responsibility for some projects to management or integrator contractors in topical areas. The management contractor becomes an extension of agency staff in a core disciplinary area, thus obviating the need for an enlargement of permanent staff in the agency office. The management contract includes ready access to experts on the contractor's staff who would not normally work full time for the agency. This feature can be a distinct advantage when quick responses or short-term help are needed. Such short-term needs include review and evaluation of proposals, preparing solicitations for projects, selecting peer reviewers, and other tasks that would otherwise fall on the agency's project officer.

**Recommendation 1: Assuming that the BPA Division of Fish and Wildlife adopts a standardized, formal project evaluation system such as that recommended here (which affords enhanced office efficiency), BPA project officers should have a maximum full-time work load of ten funded projects (that may represent 20-30 proposals to be reviewed), amounting to a maximum of approximately \$1 million in funded work). A work load of 4-6 projects and \$0.5 to 1.0 million is "normal," based on close analogs to the Fish and Wildlife Program in other agencies.**

**Recommendation 2: Project officers with a moderate level of training should be used in conjunction with a technical peer review process and an overall Fish and Wildlife Advisory Committee.**

**Recommendation 3: To maintain a moderate-sized and stable BPA Fish and Wildlife Division staff, management contractors with extensive expertise should be selected to oversee and assist with selected topical areas.**

### **2.5.2 Fish and Wildlife Advisory Committee**

The Advisory Committee recommended in Sect. 2.1 is envisioned as a body with a reasonably high level of technical expertise, but selected primarily to represent the constituencies. Its purpose is to provide input of a policy nature, in parallel with (but in more detail) agency or tribal input to NPPC. Its makeup would be by a formula whereby a certain number of seats are assigned to certain groups. Those groups would recommend individuals for rotating terms of membership. Other organizations with complex constituencies have found such an advisory group to be highly valuable for input, critique of staff approaches, and dissemination of detailed program plans as they are being developed. An open discussion with representatives of the four constituencies may facilitate arriving at a mutually acceptable seating formula. Some representation from outside the Northwest seems desirable. Such groups function most effectively when limited to about 15 members.

Operation of the Advisory Committee would be focused on two stages of the annual project evaluation process (Figure 1). The first stage is review of the BPA staff's annual implementation plan and proposal solicitation; the second is review of the annual award package. Each could be accomplished in a full-day meeting consisting of staff presentations and committee discussion, based on the experiences of other agencies. Advisory Committee members should be reimbursed for time and travel

**Recommendation: An Advisory Committee of about 15 members should be structured, in consultation with constituent groups, such that each of the identified constituencies has an assigned representation and individual members are recommended by the constituent groups for rotating three-year terms.**

### **2.5.3 Technical Review Panels**

The Technical Review Panels recommended in Sect. 2.2.3 are envisioned as being selected primarily for their individual technical expertise and their ability to provide unbiased, constructive comment. The individuals would, however, be selected by the BPA project officer to include a fair sampling of the DPA constituencies. It is also highly desirable to avoid regional "inbreeding" by including at least one technical expert from outside the Northwest.

Recommendations for peer review panel members in other agencies come from combinations of the following sources, (1) the proposer, (2) the agency's advisory group(s), and (3) the agency staff, especially the project officer. Selection of individuals is necessarily somewhat arbitrary and often highly dependent on circumstances of availability. There is no perfect set of reviewers; project officers need to select a large enough panel to ensure that a broad technical perspective can be obtained. The Advisory Committee (Sect. 2.1, 2.52) serves as a continuing check against abuse of the peer review process.

Operation of the Technical Review Panels may vary with the type of proposals. Some agencies gather panels for face-to-face discussions following review of materials and evaluation criteria at home; others obtain written views of the reviewers, which are then summarized by the project officer. Mailed reviews are most expeditious. The "brainstorming" aspect of panel meetings may not be necessary when annual plans and proposal solicitations have been well developed. The need for an actual meeting seems to depend on the complexity of the problem, the number of competing proposals, and the novelty of ideas and approaches that the proposals contain. Discretion to operate either way would seem desirable.

Recommendation: Technical Review Panels of no fewer than 5 members should be selected by the BPA project officer for a discrete topic considering membership recommendations solicited from the proposer and the Advisory Committee. Members should, if practicable, represent four constituent groups and experts from outside the Northwest. The mode of operation of panels should stress individually prepared comments based on review of proposals and evaluation criteria supplemented as necessary by panel meetings.

#### 2.5.4 Guidance Documents

The preceding sections have recommended several standardized guidance documents. These could have long-term use (although subject to revision), e.g., guidance for proposal preparation, or they could be published periodically based on a standard format, e.g., annual program guidance and proposal solicitation. This report has provided a draft of one document as an example -- "Guidance For Project Site Evaluations" (Appendix D). Each of these guidance documents can be assembled to meet BPA needs from examples provided by the agencies interviewed, although there has not been time to do so under the present work agreement. Drafts thus prepared would require detailed review by BPA staff.

Recommendation: Guidance documents, based on similar documents used by the agencies interviewed, should be prepared for BPA use.

**APPENDIX A**  
**SUMMARIES OF AGENCY INTERVIEWS**

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**Agency: Coeur d'Alene Tribe**

**Program Natural Resources**

**Contacts: Jim Albrecht (208) 274-3101**  
**Natural Resources Staff**  
**and Richard Mullin, Tribal Council Member**  
**Coeur d'Alene Tribe**

**The Coeur d'Alene Tribe is in the upper Columbia River area above Grand Coulee Dam where anadromous runs have been lost. Their main concerns are (1) for protecting fishing and hunting rights both on and off the reservation; (2) for extending the list of fishes of interest to resource managers beyond the few "game" fish, (3) historic losses of wetlands and possibly fish resources due to an old (1906) dam at the mouth of Lake Coeur d'Alene, and (4) losses of anadromous runs due to Grand Coulee Dam**

**The tribe has no formal evaluation processes to offer, and with a limited staff it would be unable to participate to any great extent in BPA's evaluation processes. It had recommended to the Northwest Power Planning Council an evaluation of the dam at Lake Coeur d'Alene, but it was not accepted.**

**Agency: Columbia River Intertribal Fish Commission**

**Program NA**

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Fisheries Technical Services Manager  
Columbia Intertribal Fish Commission  
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**(503)2389-0667  
John C. Platt  
Policy Assistant  
Malcolm H. Kerr  
Water Budget Manager**

**The Columbia River Intertribal Fish Commission is an organization that combines the fisheries interests of four tribes on the Columbia River. It has no formal project evaluation process of its own, but it interacts strongly with the NPPC and BPA in the conduct of the Fish and Wildlife Program**

**The following points were made regarding the overall evaluation process:**

- 1. The process of consultation with tribes and others with interests on the river has not yet come to a workable system**
- 2. Fisheries resources of much interest to the tribes will not fare well in a strict cost-benefit evaluation, and other criteria must be applied if these resources are to be protected.**
- 3. The Fish and Wildlife Program will be most effective when policies are set and followed consistently, without each agency making its own (different) decisions. Disagreements over policy should be taken to the Council, not BPA.**
- 4. An overall research program for anadromous fishes will be most representative of the interests of all parties when researchers are not the only ones setting the criteria by which work is judged.**
- 5. Review of proposals to carry out NPPC goals will be best when strictly objective.**

**Agency: Confederated Tribes of the Umatilla**

**Program Department of Natural Resources**

**Contacts: Gary James (503) 276-8221**  
**Tribal Fisheries Biologist**  
**P. O. Box 638**  
**Pendleton, Oregon 97801**

**The Umatilla tribes' principal fishery goal is reestablishing salmon runs and building up existing steelhead runs in the Umatilla River basin. Among the projects toward this objective are habitat improvements funded through the Columbia River Fish and Wildlife Program**

**The tribes have no formal evaluation process of their own. They participated in a summary of needed habitat improvements in four tributary river basins. These needs were presented to the Power Planning Council and were included in their measures. The tribes look forward to gradual implementation of these measures by BPA.**

**The following points were made:**

- 1. Policy questions regarding work to be done are best resolved in the Council with a high degree of agency discussion and coordination.**
- 2. People working in the field have valuable expertise that should be used in developing the overall program and selection of projects.**
- 3. The evaluation team of the Salmon and Steelhead Conservation and Enhancement Act has considered evaluation criteria extensively and its reports could be used by BPA.**
- 4. Peer review is a valuable way of bringing technical expertise into project proposal evaluations, although getting representation from all agencies for each proposal would be difficult.**
- 5. Workshops may be unnecessary when a smaller group of reviewers can be selected for relevant expertise.**
- 6. Research will be most valuable when it ties directly into the goals of the program and for upcoming expenditures.**
- 7. Evaluation of habitat Improvement work will often take the form of subsequent studies over several years that quantify physical habitat features and fish population changes.**

**Agency: Electric Power Research Institute**

**Program Ecological Studies Program**

**Contact: Or. Jack S. Mattice (415)855-2763**  
**Ecological Studies Program**  
**Electric Power Research Institute**  
**3412 Hillview Avenue**  
**Palo Alto, CA 94031**

The Electric Power Research Institute (EPRI) plans and manages research and development on behalf of the nation's electric utility industry and the public. Founded as a nonprofit organization in 1972, EPRI is supported on a voluntary basis by 497 members including investor-owned companies, municipal and regional government utilities, and rural electric cooperatives. In addition to EPRI's Board of Directors, two special advisory groups are involved in formulating policy and program guidance. The Research Advisory Committee, which is made up of utility executives, provides technical counsel on EPRI's programs and progress. The Advisory Council, which is drawn from education, business, government, science, and other groups outside the utility industry, advises EPRI on the emphasis and direction the institute's research program should take in meeting the needs of society.

Within the Ecological Studies Program proposals which are submitted to EPRI in response to a Request for Proposals (RFP) are sent to at least six reviewers. Three or more of the reviewers are utility employees and are drawn from a 25-member Environmental Task Force. At least three other ad hoc reviewers are non-utility, non-EPRI peer scientists. All proposals are read by each reviewer and are considered on the basis of certain weighted criteria, e.g., understanding of the problem approach, qualifications of the investigator, and cost effectiveness. Criteria on which proposals will be judged, but not their relative weightings, are generally published in the RFP.

Reviewers rank each proposal and submit the rankings along with written comments to the EPRI Project Manager (PM). The PM prepares a summary sheet for each proposal which includes the rankings of each reviewer and written comments. These materials are kept on file and form the basis for the PM's decision on awarding the contract. In cases where the PM has difficulty deciding between competing proposals, a meeting of the PM applicants, and peer reviewers may be arranged for oral presentations and further questions.

The majority of a Project Managers time is spent on oversight of existing research. The PM routinely makes annual site visits to any multi-year project, and is also apprised of the project's status by phone conversations, monthly cost reports, quarterly letter reports, annual progress reports, and a final project report.

**Project Manager work load in EPRI is \$1-2 million/year/project manager. Most of PMs time (60-75%) is spent on project oversight; the rest of their time is spent on program/project planning (such as preparing requests for proposals) and in dealing with proposal selection.**

**STRENGTHS: Policy and technical advisory groups represent constituencies, formal proposal solicitations based on organization needs, peer review of proposals by constituents, formal evaluation criteria, close PM oversight of projects.**

**WEAKNESSES: RFP form of solicitation limits participation, viewed by some as cumbersome.**

**Agency:** Enhancement Planning Team (Salmon and Steelhead Conservation and Enhancement Act, PL 96-561) composed of representatives of Columbia River Intertribal Fish Commission, Oregon Department of Fish and Wildlife, Washington Department of Fisheries, Washington Department of Game, Washington Tribal Coordinating Body, U. S. Fish and Wildlife Service, U. S. National Marine Fisheries Service

**Program** NA

**Contact:** Richard Berry  
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The Salmon and Steelhead Conservation and Enhancement Act of 1980 (SSCEA) provides for the development of two "comprehensive enhancement plans," one for a Washington conservation area and one for a Columbia River conservation area, and establishes a program to fund enhancement projects consistent with the plans. The plans are reviewed and approved by the Secretary of the interior in consultation with the Secretary of Commerce. The mandate to be comprehensive is particularly important, and there are provisions in the Act to assure it. The plan for the Columbia River conservation area (of most relevance to BPA) must be developed and agreed to by the states of Washington and Oregon and the Columbia River tribal coordinating body (omission of Idaho is a notable oversight). This provision responds to the identified need for improved coordination among the major fish-producing entities, recognizes their management authority, and gives them the exclusive mandate to establish the direction of future enhancement planning in the Pacific Northwest. There are important overlaps of responsibility with the Pacific Northwest Electric Power Planning and Coordination Act of 1980 (PL 96-501; "Northwest Power Act") to which BPA must be responsive, and there is current debate among agencies over which fisheries planning process should be the "guiding element" for comprehensive enhancement planning in the basin. The SSCEA provides 50% matching funds for enhancement projects carried out by the states of Washington and Oregon and up to 100% for tribal enhancement projects. A total of \$25 million is authorized for the 10-year period 1982-1992 for the Columbia River conservation area.

Policies, plans, evaluation procedures, and criteria for implementing the Act are now being developed through an interagency Enhancement Planning Team (EPT). A draft report (Volume 1, of two) being circulated for comment was provided, and it includes explicit and detailed evaluation procedures and criteria for funding projects. The draft is subject to revision, but both the process of its development and the criteria it proposes are germane to BPA and its responsibilities under the Northwest Power Act. Key elements are described below.

Policy conditions are established by the Act. The party seeking funds must obligate itself to implement and enforce the provisions of the report on coordinated management to be prepared by the Salmon and Steelhead Advisory Commission (SSAC) pursuant to Section 110 of the Act. The states and tribes must

also agree not to undertake any salmon or steelhead enhancement project, using funds provided under the Act or otherwise, that would be inconsistent with the plans. To ensure compliance with the second condition, a monitoring system must be implemented to evaluate all enhancement projects for which funds have been distributed. The provision that all projects of the states and tribes (regardless of funding) must conform to the SSAC plans is under legal dispute.

Each comprehensive plan must include such standards as are necessary to ensure that any project included in the plan "contributes to the balanced and integrated development of the salmon and steelhead resources of the area" [Act, Section 120(d)]. These standards are to include, but not be limited to, provisions designed to meet the following objectives:

- (1) assure that all commercial and recreational fishermen and the treaty tribes shall have a reasonable opportunity to participate in the benefits, considered as a whole, of the salmon and steelhead resources development;
- (2) minimize, to the extent practicable, significant adverse interaction between naturally spawning and artificially propagated stocks;
- (3) ensure that all projects included within the plan are designed to complement the contribution of sound State, Federal, and tribal enhancement activities;
- (4) ensure that all projects included within the plan are economically and biologically sound and supported by adequate scientific research;
- (5) assure that all projects included within the plan achieve significant benefits relative to the overall cost of each such project;
- (6) consider the effect of enhancement activities as they relate to existing and future international commitments, and
- (7) notwithstanding any of the above measures, provide for the harvest of fish by treaty tribes in accordance with treaty rights, unless agreed otherwise by the affected treaty tribes (Act, Section 120d).

These seven standards reflect Congress' recognition of the enhancement planning issues identified in Section 1.1(d) of the Act, and further substantiate the comprehensive intent. The comprehensive enhancement plans must address not only the physical feasibility of enhancement, but its social, biological, economic and harvest management implications as well. A second draft volume by the EPT (not seen) documents these factors for the conservation areas and defines enhancement and research measures compatible with the existing environment and consistent with the Act.

The EPT draft Volume 1 defines the project evaluation processes and the principles, guidelines, and criteria (PGCs) necessary to ensure that new enhancement projects meet the mandates of the Act. The evaluation process consists of (1) review of preliminary project proposals for relevance and

duplication by an Administrative Review Team with provisions for comment and resubmittal, (2) review of detailed proposals for technical content and satisfaction of critical review criteria (from PGCs) by a Technical Evaluation Team of disciplinary peers, with provision for comment and resubmittal, (3) a final selection based on the ability of the total package of proposals to satisfy the goals of the Act and the plan by a Final Selection Board, (4) design review for construction projects, and (5) performance evaluation to:

- (a) ensure that (new) enhancement projects are carried out in accordance with SSCEA standards and with the performance evaluation plans described in detailed project proposals.
- (b) provide each party an opportunity to review the effectiveness and impacts of (new) enhancement projects, and provide feedback to the project sponsor.
- (c) identify deficiencies in projects, project evaluation criteria, and evaluation processes to provide a basis for plan amendment.
- (d) identify research needs based on problems identified during performance evaluation.

Steps for amending the plans and resolving issues or problems are included in the evaluation process. The draft report indicates detailed requirements and timing for each step.

Principles, guidelines, and criteria for rating evaluations were developed independently by interagency working groups for each of eight specialized technical areas: facility design, habitat improvement, research, harvest/production integration, fish health, genetics, species interaction, and economics. The draft requirements are often very detailed, to the extent of specifying such items as gravel size or net size. Uniformity of scope among groups and consensus over detailed criteria have not yet been attained by the EPT.

**STRENGTHS:** Constituencies recognized, policies explicit, formal evaluation process with selection criteria, Technical and Administrative peer reviews, performance evaluation.

**WEAKNESSES:** Untested, selection criteria differ in scope among topical areas, criteria often too detailed.

**Agency: Hudson River Foundation for Science and Environmental Research**

**Program NA**

**Contacts: John C. Cooper, Science Officer (212)949-0028**  
**'Hudson River Foundation**  
**122 East 42nd Street, Suite 1901**  
**New York, New York 10168**

The Hudson River Foundation is an endowed public foundation which seeks to sponsor scientific, economic, and public policy research on matters of environmental, ecological, and public health concern relevant to the Hudson River. In December 1980, electric utilities, environmental groups, and regulatory authorities signed an agreement ending the legal dispute over the environmental impacts of large thermal electric power plants on the lower Hudson River. A critical element in the settlement was the establishment of a new, independent scientific institution to research, study, and publish results concerning all aspects of the Hudson River ecological system

The signatories decided that the Foundation should have two executive bodies to administer the Hudson River Fund (initially \$12 million). The Board of Directors, which is responsible for governing the Foundation, holds the Fund in trust and allocates each year the resources to be devoted to research and other Foundation activities. The Hudson River Panel is responsible for scientific policy, as well as decisions of grant awards based on scientific merit. The Panel is a seventeen-member body, selected and appointed by the signatories to the settlement and the Foundation's Board of Directors.

The Panel annually prepares a program plan which details areas of preferred interest and concern and determines the procedures for awarding grants on the basis of both competitive public bidding and discretionary funding. It evaluates the scientific merit and cost-effectiveness of all proposals submitted to the Foundation. The advice of outside scientists and others who are specialists, in the fields covered in the proposals are ordinarily sought in the evaluation process. A decision to award a grant requires a minimum of nine affirmative votes from the seventeen Panel members. An award from the Hudson River Fund is made solely upon the recommendation of the Panel, subject to fiscal review by the Board.

For purposes of program planning, proposal review and evaluation, and project monitoring, the Panel is divided into four standing subcommittees:

1. Community and Ecosystem Dynamics
2. Organism and Population Biology
3. Physical, Chemical, and Geological Processes
4. Education, Sociology, Economics, and Public Policy

These subcommittees suggest specific topics for inclusion in the annual program plan, initially screen all proposals in their respective fields, and make

recommendations to the entire Panel regarding existing and potential projects in their areas of responsibility.

The Panel and its subcommittees are assisted in their work by the Foundation Science Officer, whose functions include scientific and programmatic interaction with grantees on behalf of the Foundation. During 1984, the Foundation plans to sponsor approximately one million dollars in grants.

The Foundation publishes an "Annual Program Plan and Solicitation of Proposals" in January. The Program Plan charts a course for the Foundation's activities and expresses the Foundation's research interests in the natural and social sciences. The Solicitation of Proposals announces the Foundation's annual public solicitation of applications for funded research; it describes the Foundation's application requirements and grant award procedures, and serves as a guideline for ensuring effective expenditure of proceeds from the Hudson River Fund. The document contains forms and a checklist of items to be submitted and brief summaries of all funded projects (including principal investigator, organization, costs, and an abstract).

**STRENGTHS:** Annual program plan and solicitation of proposals (that includes abstracts of work already funded), explicit guidance for proposal preparation, explicit discretionary funds as well as funds for competitive selection, outside peer review panel.

**WEAKNESSES:** Panel membership is influenced by non-technical factions resulting in risk that projects are reviewed and funded from a non-technical perspective, less well-defined oversight and final evaluation procedures.

**Agency:** Idaho Department of Fish and Game

**Program** Bureau of Fisheries

**Contact:** Monte R. Richards (208)334-3791  
 Chief, Bureau of Fisheries  
 Idaho Department of Fish and Game  
 P. O. Box 25, 600 S. Walnut Street  
 Boise, Idaho 83707

The Bureau of Fisheries of the Department of Fish and Game is the responsible agency for management of anadromous and resident fishes in the State of Idaho. It thus must interact with the Fish and Wildlife Program and BPA.

Idaho has recently developed a set of management plans which it uses as the policy basis for all fisheries management activities in the state. A long range policy plan for the Department Fish and Game published in 1978 has given general goals and objectives for 1975-1990. A second plan, organized by drainage basin, provides more detailed goals and objectives for resident fish, anadromous fish, and other aquatic life. Increased concern over declining anadromous salmonid stocks prompted preparation of a separate "Anadromous Fish Management Plan 1984-1990" that is still in draft form

Project proposals and subsequent project evaluations are judged by the degree to which they address items in the plans. Projects are to be designed around specific objectives of the plans. Project evaluation is an exercise in comparing the project against stated objectives (there are no other formal criteria).

Management plans at the state level and in the Fish and Wildlife Program are seen as important tools that should be (1) revised every year or so for a period of years into the foreseeable future, (2) gradually refined as a working document that guides project initiation and evaluation. and (3) considered as guides that should be followed regularly.

**STRENGTHS:** Management plans guide research.

**WEAKNESSES:** Solely Internal administrative review of project proposals and accomplishments.

**Agency: Idaho Department of Fish and Game**

**Program Bureau of Wildlife**

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**Bureau of Wildlife**  
**Idaho Department of Fish and Game**  
**P. O. Box 25**  
**Boise, Idaho 83707**

**The Bureau of Wildlife is responsible for game management in Idaho, including game on areas affected by hydroelectric projects. The Bureau has been involved with BPA in developing Wildlife mitigation reports for such projects that include evaluation of impacts, mitigation accomplished, and additional mitigation that is needed.**

**Their own project review processes are internal and administrative. Principal research biologists propose studies, give them justification and review, and pass them along the normal supervisory chain for approval. The staff defends proposals before the Fish and Game Commission, that acts as a final review board. Generally, problems (e.g., disease outbreaks) dictate priorities.**

**The following desirable aspects of project evaluation and selection were Identified:**

- 1. Certain types of projects should be carried out by the state agencies, because the agencies have the data, are most able to get the data, or must control (e.g., through collecting permits and physical facilities) access to the resource under study. Consultants, some federal agencies, and universities may be inappropriate for such work because their effort will ultimately involve (and cost) the state staff.**
- 2. States where expertise lies or where work will be conducted should help review proposals in an open process.**
- 3. Timely proposal reviews is essential, both to meet biological cycles and to retain a stable personnel level.**

**STRENGTHS:**

**WEAKNESSES: Solely internal administrative review of project proposals and accomplishments.**

**Agency: Kalispell Tribe**

**Program**

**Contacts: Lawrence Goodrow**

**(509) 445-1147**

**As a member of the Upper Columbia United tribes, the Kalispell Tribe delegates responsibility for the fisheries matters to Dr. Alan Scholz, from whom comments have been obtained.**

**Agency: Maryland Power Plant Siting Program**

**Program Environmental Research**

**Contact: Randy A. Roig, Director (301)269-2261**  
**Maryland Power Plant Siting Program**  
**Department of Natural Resources**  
**Towes State Office Building**  
**Annapolis, Maryland 21401**

The Maryland Power Plant Siting Program (PPSP) was established in 1971 to ensure that demands for electric power would be met in a timely manner at reasonable cost while assuring that the associated environmental impacts would be acceptable. The scope of the PPSP extends to predicting the impact of proposed new generating facilities, evaluating the acceptability of proposed transmission line routes, assessing the impact of existing generating facilities, acquiring sites for utilities unable to find a suitable site for needed generation, forecasting future demand for electric power and investigating numerous information gaps through long-range research. The PPSP taxes electricity rate payers to pay its costs in a manner similar to the BPA Fish and Wild life Program

The majority of this work is conducted for PPSP on a contractual basis by agencies, Universities, consultants, etc. The work is administered by PPSP staff who integrate results into the various decision making processes. Some contractors' services are procured for a specific project. Other contractors (integrators) are retained to provide continuing consultation to PPSP. Research contractors may be funded through the integrators in program or topic areas (e.g., aquatic biology) or for specific research projects.

The roles of the integrator contractors are especially important to the PPSP. Integrators serve to distribute, on a medium term basis (a few years), the project management load of the PPSP staff. In general, the work performed by the integrator involves addressing environmental issues associated with existing and proposed power plants. This includes:

- Identification of important issues
- Design of a program of study to address these issues
- Implementation of studies
- Evaluation of results
- Presentation of conclusions

Not all studies are conducted in-house by the integrator. In some cases it is likely that studies designed by the integrator will be conducted by a subcontractor, with the integrator serving as contract manager.

For policy guidance in its environmental research program the PPSP has requested the Scientific Council of the Maryland Academy of Sciences to establish an Environmental Research Guidance Committee (ERGC) to assist the Program in identifying research needs for the prediction and assessment of power plant

**Impacts, the review of proposed and ongoing research, and the evaluation of results. The Committee consists of invited members, together with ex-officio members representing the Maryland Departments of Health and Mental Hygiene, Economic and Community Development, State Planning, and the Power Plant Siting Program. In addition, advisors from interested Federal agencies as well as from other scientific and academic institutions are asked for their expertise as appropriate.**

**The Committee identifies areas of research needs and the Program issues an invitation for proposals quarterly based on these perceived needs. The precise definition of research in areas specified by this invitation, their relation to power plant impact in Maryland, and the strategies of solution must be submitted by the proposer.**

**Procedures differ in detail for proposals to conduct specific projects, to provide services of an integrator, or in response to general areas of research need. All three, however, include common features including an explicit solicitation package, a closing date for proposals, a sole point of contact in the state for purposes of the solicitation, a statement of eligibility of potential applicants, a description of material to be included, proposal format, evaluation criteria, description of the review process, and administrative requirements including blanks of necessary forms and declarations.**

**Research proposals received from general topic solicitations are directed to ad hoc sub-committees of the ERGC for review of the following objective evaluation criteria:**

- **Relevance of topic to power plant siting issues in Maryland.**
- **Adequacy of proposed objectives, methods, and analyses**
- **Adequacy of research facilities**
- **Previous experience of the principal investigator and staff, as appropriate**
- **Time commitment of the principal investigator to this and other projects**
- **Total cost of the project**

**Those proposals passing the first round of screening for relevancy and scientific merit are forwarded to outside peer review for further evaluation. Those investigators having failed on the merits of relevancy or scientific merit are notified with an explanation for rejection.**

**Three outside peer reviews are obtained for each of the remaining proposals. Names of potential reviewers are supplied by members of the ERGC and principal investigators. Reviewers are selected on the basis of their expertise, objectivity, and willingness to contribute. Reviewers are asked to comment on the technical merits of the proposals, qualifications of the investigator(s), and adequacy of the research facilities. These comments serve as the basis for consideration at subsequent ad hoc sub-committee meetings. Recommendations for highest priority proposals are made by each ad hoc committee in a meeting of the full ERGC. The full Committee formulates a priority-ranked list of scientifically sound relevant proposals to be recommended for support by PPSP. Final selection remains with the Maryland Power Plant Siting Program**

Information contained in the proposals not funded is not used by the program for any purpose. All funded proposals and information developed in the studies is publicly available.

All projects are monitored closely (at weekly or monthly intervals) by either PPSP staff or the integrator. Although quarterly progress reports and a final report are generally required, proposers are encouraged to design their research so that the results may be published in refereed journals. Most projects have built in review points, including site visits. Principal investigators are encouraged to talk with the ERGC personnel. There is a strong review at the end of a project to see whether the expenditure was worthwhile. Outside reviewers are sometimes contracted to evaluate final reports.

Project officer work load in the Maryland Power Plant Siting Program has been circumscribed through the experience of more than a decade with projects similar to those of BPA's Fish and Wildlife Program. A top dollar amount is 1 million per project officer, although none currently handles that level. Several now handle in the vicinity of \$850,000. However, no project officer is expected to handle more than four "major" projects (judged partially by funding, partially by the closeness of attention required). Most project officers handle five to six projects.

**STRENGTHS:** Close analogy to BPA situation. formal solicitation process based on policy recommendations by a separate body, established proposal review procedure including peers and criteria, delegation of project management responsibilities to integrator contractors, different procedures for several types of contract, strong project oversight and evaluation,

**WEAKNESSES:** Unclear distinction between projects funded specifically and those procured through general topic solicitation, definition of scope for integrators (overlapping topics, degree of delegation by PPSP staff).

**Agency: Montana Department of Fish, Wildlife, and Parks**

**Program Fisheries Division**

**Contact: Patrick J. Graham (406)444-2449**  
**Chief, Research/Special Projects**  
**Fisheries Division**  
**Montana Department of Fish, Wildlife, and Parks**  
**1420 East Sixth Avenue**  
**Helena, Montana 59620**

**The Fisheries Division is responsible for fish resources in the state of Montana. Resident fishes in Montana have been affected by Northwest electric power development, and their enhancement is included in the NPPC's Fish and Wildlife Program**

**Project evaluation in Montana is conducted administratively by Fisheries Division staff.**

**The following points were made regarding BPA project evaluation:**

- 1. Resident fish work constitutes a small part of the Fish and Wildlife Program and thus it receives minor attention. For Montana, however, the resident fish are the problem**
- 2. Proposed work on resident fishes should receive the same degree of evaluation by highly competent technical reviewers as work on anadromous fishes. Many of the problems are equally as difficult to tackle, and expert attention is needed. The same comment applies to small vs large projects.**
- 3. In spite of the above, an evaluation process is least costly and most productive when it can avoid steps that are not applicable to particular situations such as Montana's.**
- 4. In Montana's experience, it is fruitful to involve both agency and power company biologists in projects (and tribes, if appropriately located).**
- 5. Technical peer review of projects is desirable, including some reviewers from outside the region who are not involved with Northwest politics.**
- 6. Technical reviews are most likely to be well received when the local expertise has a hand in selecting the reviewers.**
- 7. There is a need to separate reviewers and competitors for funds**
- 8. Policy level review of proposed projects needed that addresses the broader questions of covering the right topics. Researcher and technical experts may not be aware of the scope of the question that are being asked by the public and policy-makers.**

9. **In addition to written comments, it is useful to get reviewers together to brainstorm about the proposal alternatives, depending on the nature of the proposed work.**
10. **Coordination and integration of projects in the Program is important; information transfer isn't enough.**
11. **Differing goals of various groups (e.g., agencies and tribes) must be kept in mind when proposing work and applying an evaluation process.**

**STRENGTHS:**

**WEAKNESSES: Solely administrative review of project proposals and accomplishments.**

**Agency: National Institutes of Health**

**Program Division of Research Grants**

**Contact: S. Stephen Schiaffino (301/496-7461)**  
**Division of Research Grants**  
**National Institutes of Health**  
**5333 Westbard Avenue**  
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The National Institutes of Health (NIH) conducts and supports biomedical research to improve human health. In carrying out its mission, the NIH relies on public advisory committees for counsel and critique with respect to both ongoing and proposed activities. The publication "NIH Public Advisory Groups" (NIH Publication No. 84-10) describes the peer review system used to select meritorious research projects for funding; the following material is largely abstracted from that description.

All proposals are subject to a dual review system including judgment on both scientific merit and consistency with program needs. Scientific review groups (also called initial review groups or study sections) are organized along lines of scientific disciplines or disease areas, and are composed primarily of non-Federal scientists with established research credentials. Scientific review groups usually meet three times yearly, each meeting generally requiring two or three days of intensive review of research grant applications. Each application is assigned to a primary and a secondary reviewer and each reviewer is assigned twelve to fifteen applications in advance of the meeting. In addition to the assignment as primary or secondary reviewer, each member of the study section must read all of the applications to be reviewed at the meeting (usually 75-80), so that they may discuss and vote on each one. They usually receive the total package 6-8 weeks before the meeting. At the scientific review group meeting, the primary reviewer presents a summary of the grant application, the secondary reviewer provides additional comments, and the entire group discusses the application until a consensus is reached. Group discussion includes such considerations as the (1) importance of the proposed research problem (2) novelty, originality, and adequacy of the experimental approach; (3) training, experience, and research competence or promise of the investigator; (4) suitability of the facilities; and (5) reasonableness of the requested budget. Applications recommended for approval are assigned a numerical rating by each member; the arithmetic average of the review group becomes the priority score for the application. In lieu of recommending approval or disapproval, review groups may vote for deferral of applications needing additional information (including a project site visit) on which to base later recommendations.

Following the meetings, the review group Executive Secretary prepares and forwards summaries which contain the recommendations, reasons for the recommendations, and priority scores of approved applications to a national advisory council or board. These councils are composed of twelve or more scientists and lay community leaders who review the summary statements on each application not only for scientific merit but also based on the total pattern of

biomedical research, need for research in new areas, relevance to the missions of the institutes, and other policy matters. Funding of approved applications is based on descending order of priority scores. Councils may require funding of low ranking, highly relevant proposals, but cannot fund disapproved projects.

Oversight of ongoing projects is carried out by a program staff separate from that which reviews research grant proposals. Reporting requirements are limited to annual progress reports and annual budgets.

Project officer workloads in NIH are not comparable to BPA practice, because granting staff is separate from staff that administers projects. On the Grants Staff, Executive Secretaries deal with 20-25 project proposals on each of three award cycles per year. The average grant is worth \$120,000, although multi-year projects may total \$1 million. Large grant proposals require more effort, and a granting officer handling proposals in the \$0.5- to 1-million range will have only 10 to 12 proposals per year. Program managers, who only administer projects after the award, may handle 100 projects each year. It is difficult to predict a priori how many staff hours will be needed; only when such factors as clientele and number and quality of proposals are known through experience can the real need be determined and staff adjusted accordingly.

**STRENGTHS:** Formal evaluation process, dual reviews (scientific and administrative), quantitative scoring of selection criteria, panel feedback to applicants, project oversight.

**WEAKNESSES:** Difficulty in finding adequate numbers of qualified peer reviewers, score escalation and difficulty in quantifying minute differences, high complexity of the required application (-100 pages).

**Agency: National Science Foundation**

**Program Ecosystem Studies Program**

**Contact: James T. Callahan (202/357-9596)**  
**National Science Foundation**  
**1800 G Street, N.W.**  
**Washington, DC 20550**

**The National Science Foundation Act of 1950, as amended, authorizes the foundation to initiate and support both scientific research and programs to strengthen scientific research potential. NSF carries out this responsibility by awarding research grants in a wide range of scientific and engineering disciplines. The National Science Board is the policymaking body of NSF; its 25 members approve new NSF programs and large grants or contracts.**

**Guidance for the preparation, content, and format of NSF research proposals is provided in "Grants for Scientific and Engineering Research" (NSF 83-57). Unsolicited research proposals may be submitted at any time. Some NSF programs set target dates for submission of proposals which are published in the monthly NSF Bulletin. Approximately six to nine months are required for review and processing of research proposals.**

**Proposals assigned to the Division of Biotic Systems and Resources (of which the Ecosystem Studies Program is a part) pass through a three-tiered process, which includes reviews by ad hoc reviewers and an advisory panel, and consideration by an NSF Program Officer. Variations to this three-level review process within NSF include deletion of either ad hoc or, more commonly, advisory pane? review.**

**An average of six ad hoc reviewers, who have been chosen based on their demonstrated competence in the particular scientific discipline, are assigned to each proposal. Ad hoc reviewers are mailed the proposal and a standard Proposal Evaluation Form (NSF Form 1 4/84) and asked to judge the proposal using four general criteria: 1) research performance competence, 2) intrinsic merit of the research, 3) utility or relevance of the research, and 4) effect of the research on the infrastructure of science and engineering. Ad hoc reviewers are not paid for their efforts.**

**Advisory panels consist of approximately ten scientists selected for their depth of experience in the general scientific field represented by the proposals. Usually three panel members are assigned to each proposal; they prepare individual reviews and meet in Washington, D.C. to discuss all proposals assigned to a given NSF program. The advisory panel considers each proposal as an independent entity but within the total context of all others (there is no ranking procedure) based on written ad hoc and advisory panel reviews. The advisory panel discussion leader for a proposal writes a summary document on the discussions which, along with written reviews, is used by the NSF Program Officer to make funding decisions. Panel members are paid an honorarium and expenses for the time spent meeting in Washington, D.C.**

The duties of NSF Program Officers include selection of ad hoc reviewers and advisory panel members, organization of panel meetings, provision of scientific and administrative input to the panel, discussion of the consistency of proposals with NSF goals, and recommendations as to which of the proposals approved by the advisory panel are actually awarded grants. Program Officers are scientists selected for their strong technical background and may be on either career or rotating (i.e., temporary) assignment in that role.

Administration and oversight of ongoing projects are summarized in the "Grants for Scientific and Engineering Research" brochure. Site visits to projects facilities are not routinely taken, although they are possible both during the conduct of an active project and prior to deciding upon the funding of a proposal. Reporting requirements are generally limited to annual progress and final project reports; open literature publications of project results in lieu of lengthy progress reports are encouraged.

**STRENGTHS:** Formal evaluation process, multi-tiered peer reviews, open literature publication in lieu of progress reports.

**WEAKNESSES:** Little policy guidance or schedule.

**Agency:** Oregon Department of Fish and Wildlife

**Program** Fisheries Research and Development Section, Fish Division

**Contact:** James A. Lichatowich (503) 229-5440  
 Assistant Chief, Fisheries  
 Oregon Department of Fish and Wildlife  
 506 S.W Mill Street  
 Portland, Oregon 97208

The objective of Oregon's Fisheries Research and Development Section is to provide, through field investigations and laboratory experimentation, the factual, biological knowledge appropriate for more efficient management of Oregon's fish and wildlife resources. To achieve this goal, regular wildlife and state general funds are used primarily to match federal funds to carry out fishery research and development programs. A major portion of research funds originates from contracts with federal agencies. The percentage distribution of funds within the Fishery Research and Development Section (1983-1985 biennial budget) is: federal 68.8%; state - general 12.6%, wildlife 6.8%, other 11.8%. Funds are dispersed by the agency to specific research projects in three technical programs: Coastal Salmonids, Columbia Basin, and Rogue Basin Evaluation.

The Department has been working to develop a uniform practice for its project planning, analysis and reporting procedures, but the practice remains flexible. An internal guide provides direction and examples for staff who develop proposals and must report the results (Lichatowich 1977). Formats and procedures have evolved; responsibility for quality plans and proposals seems to lie with project leaders without an established protocol for reviewing them against the guidance. The state-wide planning process that would provide policy goals to project leaders is unclear, although the State is cooperating fully with planning processes of the Northwest Power Planning Council and the Salmon and Steelhead Enhancement Act. Annual progress reports from projects (packaged in a Section report) describe briefly each project's plans for the subsequent year.

Project proposals are to be supported by problem definition, "step-down" Planning, and a common format. Problems are defined by four steps: statement/justification, listing of information needs, listing the questions to be answered by the project, and a statement about how results will be used in management of the resource. "Step-down" planning involves a hierarchy of objectives that follow a general goal statement, with each objective paired with a measurable endpoint. The format for proposals indicates the need for a number of items (e.g., scientific hypotheses, statistical hypotheses, sensitivity analysis) that could be considered evaluation criteria.

**STRENGTHS:** Planning and justification of research by hierarchy of objectives.

**WEAKNESSES:** Solely internal administrative review of project proposals and accomplishments.

**Agency: Pacific Marine Fisheries Commission**

**Program NA**

**Contact: Larry Six, Director (503) 229-5840  
Pacific Marine Fisheries Commission Dr. J. Kenneth Johnson  
305 State Office Building  
1400 SW 5th Avenue  
Portland, Oregon 97201**

**The Pacific Marine fisheries Commission is an interstate compact dedicated to fostering coordinated management of Marine and anadromous fisheries of Alaska, Washington, Oregon, Idaho, and California. The Commission employs staff of the Columbia River Water Budget Center (that includes smolt monitoring and is funded totally by EPA), provides data management for the regional coded wire tagging and tag recovery program and coordinates the Columbia River tag recovery effort BPA funds a portion of the coastwide tagging effort.**

**Commission staff believes that a group analogous to the Columbia River Basin Fish and Wildlife Council's Anadromous Fish Research Committee should establish research priorities and evaluate project proposals and results. The following items were discussed in relation to a project evaluation system for BPA:**

- 1. The Fish and Wildlife Program will be most effective when it coordinates planning of projects with the Columbia River Basin Fish and Wildlife Council.**
- 2. Fish and Wildlife Program projects can be evaluated in terms of numbers of smolts in the estuary and numbers of adults contributing to the fisheries and escapement. Coded-wire tagging and branding are useful tools for such evaluations.**
- 3. Proper experimental design is necessary to obtain statistically valid results in evaluation studies using coded-wire tags.**

**Agency:** Pacific Northwest Utilities Conference Committee

**Program** Fish and Wildlife Committee

**Contacts:** Mke Erho (509) 884-7191  
 Douglas County PUD  
 1151 North Main  
 East Wenatchee, Washington 98801

Pamela Barrow (503) 223-9343  
 Fish and Wildlife Coordinator  
 PNUCC  
 520 SW Sixth Avenue, Suite 505  
 Portland, Oregon 97204

The PNUCC is a coordinating group for the public and private utilities in the BPA region. The Fish and Wildlife Committee discusses and coordinates utility actions in its subject area. The PNUCC group represents the source of funds used by PEA to pay for the Fish and Wildlife Program

The following attributes of a BPA project evaluation system were discussed following a presentation on this project:

1. An important evaluation criterion for a project is cost effectiveness.
2. Objective project evaluations can be expected to indicate that certain measures identified by the Power Planning Council may not be cost effective.
3. Peer review panels for evaluating BPA-funded projects will be limited in their ability to judge the effectiveness of projects specifically mandated by the PPC.
4. Evaluation will be most beneficial when it judges the end product of getting fish in the river.
5. Anticipation of evaluation can be expected to foster better front end planning.
6. The "strategic constituency" for evaluations is not limited to biologists but includes other sections of society.
7. An objective evaluation system does not begin with the premise of advocacy for only the fishery resource.
8. Consultation with agencies/tribes is effective for utilities in planning research projects.
9. Many evaluation criteria can be simple checklists that do not require biological expertise.

10. **Peer review panels will be most effective for balanced, objective evaluation of projects when they include representation for the utilities as well as fishery agencies/tribes.**
11. **The evaluation process can be especially effective when it is set up to identify poor projects that are already underway so they can be stopped, and the management agencies learn from the negative results.**

**Agency: National Oceanic and Atmospheric Administration  
Office of Sea Grant**

**Program Oregon State University, Sea Grant College Program**

**Contact: William Q. Wick, Director (503) 754-2714  
OSU Sea Grant College Program  
565-32-1700  
Oregon State University  
Corvallis, Oregon 97331**

The Sea Grant College and Program Act of 1966 established a federal program for funding marine research through "Sea-Grant Colleges" at existing universities. The intent was to develop modern parallels of the developments in agriculture and mechanic arts that were fostered by the Land Grant Act a century earlier. The Oregon State University (OSU) program began in 1968 and makes use of the faculty and facilities of OSU and other public and private universities, colleges, and agencies in Oregon and the Pacific Northwest. The OSU program is an integral part of the National Office of Sea Grant, National Oceanic and Atmospheric Administration, and the Department of Commerce, from which annual institutional matching grants are obtained. Matching funds come from the State of Oregon, county governments, private industry and citizens, and participating universities. Institutional funds are distributed to projects after a detailed process of prioritization and proposal evaluation.

Increasing the value of public benefits from marine resources is the guiding policy objective that is identified in the Act and reiterated in proposal guidance documents for the OSU program. Expansion of understanding for its own sake is not considered appropriate for Sea Grant, although proposed activities should have sufficient intellectual content to make them appropriate university functions. Projects in three areas--research, education and training, and extension--are planned in a three-year time frame, with a rolling five-year plan. The plan is developed by OSU Sea Grant staff from National Sea Grant guidance and in consultation with two advisory groups: (a) an external advisory council composed of 9-12 executive-level people representing a diversity of regional marine interests (e.g., steanship lines, port authorities, fishermen), and (b) an internal executive committee composed of administrators of participating departments. Priorities are spelled out in an annual Sea Grant Proposal Guidance, that includes numerous disciplinary areas (e.g., fisheries, aquaculture, marine biotechnology, seafood science and technology, marine geological resources, coastal and seafloor processes, energy, ocean engineering, marine transportation, marine economics, undersea research, ocean law and policy, education and training, etc.), each with subcategories.

Proposal preparation and evaluation proceeds through carefully defined and timed steps, each with clearly written guidance. A preproposal stage was once included but was discontinued as a preliminary screen, although proposers are encouraged to discuss ideas with the director before submitting a full proposal.

**The proposal evaluation process now consists of:**

1. **By fall of year preceding proposal due date (often sent out in May before regular school year closes) - Call for proposals, with priority guidance.**
2. **October 1 - Full project proposals due in OSU Sea Grant office.**
3. **October - Proposals screened by director (inappropriate ones filtered out).**
4. **October-November - Proposals for all projects are sent to peer reviewers. Two are to be recommended by the proposer, others are selected by director and (for fisheries projects) always include National Marine Fisheries Service, Oregon Department of Fish and Wildlife, and the Sea Grant extension office. Criteria, format, and a rating system (excellent, very good, good, fair, poor) are provided to reviewers. Criteria are: (a) need and timeliness, (b) objectives specific and clear, (c) methods up-to-date and reliable, (d) timetable and budget realistic, and (e) research duplicated. For the 1985-87 proposal there were an average of 12 reviews per proposed project.**
5. **November - Proposers may revise proposal based on comments.**
6. **December - Meetings of Advisory Council and Executive Committee to aid staff in final selection of proposals.**
7. **January - OSU program package goes to National Office of Sea Grant.**
8. **March-April - Site review of entire program proposal at the University.**
9. **April - OSU program negotiation with National Office and submission of revised program proposal package;**
10. **July 1 - Start of approved program**

**There is no formal project oversight other than annual reports. The director makes frequent visits to the study sites and maintains close contact with the staff in order to monitor progress. Budgets and timing of completion of tasks are overseen quite closely. The director's overall impression guides his decisions at renewal time. "Payoff" is important; much staff time is spent working with projects that are performing poorly.**

**The director estimated in 1975 that it costs about \$50,000 per year to develop the program proposal and to administer a \$2-million-per-year program although there has been no recent accounting. Present administrative staff, mostly for project evaluation and management, consists of a director, fiscal manager, administrative assistant, and half-time clerk.**

**STRENGTHS:** Rolling five-year plan, external advisory council representing constituents, annual guidance document, formal review process, established schedule, external peer reviewers. criteria and rating system

**WEAKNESSES:** No formal oversight of projects other than close contact with director and annual reports.

**Agency:** U. S. Army Corps of Engineers, North Pacific Division

**Program:** Fish Passage Development and Evaluation Program

<b>Contact:</b>	Douglas Arndt Fishery Biologist North Pacific Division US Army Corps of Engineers P. O. Box 2870 220 NW 8th Avenue Portland, Oregon 97208	(503) 221-2835 John Williams Fishery Biologist Portland District
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The Corps of Engineers, North Pacific Division funds and directs an anadromous fish passage development and evaluation program to insure that its Columbia and Snake River system fish facilities are designed and operated to provide efficient passage and perpetuate the anadromous fish runs. The COE is a direct user (for facility design, construction, modification and operation) of the data collected in the program. The research is developed and monitored cooperatively with the National Marine Fisheries Service, U.S. Fish and Wildlife Service, Columbia River Intertribal Fish Commission, Oregon Department of Fish and Wildlife, Idaho Department of Fish and Game, Washington Department of Fisheries, and Washington Department of Game.

The forum used to carry out the coordination necessary for the Fish Passage Development and Evaluation Program as well as for other fish passage activities at the Corp's eight Columbia and Lower Snake River projects is a Technical Coordinating Committee. The advice and the recommendations of the committee are public documents and are carefully considered by the Corps when making decisions impacting fish passage. The Fish Passage Development and Evaluation Program Technical Coordinating Committee has four subcommittees to carry out detailed discussions and coordination. Subcommittee actions are typically referred back to the full committee for concurrence. The subcommittees are:

- (1) Fish Research Review
- (2) Fish Research Needs and Priorities
- (3) Fish Facility Design
- (4) Adult Fish Counting

The Corps of Engineers has a detailed and carefully timed annual procedure for developing and processing fisheries proposals, of which there are 10 to 20 annually (Figure A-1). The procedure is characterized by general project needs planning up to six years in the future, specific project planning one year in advance of projects being started (although funding levels are fixed two years in advance), technical reviews by subcommittees of the interagency/tribal Technical Coordinating Committee, selection based on outline proposals rather than detailed experimental designs, and close cooperative planning between the corp's project officer and the applicant to finalize plans. Projects are on a calendar year to

1 February 1983

<p><u>Step 1</u></p> <p>Fish Research Needs and Priorities Subcommittee jointly identify Corps anadromous fishery problems, set priorities and determine research needs.</p> <p>January</p>	<p><u>Step 2</u></p> <p>Prospective Research Groups develop research proposals based on needs developed in Step 1. Preliminary proposals will describe each work unit to be undertaken in each proposal, time frames for completion of each work unit, and include cost estimates for the upcoming budget year as well as for completion of the proposed work.</p> <p>1 March to 1 June</p>	<p><u>Step 3</u></p> <p>Research proposals to Corps Districts and Division for technical review and program oversight. Fish Research Review Subcommittee reviews proposed experimental design.</p> <p>1 June to 1 July</p>	<p><u>Step 4</u></p> <p>NPD Division Engineer and designated staff members review and approve research proposals and preliminary cost estimates. Division informs research group of decision on research proposal and request that detailed study plan and cost be developed with appropriate district.</p> <p>1 July to 1 August</p>	
<p><u>Step 5</u></p> <p>Research studies assigned by NPD to appropriate district for detailed study plan and cost negotiations.</p> <p>1 August 10 1 September</p>	<p><u>Step 6</u></p> <p>District coordinates experimental design and cost estimate with research group and Corps field elements to resolve questions on project impacts, scopes of work, costs, Corps support requirements and other details.</p> <p>1 September to 1 October</p>	<p><u>Step 7</u></p> <p>Detailed Experimental design to the Fish Research Scientific Review Subcommittee for review of scientific design and sufficiency.</p> <p>1 October to 1 November October</p>	<p><u>Step 8</u></p> <p>Endorsement of FPDEP Research Scientific Review Subcommittee recommendations by FPDEPTCC.</p> <p>November FPDEPTCC Meeting November</p>	<p><u>Step 9</u></p> <p>Final detailed proposal, experimental design, and cost estimate forwarded to NPD for approval. NPD sends funding authorization letter to district. District completes final negotiations and prepares contract documents. Contract is completed and signed. Copy is furnished to NPD and research begins.</p> <p>Mid-November to 31 December December</p>

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**Figure A-1. Corps of Engineers Fish Development and Evaluation Program (FPDEP) Procedure for developing and processing fisheries research proposals**

most closely match biological cycles, even though this necessitates Corps funding across two fiscal years. All projects are "proposed" and reviewed annually, even when conducted over several years.

Project officers maintain close contact with all of the 4 to 10 projects (usually 4-5) that they administer. This generally includes weekly meetings with staff in the field, partly to coordinate services provided by the Corps to the researchers (e.g., use of overhead cranes). About 75-80% of a project officer's time is spent with the projects being administered. Full time equivalent (FTE) staff assigned by the Corps to the 17 proposals that led to 10 funded projects in 1984 amount to about 2-2 1/2. Project officers are selected for their technical expertise in the projects.

Strong preplanning and continual oversight of projects reduces the need for a formal post-project evaluation. A detailed final report is required that must include data as well as analyses, and cover negative results as well as successes. The project officer informally critiques the reports and uses the critique in the subsequent year's proposal evaluations.

The following points were made regarding the project evaluation processes, in addition to support for the Corps of Engineers' system

1. Data users need to be identified so that their interaction with projects can assure timely and useful information transfer. The Corps projects have the advantage of direct use of the data by the Corps itself.
2. When types of research differ broadly, topical groupings of projects allow project officers to maintain necessary technical expertise and to successfully cultivate close working relationships between themselves and applicants.
3. To assure highest quality proposals, it may be necessary to go beyond the traditional contractors when soliciting.
4. Novices to Columbia River research introduced through solicitations and possible lack of adequate personnel in the basin will require close project officer attention during the work and in post-project evaluations, as well as additional requirements for technical advisory committee activities.
5. Proposals should always demonstrate that the applicant has acquired all necessary approvals for the state agencies or tribes for use of the resource (e.g., availability of juvenile fish, permission to take adults, etc.)

**STRENGTHS:** Formal planning, constituent input to development of research plans and selection of projects, formal evaluation procedure, established schedule, cooperative development of final detailed proposal by project officer and applicant.

**WEAKNESSES:** Perpetuation of ongoing projects of cooperating agencies.

**Agency:** U.S. Department of Energy

**Program** Global Carbon Cycle Program

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Oak Ridge National laboratory provides technical and management support for research in the Carbon Dioxide Effects Research Division, which is a part of the U.S. Department of Energy's Office of Basic Energy Sciences. The Department of Energy's carbon dioxide effects research is organized into several program elements. One element is the Global Carbon Cycle Program which is concerned with research, modeling and assessment aimed at improving our quantitative understanding of the perturbation of the natural carbon cycle by fossil fuel emissions and use changes so that accurate projections of future atmospheric concentrations of carbon dioxide can be made.

Projects are selected by program management based on external peer review by selected experts and internal matching with program goals, objectives, and funds. Comments from reviewers are treated anonymously.

Reviewers are asked to consider the following points.

- (1) Will new information or synthesis of heretofore unavailable data be obtained?
- (2) is the proposal technically sound and does it address an important element of the global carbon cycle?
- (3) Does the proposed research contribute needed knowledge about the reservoirs and fluxes of carbon in the global cycle that will improve our predictive capabilities?
- (4) Are the principal investigators experienced and qualified in this area of research?
- (5) Is the work plan proposed achievable in a reasonable time frame and are milestones/deliverables clearly indicated?
- (6) Does the research proposed effectively utilize existing facilities, scientific expertise, and extant information available both nationally and internationally from academia, government, and the private sector?
- (7) Do you recommend this proposal for support by the Department of Energy and, if so, with or without constraints and/or modifications of the research plan?

**Agency:** U. S. Department of Energy

**Program** Short Rotation Woody Crops Program

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The Short Rotation Woody Crops Program (SRWCP) was initiated by the U.S. Department of Energy (DOE), Biomass Energy Technology Division, in 1978 to address concerns about an adequate supply of biomass for energy use. It is a comprehensive nationwide program investigating short-rotation intensive culture (SRIC) as a means of supplying energy needs.

The goal of the SRWCP is to provide, through DOE-sponsored research, an information base to the private sector that includes (1) methods and materials required to obtain high rates of wood (energy) productivity for selected species, and (2) recommendations for producing wood at costs competitive with those of other energy and wood feedstocks for selected site types.

The objectives are being met through field research contracted to universities, corporations, and government agencies across the United States, and by literature evaluations and modeling conducted by investigators at Oak Ridge National Laboratory (ORNL), Tennessee Valley Authority (TVA), and the Solar Electric Research Institute (SERI). Management activities are carried out by Oak Ridge National Laboratory, with major efforts focused on technical research quality, scientific relevance, and timely placement of contracts (21 in FY 84 with nearly \$3 million).

Program planning was initially conducted in 1977 and priorities were published in a DOE Program Research and Development Announcement (1978). Subsequently, there has been less extensive annual program planning that culminates in requests for proposals (RFPs). No unsolicited proposals are accepted. Most projects are continuing. All work is contracted on a solicitation basis; there are no sole-source contracts.

The program uses a combined project evaluation and proposal review process. Each ongoing project prepares an annual report and continuation proposal; responses to RFPs have only the proposal. Technical experts from constituency groups in industry, universities, the Gas Research Institute, etc., are invited to an annual meeting in March to evaluate projects and proposals. A scheduled turnover of reviewers assures continuity and infusion of fresh ideas. At least three reviewers are assigned to conduct a detailed review of each project, and they are guided by general evaluation criteria. A numerical scoring system is employed. In a workshop format, all preceding work and that proposed for the next

year are discussed on a program basis to establish priorities. ORNL develops project summaries, including strengths and weaknesses, and a Field Program Recommendation for DOE headquarters. Final funding decisions for project and federal budget activities are handled by headquarters staff.

Considerable attention is given to oversight of existing projects. The following are standard obligations of project officers:

1. Annual site visit to each project.
2. Annual negotiation of work to be done (more detailed than proposal).
3. Quarterly reports from contractors that are assembled for DOE headquarters.
4. Quarterly oral presentations to DOE headquarters on progress of each project
5. An annual technical report from contractors that is assembled for DOE headquarters.
6. Annual operating plan and multi-year plan.
7. Project summaries for all projects (for general distribution).
8. Technical information dissemination plan for DOE on each project.
9. An annual meeting of all contractors for exchange of information.

Work load for project officers has varied during the course of the program. Projects have numbered between 16 and 30, and \$2 to 4 million in funding. There are four full-time staff devoted to project management, although two people handle most of the direct contacts with projects. A work load of 8 to 10 projects per person is considered maximum for the type of oversight that is desired. For typical part-time subcontract officers who handle projects in the \$50,000-150,000 range, ORNL considers three to four projects to be desirable work load.

**STRENGTHS:** Formal evaluation system use of constituency advisors and peer reviewers, numerical scoring of evaluation criteria, careful project oversight, delegated management responsibility from DOE headquarters.

**WEAKNESSES:** General evaluation criteria, much paperwork.

**The DOE Office of Basic Energy Sciences has established procedures for annual reporting of results, and site reviews of projects that extend for several years. The program manager maintains close contact with all projects.**

**STRENGTHS: Expert peer review, standardized questions for reviewers**

**WEAKNESSES: Arbitrary selection of reviewers by program manager, subjective selection process, unclear oversight of program direction.**

**Agency:** U. S. Environmental Protection Agency

**Program** Exploratory Research Grants Program

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The Environmental Protection Agency (EPA) is charged, through a series of laws and executive orders, with protecting human health and environmental quality. EPA carries out this mandate not only through the work conducted at its own laboratories but also by sponsoring research elsewhere in the scientific and technical community through cooperative agreements, contracts, and research grants. Although certain needs may be emphasized in the annually published "Solicitation for Research Grant Proposals," every scientifically meritorious proposal that is germane to EPA's mission is given full consideration.

While there are no deadlines for submitting research grant applications, they are evaluated at regular (approximately semi-annual) intervals. All applications are initially reviewed by the Agency to determine their legal and administrative acceptability. Acceptable applications are then reviewed by appropriate peer review panels. A peer review panel consists of 30 to 40 primarily non-EPA scientists who are acknowledged experts in their respective disciplines. Commonly, each panel member reviews 4 or 5 applications and each application has 3 primary reviewers. Primary reviewers prepare written critiques of the proposals, which are then discussed by the entire review panel in the context of the following general criteria: (1) quality of the research plan, (2) qualifications of the principal investigator and staff, (3) potential contribution to scientific knowledge, (4) availability and adequacy of facilities and equipment, and (5) budgetary justification. Each proposal is given a score between 1 and 100, and the panel chairman prepares a summary of each proposal which reflects the consensus of the panel. The panel summary and score for each proposal are provided to the responsible EPA Science Review Administrator (SRA), who assigns a second score based on the proposal's relevance to EPA's mission. Relevant and acceptable programs are funded in descending order (ranking is based on the peer review panel's scores) until all money in the current funding cycle has been awarded.

Oversight of ongoing projects is the responsibility of the SRAs. The SRA is appraised of project activities by means of semi-annual progress reports and a final report. Open literature publications can be used in lieu of in-house final technical reports. Project site visits by the SRA and a site visit team are possible but rare because of limited travel funds.

The Science Review Administrator (SRA) in this EPA program handles projects from collection of proposals through conduct of research and receipt of final report. He/she is mostly an administrator -- receives materials and judgments of technical review panel but does not serve as the technical panel chairperson.

**Current work load is about 100 projects per SRA at various stages of completion, or \$2.7 million/SRA. Because many are multi-year projects, the load is less than it appears for review of new work.**

**STRENGTHS: Annual solicitation for proposals, peer review, quantitative scoring and open literature reporting.**

**WEAKNESSES: Limited project oversight.**

**Agency: U. S. Environmental Protection Agency**

**Program Western Fish Toxicology Station**

**Contact: Gary A. Chapman  
U. S. Environmental Protection Agency  
Western Fish Toxicology Station  
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**The Western fish Toxicology Station is a research field station of EPA's Environmental Research Laboratory, Corvallis. In addition to conducting their own research, senior staff act as project officers for EPA contracts with universities, other laboratories, and consulting firms.**

**The following points about the project evaluation process were raised from the perspective of a project officer:**

- 1. A periodic (annual?) "needs statement" from the agency can serve as an advertisement for soliciting proposals. A suitably detailed and prioritized needs statement with clear instructions on how to prepare a proposal will help in attaining high quality proposals that address the pertinent subjects.**
- 2. The best evaluation of completed projects may not come from the agency staff; a separate outside contract for evaluation may give a more useful analysis.**
- 3. Site visits by a project officer are essential for project oversight.**
- 4. Well prepared work statements for projects minimize the amount of time needed for oversight by the project officer. 20-25 well prepared projects in the \$50,000-\$100,000 range is a reasonably full work load.**
- 5. Seasonality of biological work must be factored into project officer work load; multiple project assignments that overlap significantly in time of major activity should be avoided when oversight must be close.**
- 6. Selecting investigators with proven performance is an essential element in proposal evaluation, decreases project officer oversight requirements, and increases the number of projects a project officer can handle.**

**Agency:** U. S. Fish and Wildlife Service

**Program** Ecological Services Division, Boise Field Office

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The Boise Field Office has responsibility for field management and conduct of FWS studies in the area. This includes local work contracted to FWS by BPA. The office is currently conducting mitigation status reports for fish and wildlife that have been impacted by hydroelectric facilities.

Our discussions elicited the following recommendations, in lieu of any formal procedures used by the office:

1. The evaluation process should be simple.
2. Local expertise as well as agency (FWS) headquarters should be questioned early regarding interest and capability to conduct tasks that are given priority by BPA/NPPC or others.
3. Projects should be thoroughly scoped in advance, with clear objectives and definition of product. A pre-project face-to-face meeting between BPA and contractors would be helpful.
4. There should be strong accountability for meeting objectives.
5. Proposal review and contract obligation should be timely, both to meet biological cycles and to maintain a consistent level of effort at the field station.
6. Project officers at BPA should maintain a high level of communication with projects, including monthly status reports from projects and time for phone calls, site visits, etc. as necessary. Such oversight helps to prevent misunderstanding.
7. There should be time allotted for review and discussion of a draft final report to determine prior to termination whether expectations are met, and time allowed to make corrections in the draft as necessary.

**Agency:** U.S. Fish and Wildlife Service

**Program** The Federal Aid in Fish and Wildlife Restoration Program

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 Portland, Oregon 97232

The Federal Aid in Fish and Wildlife Restoration programs, the first of which began in 1938, are administered by the U.S. Fish and Wildlife Service (FWS) as a national effort to strengthen the ability of the States to preserve, protect, and enhance fish and wildlife resources, and to increase public enjoyment of these resources. The principal mandates under which the Federal Aid program operates are set forth by three laws--the Pittman-Robertson Act, the Dingell-Johnson Act, and the Forsythe-Chafee Act. Each of these laws is supplemented by Secretary's rules (regulations) that provide the basic standards and requirements needed to implement them. Research or survey work under Federal Aid is problem oriented; each proposal is to be an outgrowth of a problem that impedes (or predictably will impede) fish or wildlife restoration/management or public benefit from it.

Policy guidance for the types of projects to be funded is included generally in each of the acts, and more specifically, in the Secretary's rules and regulations. At the regional level, the FWS identifies needed research in a Regional Resource Plan. States also may have planning documents that spell out specific research or survey needs. All proposals must address a specific identified need.

There is explicit guidance in the form of a "Federal Aid Manual" that specifies how the Fish and Wildlife Service will administer the program in its relationship with the States. A separate handbook addressed to potential researchers, "Handbook on Research and Surveys," summarizes the numerous requirements from the Manual in a manner that expedites compliance. The guiding philosophy is that clear statement of objectives in the proposal defines evaluation criteria to be used later. There are specific formats for application (Standard Form 424).

To be approvable, each project proposed for funding under the Federal Aid programs must meet certain basic standards. A test for substantiality in character rests on the validity of the need the project proposes to address. A test for substantiality in design rests on the adequacy or quality of the approach to be used. A project meeting these standards is one that:

- a. Identifies and describes a need within the purposes of the relevant act to be utilized;
- b. Identifies the specific objectives to be accomplished based on the stated need;

- c. Utilizes accepted fish and wildlife conservation and management principles, sound design, and appropriate procedures; and
- d. Is expected to yield benefits pertinent to the identified need at a level commensurate with project costs.

Deductive analysis is described as a means of attaining a hierarchy of objectives. Thorough, documented literature review and careful statement of the problem lead to definition of objectives for a progression (broad to narrow) from project to subproject to study to job (task). There is general guidance to involve key people outside of the immediate research team in all phases of developing and executing a project. Review and approval of the submitted proposal material is handled through the submitting States' and Federal Aid Coordinator and the appropriate Federal Aid staff biologist in the regional office. There is no mandatory peer review process.

Performance reports (annual) are required that compare actual accomplishments with those stated in the job objectives. A final completion report summarizes the work through the lifetime of the project. In addition to specific reporting requirements, there is a requirement for study results and management recommendations to be made available promptly to the parties who can apply them to existing problems or guide further investigations. Projects are given scrutiny by Federal Aid staff biologists through periodic field inspections to determine whether funds have been spent productively. Audits of the grant recipients fiscal systems are also required at intervals not to exceed two years.

**STRENGTHS:** Explicit guidance for administering program and developing proposals, evaluation criteria, performance reports, technology transfer requirements.

**WEAKNESSES:** Lack of peer review, complicated proposal evaluation process involving state and federal agency.

**Agency:** U.S. Fish and Wildlife Service

**Program** Regional Office

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 Regional Planning and  
 Evaluation Specialist  
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 Division 3 Supervisor  
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Region 1 of the U.S. Fish and Wildlife Service encompasses the states of Washington, Oregon, Idaho, Nevada, California, Hawaii, and various territories and/or possessions within the Pacific Islands, including Guam and Samoa. The Service's basic Program Management System structure consists of programs in Habitat, Wildlife, Fisheries, Endangered Species, Federal Assistance, and General Administration, various subprograms such as Land Enforcement and Projection, Research and Development.

The Regional Resource Plan (RRP) provides policy guidance for FWS research needs within the Region. It delineates priorities, goals, objectives, and strategies for management of National Species of Special Emphasis (NSSE's) within eight geographical planning areas. This information provides basic guidance for Regional decision-making. The Plan is developed by regional personnel in consultation with field and Washington Office personnel. The Region 1 RRP relates directly to Fishery Program policy developed by the Washington Office, and addresses major areas of responsibility identified for the Fisheries Resource Program

Proposals for work within the Fisheries Program are developed annually on a "Project Proposal Worksheet" that requests standard information from field project leaders. Included is an objective (keyed to the Regional Resource Plan), tasks, milestones, budgets, and termination date. These worksheets progress through a management review (without explicit criteria) and form the basis for budgets (within a 3-year budget cycle) and statements of work for the coming year. The project review is completely internal. The result of the reviews is an "Annual Work Plan Advice" which is the contract for the project and time period. Federal Aid funds to States are treated differently, and are reported separately here.

The FWS evaluation system is described generally within Program Management System (PMS) Memorandum 101.1 (March 1, 1984). Programmatic evaluations are conducted at the Washington Office, Regional Office, and field station levels. An evaluation of the "Executive Direction" function is also conducted at the Regional and Washington Office levels. The purposes of these evaluations are:

1. To assess the implementation and effectiveness of Service Program activities, the effects of Service activities on the resource and the public, and how those effects were achieved.
2. To inform Service Managers of Policy implementation program administration, and program execution in order for them to identify and act upon opportunities for improved program management and operations at the headquarters, regional, and field levels.
3. To provide evaluation findings as feedback to PBE system guidance to ensure
  - short-range, Program Advice and Regional Resource Plan objectives are accomplished, methods for accomplishing those objectives are effective, and current year funding and staffing resources are used as planned;
  - medium-range, Program Management Documents, Regional Resource Plans, and other planning objectives are realistic, progress is being made toward accomplishing them and the resources necessary to accomplish this objectives are included in appropriate budget proposals; and,
  - long-range, the results specified in the Service Management Plan are being achieved and that those results continue to be desirable in light of a changing environment.
4. To promote self-evaluation as a tool to improve program management.
5. To foster communication among various organizational levels of the Service.
6. To take advantage of evaluation as an opportunity for program managers, regional directors, and their staffs to gain first-hand insight and understanding of issues and concerns specific to each organizational entity.

Table A-1 provides additional information on the frequencies, scope, and reporting of these evaluations.

The most project-oriented evaluation is that for field stations (refuges, hatcheries, ecological services offices, research laboratories). The evaluation guidelines focus on the on-site review in which selected evaluators visit service installations. General guidance is provided for selecting the evaluators from among agency staff and outside peers. Although fairly detailed, there is flexibility to meet local differences and special situations.

Since Regional Resource Planning and the Service evaluation system provide decision-aiding information useful for interagency coordination, FWS suggests that these processes can serve to coordinate work with the BPA/NPPC.

**STRENGTHS:** Formal planning, programmatic evaluations of ongoing work.

**WEAKNESSES:** Solely internal administrative review of projects, lack of explicit evaluation criteria, evaluations of on-going work not geared to projects.

**Table A-1. U.S. Fish and Wildlife Service Guidance for Evaluations  
[Program Management System (PMS) Memoranda 100-102.2]**

**I. Purpose:** Described in text.

**II. Frequencies:**

<u>Installation</u>	<u>Evaluated by</u>	<u>Frequency (Minimum)</u>
Regional Field Stations	Regional Office	Every 4 years
Research Laboratories and National Teams	Associate Director, Research & Development	Every 3 years
Research Field Offices	Laboratory Director	Every 3 years
Regional Offices	Program Manager	Yearly
Washington Office	Service Evaluation Team	Yearly
Executive Direction	Service Evaluation Team	Yearly

**III. Scope and Reporting:** Evaluation generally address policy application, Program Administration, Program Execution, and Special issues and are summarized in detailed written reports for action by Washington, Region, and field office personnel. Emphasis is on line organization evaluation rather than project evaluation.

**IV. Follow-up:** Procedures are delineated within evaluation guidelines for tracking follow-ups and reviewing actions taken.

**Agency:** U. S. Fish and Wildlife Service (FWS)

**Program** National Fishery Research Center, Seattle

**Contact:** Gary Wedeneyer, Section Chief  
US Fish and Wildlife Service  
National Fishery Research Center  
Bldg. 204 Naval Station  
Seattle, Washington 98115

(206) 527-6282

Al Fox, Director  
Dan Mulcahy  
Research Virologist  
Bill Nelson  
Supervisory Fishery  
Biologist

The National Fishery Research Center conducts studies related to regional fishery needs. There is an ongoing redefinition of the FWS's role in protecting the nation's fishery resources, but currently the scope of fishery research is addressed in three categories: habitat, use, and husbandry. Emphasis is on species of fish that are identified as requiring special attention, (e.g., exotics), endangered or threatened, anadromous or migratory, or that inhabit interjurisdictional waters. High priority is given to research and other activities aimed at restoring depleted fishery resources through more effective control of their use, and mitigating damage to productivity of fish populations whose habitat has been altered by federal water development projects. The Seattle Center conducts salmonid research for BPA.

An example of a formal project evaluation process in which the center participates is that for Endangered Species Research (Figure A-2). Policies for management of an endangered species are identified in an approved Recovery Plan that is developed for that species by a group of experts (FWS and others) on a Recovery Team. Annually, the national Endangered Species Office in FWS solicits research needs from regional centers (early July) for the fiscal year that begins in 14 months. Submissions are screened by species at the national office level (September) and some are rejected (with regional center appraised of the reason). Needs statements are refined into comprehensive proposals by each laboratory (September-December). These proposals are again reviewed internally by the central office staff, and an internal Research Conference is convened to discuss proposals (January). Progress in the current fiscal year is reviewed and related to the proposed work in a proposed work plan submitted by each laboratory. Agency reprogramming is conducted in the spring if necessary to accommodate high priority new proposals. Program advice is sent to laboratories in the summer (August) for work that is to commence at the start of the fiscal year (October).

Ongoing work receives scrutiny in two ways: agency staff's comparison of the work with new proposals (above) and through agency-mandated site peer reviews every three years, on average. There is no explicit review of completed work.

The following observations were made relative to developing a BPA project evaluation system

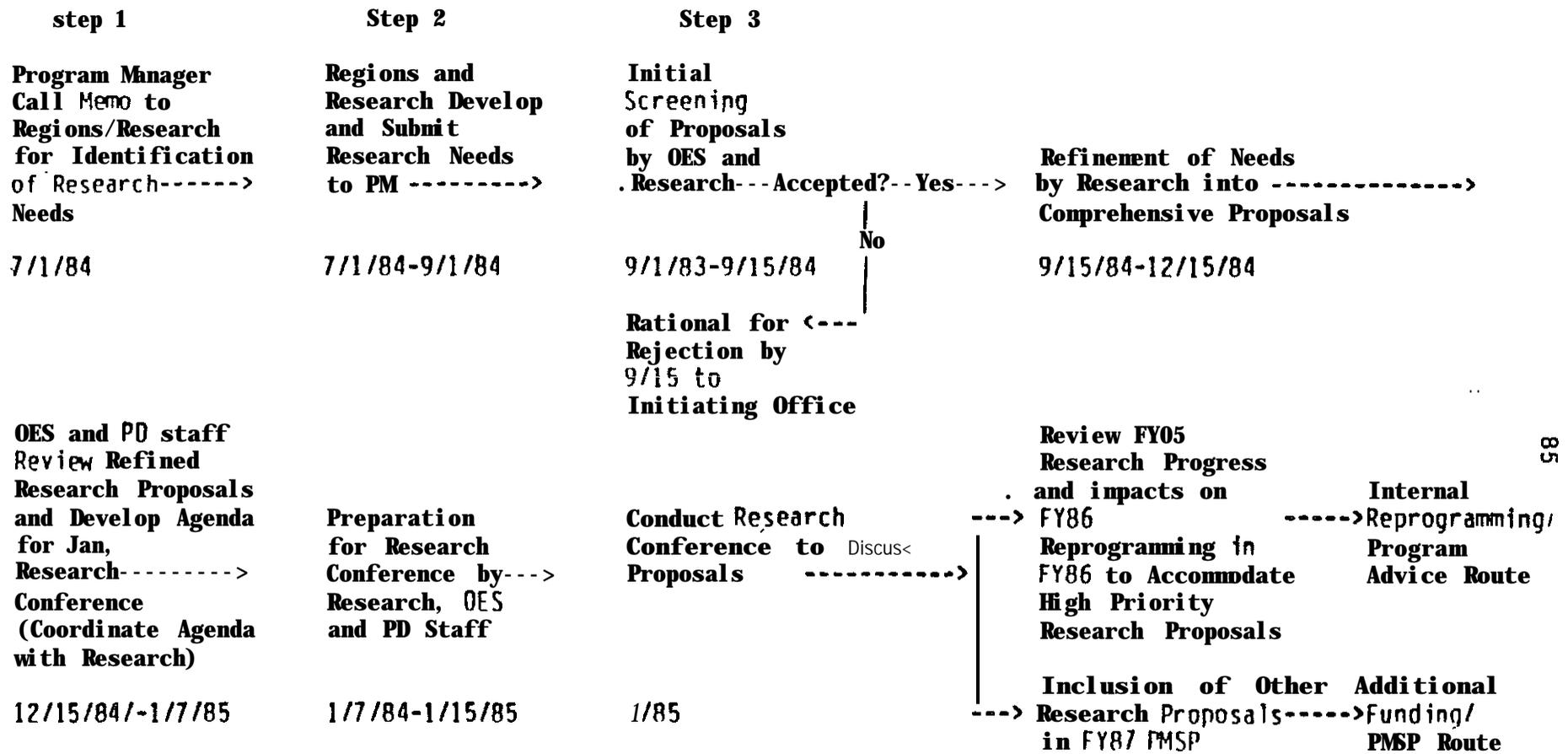


Figure A-2. Procedures for identification, review, and budgeting of endangered species research needs.

1. **A formalized evaluation structure would help both BPA and the applicants.**
2. **A consensus-based action plan annually from the Council would aid BPA's selection process.**
3. **Opportunity should be provided for accepting innovative ideas that may not achieve a consensus with the Council or the BPA selection processes. A separate "exploratory research" category would be desirable.**
4. **Research planning workshops are successful, and participants willing to do so again, when there is an identifiable use for recommendations.**
5. **A BPA Notice of Proposal interest would help prioritize proposals for the coming year, perhaps based on workshop recommendations, and define a "season" for accepting proposals.**
6. **General calls for proposals in topical areas need to be coupled with a recognized system for reviewing and selecting among the many responses that can be expected.**
7. **A pre-proposal (1-2 page outline) would be useful as an initial project screen, to be followed (after BPA review that might include outside peer) by solicitation of complete proposal from those not screened out.**
8. **Proposals will lead to more innovative research when objectives are framed loosely enough that approaches that do not work are not branded as failures, but as part of the normal investigative process.**
9. **A proposal refinement process between BPA and the applicant would aid in focusing proposed studies to goals and within available funds. This is preferable to accepting proposals verbatim as initially submitted. The interaction would be especially beneficial when continued into the funded work.**
10. **Sufficient time (9 months to 1 year) needs to be allowed for proposal reviews and selection so that funding can begin promptly at the start of the fiscal year.**
11. **Peer review is a valuable means of obtaining unbiased judgments, especially when it includes new people with fresh ideas.**
12. **Mechanisms for evaluation of on-going work (annual work statement, written progress reports, and reports, etc.) should be established in proportion to the time devoted to actual research.**
13. **Project evaluations that are tailored to the needs of each project can avoid burdensome and potentially unnecessary oversight on projects that are performing well.**

14. A work load for BPA project officers that reduces staff turn-over rates would benefit continuity in executing projects.
15. The amount of detail required by BPA in proposals and contracts exceeds that of other funding sources with which FWS deals, and would be better justified if there were clear uses for the detailed information.
16. Review of ongoing work is easiest when the goal-setting and proposal stages were done thoroughly; many projects underway now may need attention beyond the norm
17. Projects found to be deficient might be brought back to desired performance through interactions with the BPA project office.
18. Project evaluation will be most useful if it links previous work to work being funded next.
19. A consistent definition of what is expected in final reports to BPA would simplify their preparation and evaluation.
20. In order to evaluate the BPA program as a whole, long-term monitoring of salmon (smolts or adults) will be necessary. There does not seem to be a place in the program now for this type of work.
21. Payment for lengthy proposal or project reviews is done in some other federal agencies and may necessary for BPA to get the services of good reviewers not otherwise under contract to BPA.

**STRENGTHS:** Peer development of long-range plans, formed schedule for soliciting and reviewing proposals, peer review of research sites.

**WEAKNESSES:** Solely internal project review, no specific review of completed work.

BB

**Agency: U. S. Forest Service (USFS)**

**Program Intermountain Forest and Range Experiment Station**

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**Intermountain Forest and FTS 554-1457**  
**Range Experiment Station**  
**U. S. Forest Service**  
**316 E. Myrtle**  
**Boise, Idaho 83702**

**The intermountain Station, headquartered in Odgen, Utah, is one of eight regional USFS experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems. The Boise, Idaho office has conducted work in cooperation with the Idaho Fish and Game Department, Nez Perce National Forest, and BPA regarding stream habitat evaluation techniques and the review and evaluation of effectiveness of habitat improvement projects. Our discussion centered on this aspect of project evaluation.**

**There is a need for special efforts to evaluate enhancement projects during the initial phase of work. A proper evaluation procedure will reveal those habitat improvement projects that will not repay the rate payers' financing. Evaluation of first stage projects will be highly cost effective over the long run, because projects with good payoff will be identified in the program early (and can be pursued) and poor payoff projects or techniques will not be perpetuated. Project evaluation is a formal part of the fish and wildlife program that can head off future negative public and political opinion that will arise if information is not available to justify costly expenditures or poorly performing projects are not terminated. Methods are available for evaluating the effectiveness of stream habitat improvements.**

**Agency:** U. S. Forest Service (FS)

**Program:** Region 6 (Oregon, Washington)

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 U. S. Forest Service  
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 Multnomah Bldg.  
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 also (via telephone):  
 Fred Everest, Corvallis  
 FTS 420-4390

The regional office of the Forest Service oversees stream habitat improvement projects on National Forest lands and their evaluation, some of which (about 1/3 are currently supported by BPA (others are supported by a tax on timber sales). The work is on tributary streams that contain runs of anadromous fishes. Many of these runs have been affected by hydropower activities in their lower reaches or in the mainstream Columbia River. Tributary habitat improvement is considered "off-site mitigation."

Planning direction for new habitat improvement or evaluation projects is being taken from the NPPC, whereas previously the plans came from FS staff biologists. The Final Amendment Document and the 201 goals package from the Council spell out areas to be improved, and FS expects that these guides will be followed. Some additional prioritization of recommended projects is needed, however, and the FS region looks to the annual work plans of BPA for this direction.

Within the Forest Service, habitat improvement projects proposed by forest fish biologists in the field are given administrative reviews within the Regional Office. Criteria used to evaluate proposals include benefit cost ratio, potential improvement in smolt production, evidence of interagency support and consensus (state and federal fisheries agencies), whether the work affects important species, and priority of the area. A common form is used for justifying work and costs for FS funded work. Internal peer review is used for justifying work and costs for FS funded work. Internal peer review is used successfully, with team members usually drawn from different National Forest biologists in the FS. Project oversight is conducted in a general way by the Regional Office to see if objectives are met.

Post project evaluation includes three basic questions: (a) Were objectives for habitat change met?, (b) is there an increase in smolt output?, (c) is there a favorable benefit-to-cost ratio?

The following attributes of a project evaluation system were discussed:

1. There needs to be a mechanism for developing consensus among agencies regarding priority of possible tributary habitat improvements; the number of projects mandated by NPPC is large and must be time phased. This prioritization is essential before proposals can be evaluated.

2. **Time needs to be allowed for adequate response by agencies to project proposal solicitations. One year to 18 months lead time is suggested as appropriate between BPA's notification of intent to fund a proposal and start of construction, in order to allow a full field season for detailed project planning.**
3. **High quality plans for construction of habitat improvements will be developed when BPA funds the planning effort as well as the construction itself.**
4. **A specified protocol for proposals would increase efficiency and fairness to all applicants.**
5. **Specific inclusion of the Forest Service Division of Fish and Wildlife in the BPA solicitations and discussions would be appreciated, since they control perhaps 60-70% of the upstream spawning habitat.**
6. **it is important to define responsibilities for work in topical areas. In National Forests, it is required that either the FS conduct the work or any other contractor obtain a FS "Use Permit", indicating that the agency concurs with the work to be done. Concurrence of the relevant state is also important.**
7. **Project proposal, review, and evaluation processes can be conducted most smoothly when the avenues of communication between BPA and the FS staff are clearly spelled out.**

**STRENGTHS: Evaluation criteria, common format.**

**WEAKNESSES: Solely internal review of project proposals and accomplishments.**

**Agency: U.S. National Marine Fisheries Service**

**Program Northwest and Alaska Fisheries Center**

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**FTS 399-4445  
Ted Blahm  
Lee Harell  
Don Park  
Kenneth Liscom**

The Northwest and Alaska Fisheries center has conducted extensive research on anadromous fish in the Columbia River. It has been the dominant federal fisheries entity investigating fish passage, both adult and juvenile, at federal hydroelectric facilities on the mainstream Snake and Columbia Rivers. It thus has a legacy of involvement and expertise in matters directly related to the Fish and Wildlife Program. This group does not evaluate proposals by others, but is recipient of funds to conduct research.

The following points regarding an effective project evaluation process were discussed, based on the group's experience with several funding sources:

1. An established time schedule beginning nearly a year before projects are begun is helpful for both applicants and evaluators.
2. A multiple-agency review of a staff-developed tentative list of projects for the next year provides opportunity for critique of work already accomplished and discussion of needs.
3. An outline proposal stage is valuable for refining the scope of work objectives and detailed study plans.
4. A multiple agency technical peer review of outline proposals allows technical input regarding feasibility and desirability of the various proposed projects.
5. An oral defense of outline proposals by principal investigators aids understanding by peer reviewers and the agency staff.
6. Final decisions regarding projects to fund with available money are most appropriately made by the funding agency's staff, although allowing applicants an appeal provides a mechanism to avoid mistakes.
7. Detailed proposals (work statements) are most effectively written after a consensus is reached among political and management factions; a peer review panel having appropriate technical expertise can then review it solely for technical merit.

8. Annual progress reports and final reports are most useful if they are first reviewed in draft by the funding agency, with whatever outside review is deemed appropriate.
9. The Fish and Wildlife Program can be most effective when agencies and tribes know what proposals are submitted and are under review, and how the review process is undertaken.
10. It is helpful to applicants to know a specific contact in BPA for certain research topics.
11. A compromise is needed between high scientific quality of reporting results and getting data to users expediently; this might require reporting in two forms, each to be judged independently.
12. There is value in long-term data collection (monitoring) at selected sites even though the distinct need may not be apparent; project evaluations should account for this reality, and work statements should specify a duration.
13. When projects must be terminated because of alleged poor performance, it is helpful to have the reasons discussed with project staff, and (if appropriate) with other groups.
14. It is helpful to project staff to have close attention given by the funding agency's project officer so that perceived deficiencies can be corrected in a timely manner. Critiques are most helpful when done privately or through a small technical review panel.
15. For project officers to give adequate attention to projects, a responsibility for 10 projects or less seems reasonable, although much depends on size and complexity of the projects.
16. A distinction would be helpful for evaluation purposes between projects that are undertaken to obtain research information and projects that are primarily construction projects such as construction of irrigation screens, hatcheries, or rearing ponds. A distinction might also be needed between projects that are the technical research type and those which deal with political and/or management issues such as the Section 200 goals measure.
17. Because new ideas come unexpectedly, an evaluation system should be flexible enough to allow and encourage them.
18. Evaluation of results at the end of a project is most usefully coupled with goals and objectives laid out in initial planning.

**Agency: U.S. National Marine Fisheries Service (NMFS)**

**Program Operations Branch**

**Contact: Douglas Dehart  
Operations Branch  
National Marine Fisheries Service  
Portland, Oregon**

**(503) 230-5417  
Brian Brown**

**The Operations Branch is a functional component of the National Marine Fisheries Service. It does not allocate funds itself (see other NMFS programs that do), but it interacts with BPA and the NPPC as a local representative of the fish and wildlife agencies.**

**The Following points were made regarding the Fish and Wildlife Program**

- 1. The existing fish and wildlife agencies are intended to have a special role in the program according to the Act.**
- 2. BPA's several efforts at developing consensus (e.g., workshops, expert working groups, outside experts, peer reviewers) would be most effective when agencies represent the fisheries.**
- 3. BPA's program will operate most effectively when a technically expert staff (e.g., in biology, statistics) is available through either hiring on the staff or use of technical panels.**
- 4. The transition between NPPC plans and BPA's program is a topic that needs clarification in order for the Fish and Wildlife Program to be successful.**
- 5. Agencies will be most enthusiastic about the program when they can recognize their recommendations to NPP in final BPA study priorities.**
- 6. Resource managing agencies feel that EPA-sponsored work should be compatible with other work in progress and, preferably, should be conducted by these agencies already engaged in such work.**
- 7. Large blocks of work to be funded by BPA could be effectively managed by assignment to existing agencies.**
- 8. It is important that the program specify the uses of information obtained.**
- 9. A strong review and oversight process for ongoing work is important, and may include active peer and site reviews.**

10. **Participants will be most able to be productive when they know what other projects are funded and can interact with them through receipt of proposals and progress reports.**
11. **Operational funding of state agencies by BPA will serve the Fish and Wildlife Program best if it is restricted to conduct of new work for BPA.**
12. **Explicit evaluation criteria for projects should be helpful in delineating items of interest to the BPA program from other management work.**
13. **Qualifications of the applicant should be an important selection criterion.**

**Agency:** U.S. National Marine Fisheries Service (NMFS)  
**Program** Saltonstall-Kennedy Grant Program (U.S. Fishing Industry Aid)  
**Contact:** Kevin A. Ford (206) 527-6150  
National Marine Fisheries Service  
7600 Sand Point Way NE  
BN C15700 (Bldg 1)  
Seattle, Washington 98115

The Saltonstall-Kennedy (S.K.) grant program provides financial assistance for research and development projects to strengthen and develop the U.S. fishing industry. The NMFS has two objectives for funding projects: (1) to maintain stability in and strengthen traditional fisheries i.e., those with existing capability to harvest, process and market a particular resource; and (2) to provide for the growth of the fishing industry through increased use of nontraditional or unused resources for which a potential is indicated. The emphasis is on commercial fisheries. Six general topical areas are funded: harvesting activities, quality enhancement and control, domestic market development, foreign market development, Improvement in efficiency and productivity, and economic and investment studies. The nationwide program distributes about \$10 million annually, of which about \$1.3 million is administered from the Northwest Regional office.

The S-K program has a highly organized process of developing regional and national priorities, and soliciting and reviewing proposals. Priorities are developed through a combination of national fishery goals and regional meetings with commercial and sports fishery interests.

The annual proposal solicitation and review process is initiated by a Federal Register notice (usually January, but as late as March) that describes the program, outlines the year's priorities, gives general directions and contact points for application, and outlines the review process and selection criteria. The region also supplies a memorandum outlining more specific regional priorities. The regional coordinator encourages potential applicants to contact the office and discuss proposed studies in order to weed out inappropriate topics and to all preparation of adequate proposals; there is no formal pre-proposal. Submission deadline is generally mid-March (about 45 proposals were received in 1984).

Proposals are evaluated in consultation with representatives from other federal government agencies with programs affecting the U.S. fishing industry, members of the fishing industry, and consumer groups. NMFS research centers, Pacific Fishery Management Council, Sea Grant Office, Northwest Fisheries Association, and Pacific Seafood Processors Association are asked to provide technical reviews for Regional project proposals. The reviews give proposals point scores based on the following criteria, although commentary is also solicited:

- a. **Adequacy of research/development/demonstration for resolving an impediment and possibilities of securing productive results (20 points).**
- b. **Soundness of design/technical approach for resolving an impediment (20 points).**
- c. **Organization and management of the project, including qualifications and previous related experience of the management team and the personnel involved (20 points).**
- d. **Effectiveness of proposed methods for monitoring and evaluating the project (20 points)**
- e. **Appropriateness of the budget in terms of the work to be performed (20 points).**

The public is also invited (through advertisements) to comment on proposals that are made available in the regional office. The review period generally takes about 3 months.

After technical evaluation, the regional office convenes an advisory panel of (mostly local) NMFS, fishing industry, and consumer representatives (and others as appropriate) to rank the projects. The panel considers significance of the problem addressed along with the technical evaluation, and ranks each project in terms of importance of funding. The panel recommends level of funding and summarizes the merits of funding each project.

Regional staff prepares a recommended set of projects for Regional Director and national office consideration. The NMFS Assistant Administrator for Fisheries determines the projects to be funded based on recommendations provided by the regions, consistency of projects with national fisheries policy, and amount of funds available for the program (in 1984, 95 of 130 recommended projects were funded). Exact amounts of awards and special award conditions are determined in pre-award discussions between the applicant and the NMFS representatives, with advice from a Financial Assistance Review Board in Washington, DC. Funds are obligated by 1 October.

Progress is monitored through quarterly progress reports to a technical monitor (Ford) on the NMFS staff. Goals, objectives, and milestones required in the proposals are checked. The S-K coordinator monitors all phases of about 15 local projects and 3-4 national ones. Criteria are not explicit for evaluating on-going projects, and the quality of reports varies greatly. The technical monitor often subjectively judges deficiencies and makes personal contacts to clarify or redirect questionable activities.

Final project reports are required that, in principle. Include an evaluation of the work performed. Results and benefits of the work are to be described in sufficient detail to enable NMFS to assess the success of the completed project. A follow-up review of all final reports is being planned with a goal to analyze

**the final product against the objectives expressed in project proposals. The project officer currently does an informal review with feedback to the contractor.**

**STRENGTHS: Well-organized process of developing priorities and soliciting and reviewing proposals, set timing, involvement of constituents, quantitative scoring of established criteria, administrative decisions.**

**WEAKNESSES: Post award activities less formalized and clear.**

**Agency:** U. S. National Marine Fisheries Service (NMFS)

**Program** Commercial Fisheries Research and Development Act (PL 88-309)

**Contact:** Nancie Bell **FTS 392-6146**  
 Federal Aid Coordinator  
 National Marine Fisheries Service  
 Northwest Regional Office  
 7600 Sand Point Way NE  
 BIN C 15700  
 Seattle, Washington 98115

The purpose of this Act is to authorize the Secretary of the interior (now Commerce) to cooperate with the States through the respective State agencies with jurisdiction over the fisheries in carrying out projects designed for the research and development of the commercial fisheries resources of the Nation. Federal funds (grants) made available under Section A of this Act are used to supplement State funds that would be made available for commercial fisheries research and development. Federal funds are apportioned to the States for their implementation of approvable projects.

Policies, evaluation procedures, and criteria are not very explicit; available guidance is provided in the Act itself and in the implementing regulations (50 CFR 253), both of which are contained in the NMFS Grant-in-Aid Handbook (Chapter 700, Sections 702, 703).

General policy requirements are contained in the Act. Sections B and C of PL 88-309 authorize the Congressional appropriation of funds for alleviating resource disasters or the development of new commercial fisheries, respectively. Such funds are rarely made available, requiring a special Congressional appropriation.

Instructions for Section A proposals state merely that "Any State desiring to avail itself of the benefits of this Act may, through its State Agency, submit to the Secretary full plans, specifications, and estimates of any project proposed for that State." A standard form (SF-424) is to be used for applications, which may cover a specific project or the State's whole annual program. Responsibility for acceptance lies with the Secretary. No technical evaluation criteria are provided, although there must be administrative assurance that projects comply with state and federal laws, pay standard wages, account for property, and so forth. Available funds are apportioned annually among the States on the basis of the average value of the previous three years' commercial fishery. Generally, no state may receive more than \$270,000 or less than \$20,000 of Federal funds. Twenty-five percent of project costs must be borne by the grantee.

Criteria for acceptable prosecution of the work are likewise general. The operant phrases are: "shall be performed in a manner acceptable to the Secretary," and "appropriate and adequate means shall be employed to achieve economy and efficiency, including avoidance of undesirable duplication, in the

completion of a project." Grantees are also bound by the general provisions of Circulars OHB A-102 or A-110.

**STRENGTHS:** General guidance allows the agency maximum flexibility.

**WEAKNESSES:** Guidance and selection criteria very general, leaving decisions to administrators and little instruction to applicant.

Agency: U. S. National Marine Fisheries Service

Program Anadromous Fish Conservation Act (PL 89-304 as amended)

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 BIN C 15700  
 Seattle, Washington 98115

The Anadromous Fish Conservation Act of 1965, as amended, authorizes the Secretary of the interior to enter into cost-sharing agreements with the States and other non-Federal entities for the conservation, development, and enhancement of the anadromous fishery resources of the Nation, and the fish of the Great Lakes and Lake Champlain which ascend streams to spawn. The program is administered jointly by the Fish and Wildlife Service (FWS) of the Department of the interior and the National Marine Fisheries Service (NMFS) of the Department of Commerce. Non-Federal participants in this program include State fishery agencies, universities, and indian tribes. Grantees with individual projects receive up to 50 percent Federal funding for eligible projects; on multi-state cooperative projects the Federal share can be as high as 66-2/3 percent. Grant funds can be used for construction, research, fish production, operation and maintenance of facilities, management coordination, and planning.

Policies, evaluation procedures, and criteria are not very explicit; available guidance is provided in the Act itself and in the implementing regulations (50 CFR Part 401), both of which are included in the NMFS Grant-In-Aid Handbook (Chapter 700, Sections 702, 703). More explicit criteria are provided for an Emergency Striped Bass Study (added in 1979 amendments).

This is a broadly scoped program authorized to fund research investigations, surveys, engineering, stream clearance, construction of structures to improve habitat and migration, construction of hatcheries, and about any other action that will aid fish stocks defined by the Act. In this respect, it is much like the BPA mandate under NPPA. There is little policy guidance except in the case of the Emergency Striped Bass Study.

Proposals for these funds are to describe the actions to be taken, benefits expected, estimated cost, the sharing of costs, terms of agreement, and use and disposal of property. There is a requirement for reports of the work to be transmitted to States, Congress, and Federal water resource construction agencies. A list of eligible species is provided, although other species may be proposed (with justification) if they meet stated criteria. Separate lists are provided for truly anadromous species and those that inhabit the Great Lakes and Lake Champlain.

The 1979 amendment on behalf of striped bass is quite specific regarding topics of study. Two main areas are identified, each with subtopics:

**(a) Monitoring the status of the striped bass populations in Atlantic coastal waters (NMFS lead), and (b) Factors responsible for the decline in numbers of striped bass (FWS lead). Narrative in the Senate report (96-174) identifies criteria by which projects should be selected and the results used (Table A-2).**

Criteria for acceptable prosecution of the work are general. The work is to be "carried through to a state of completion acceptable to the Secretary with reasonable promptness," and the Secretary has the "right to inspect and review work at any time." Work shall be "continuously coordinated" by the investigators "with studies conducted by others to avoid unnecessary duplication." All work shall be performed in accordance with applicable local laws, and these are explicit administrative requirements.

**STRENGTHS: General guidance allows the agency maximum flexibility.**

**WEAKNESSES: Guidance and selection criteria very general, leaving decisions to administrative and little information for applicant.**

**Table A-2. Criteria for projects in the Emergency Striped Bass Study,  
Anadromous Fish Conservation Act (PL 89-304 as amended)  
(from Senate Report 96-174)**

- 
- A. Monitoring the Status of the Striped Bass Populations in Atlantic Coastal Waters**
1. Cooperation between NMFS, FWS, State agencies, independent bodies.
  2. Monitor through principal species range on the Atlantic coast.
  3. Information to be used as an assessment of condition of stocks.
  4. Information may indicate need for immediate management measures.
  5. Information over several years should allow evaluation of effectiveness of any management measures imposed on the fishery.
  6. Categories of monitoring are specified as:
    - a. eggs, larvae, and juvenile abundance--continuous time series;
    - b. rate of mortality, natural and fishing;
    - c. age class and sex composition;
    - d. catch and expend effort--commercial and recreational;
    - e. population size;
    - f. growth rate; and
    - g. condition--condition factor, parasite load, contamination load.
- B. The Factors Responsible for the Decline in the Numbers of Striped Bass**
1. Investigations (experimental work) applied to determining causes of declines.
  2. Investigations in the following areas:
    - a. extent and success of annual spawning (several measures suggested)
    - b. extent and causes of mortality at successive stages (partial list of factors is provided)
    - c. effects of pollution on viability and condition of eggs, larvae, and food chain organisms; contaminant incorporation in tissues (a partial list of pollutants is provided)
    - d. economic factors
-

**Agency:** Upper Columbia United Tribes (UCUT)  
**Program** UCUT Fisheries Center  
**Contact:** Allen T. Scholz, Staff Director (509) 359-6397  
UCUT Fisheries Center  
Department of Biology  
Eastern Washington University  
Cheney. WA 99004

The Upper Columbia United Tribes (UCUT) is a cooperative venture among the Coeur d'Alene, Kalispell, Kootenai, and Spokane tribes; the Fisheries Center is a new (less than 1 year old) activity directed toward coordinating tribal responses to the Columbia River Fish and Wildlife Program. All tribal lands are above Grand Coulee Dam and thus their historic anadromous fish runs are extinct. UCUT emphasis is on developing resident fisheries in Lake Roosevelt and its tributaries as mitigation to the tribes for the 'lost anadromous runs.

UCUT has no formal process for project evaluation. The Fisheries Center, once fully established, will be a focus for developing project recommendations to the Northwest Power Planning Council and ultimately to Bonneville.

The following points were made toward developing an evaluation system

1. A rigorous project review system can be a major factor in ensuring high quality studies.
2. Review of outlines or pre-proposals prior to submission of fully developed proposals favors selection of investigators with established records in the agency and may prevent the infusion of new ideas from new sources.
3. General solicitation of proposals on ideas submitted to BPA or the Council by specific groups can be unfair to the proprietary interests of the original proposer, or the original idea (or approach) may be altered and lost.
4. A clearer definition and public understanding of the public discussion responsibilities of the Council and the procurement responsibilities of BPA would help everyone.
5. A project evaluation plan based on research may not be applicable to applied, technological, or habitat improvement projects. An initial characterization of projects as basic or applied, with separate evaluation procedures, may be needed (as done by the National Science Foundation).
6. Peer review of proposed work is needed, and is most effective when it includes university people and other outside the fisheries agencies.

7. **The project evaluation process would be more focused if clear goals were available for the Fish and Wildlife Program. Analogs to the process exist elsewhere, e.g., the Great Lakes Fishery Commission.**
8. **Submitting acceptable proposals would be facilitated by more definite timing and guidelines for content and organization.**
9. **It is as important to carefully review continuing work as it is new starts. Full proposals may be needed again after several years of effort, as is required by some agencies (e.g., NSF).**
10. **Evaluation of work at the conclusion is especially important when projects use alternative methods or approaches and prudence would suggest eliminating the least promising ones (this may constitute a separate project). The evaluation could lead to specific action items for Council consideration.**

**Agency:** Warm Springs Tribe

**Program** N. A.

**Contacts:** Chris Stainbrook, Tribal Biologist (503) 553-1161  
Warm Springs Tribe  
P.O. BOX c  
Warm Springs, Oregon 97761

Fisheries work is a new endeavor for the tribe, and the program is just developing. Currently most work is funded from external sources, including BPA. Proposed projects are developed by the staff and reviewed by the Tribal Council and its Fish and Wildlife Committee

The following comments were made about project evaluation:

1. They are better able to propose work under the Fish and Wildlife Program as they become more familiar with the selection processes. Both their lack of understanding and BPA's evolving process has caused confusion.
2. They are most able to propose work that fits BPA's needs when there is feedback from BPA concerning what is most relevant.
3. Awareness of projects actually underway would allow them to make better proposals for new work.
4. Goals and direction from the Council are needed before BPA can implement the program; the political questions and bargaining are best addressed there.
5. Workshops can be an efficient method for discussing needs in particular topics. The face-to-face discussion can prevent misunderstandings.
6. Peer review of proposals would be most valuable when the political aspects are either excluded or all factions are represented on the panel.
7. The efforts of the Salmon and Steelhead Enhancement Plan Team could be valuable in helping BPA select evaluation criteria.

**Agency:** Washington Department of Fisheries

**Program** NA

**Contact:** Loyd Phinney  
 Washington Department of Fisheries  
 General Administration Building, Rm 115  
 Olympia, Washington 98401  
 Bill Hopley, Assistant Chief  
 Salmon Culture Research

(206) 753-6616  
 Richard Lincoln  
 Fisheries Research Manager  
 Bill Zook  
 Coordinator for Enhancement  
 Planning Team SSCEA

The Department of Fisheries is the responsible agency in Washington State for salmon and other food fish. As such it interacts with the Fish and Wildlife Program in many areas of research and management related to hydropower.

Policies and priorities for research and management in Washington State fisheries are being developed in draft plans. The current process involves development of research/management needs and approaches for tackling them by field staff in several topical areas. These statements are given peer review mostly within the agency. The work, largely supported through several types of Federal Aid funds, is at a small enough state that no elaborate proposal/project evaluation process is needed.

The following attributes of an evaluation process were discussed:

1. The Fish and Wildlife Program will be most acceptable by state resource managers if the process for selecting projects is open to scrutiny for purposes of understanding. The fish and wildlife constituency expects a more open process than that applicable to bid selection for engineering projects.
2. Proposals that separate the scope and methods of work from proprietary information on costs, salaries, etc. are more amenable to open review and discussion (of scope, methods, etc.).
3. Respect for the total program is enhanced when the complete work statements for each proposed or funded project are available for public inspection on a timely basis (although this need not include proprietary information).
4. Potential applicants will be more likely to submit proposals if they perceive the selection system as simple (not cumbersome) and fair to all.
5. The selection process will be most fair among potential applicants if there is a clear time for submission of proposals, a clear schedule for review and acceptance, and a minimum of potential for favoritism based on proximity to BPA offices.

6. **Fairness will be enhanced if all project officers have the same guidelines and criteria to follow.**
7. **Proposals can be written closer to program needs if the selection process includes discussion between the applicant and a project officer, and a period of proposal refinement.**
8. **Work groups and peer review panels are helpful mechanisms for reaching consensus if makeup, procedures, and expected output are well planned, and their recommendations are usually heeded.**
9. **Review teams that include local expertise as well as outsiders will more likely have their conclusions accepted by regional resource managers.**
10. **The Fish and Wildlife Program selection process can make use of local expertise through existing planning, prioritization, and selection efforts (e.g., the Salmon and Steelhead Conservation and Enhancement Act planning) without expending additional funds or requiring separate meetings.**
11. **Project evaluation and selection processes will yield the greatest results for the resource when critical links are sought and non-critical links are relegated to lower priority.**
12. **The BPA selection process would be most effective with clear goals from NPPC, in which the degree of flexibility on BPA's part is defined. The recent Five Year Action Plan from NPPC still requires translation for the agencies to know what to propose.**
13. **The project evaluation process will be most effective when it recognizes that the resource advocacy position of the agencies and tribes represents the major constituencies for the Northwest Power Act, and that the advocates can be used as a source of information and expertise.**

**STRENGTHS:** Policies and priorities being developed.

**WEAKNESSES:** Solely internal administrative review of project proposals and accomplishments.

**Agency:** Washington Department of Game (WDG)

**Program** NA

**Contract:** Jack Howerton  
Power Planning Coordinator  
Washington Game Department  
600 N. Capitol Way  
Olympia. Washington 98504

(206) 753-2736  
Gary Fenton  
Major Projects Coordinator

The Department of Game is the responsible agency in the state of Washington for managing non-anadromous fisheries and wildlife. As such it interacts with BPA in implementing the Northwest Power Act's Fish and Wildlife program

WDG anticipates operating its research and management projects under a planning document for each major species. The documents are not yet completed. Project review and selection is carried out internally through administrative channels. Past experience as recalled by current staff is the principal guide for project evaluation. A mitigation status review just completed identifies certain needs for wildlife; fisheries mitigation status has not been reviewed.

The following items were discussed as important elements for Fish and Wildlife Program projects:

1. Projects will be better conceived and better recommendations will be made to NPPC for inclusion in planning if the states have more people and time available to devote to this activity.
2. The best evaluation system is the simplest; too many groups involved can create delays and inefficiencies.
3. Proposed projects developed at the state level would be more helpful in developing a regional plan than the reverse, i.e., a regional plan developed first that is separated into portions for each local area or state.
4. Different states or locations can be expected to have different goals and priorities, and the Fish and Wildlife Program actions need to be flexible enough to accommodate these differences.
5. Technical workshops on topical areas can be useful for defining accomplishments and needs.
6. It is important to emphasize actual resource gains in evaluating projects.
7. Peer review panels can be useful but participation of good people will not be assured if their advice is not taken seriously.

8. **The annual set of funded projects is more likely to be accepted by the resource managers if they have knowledge of the selection process.**
9. **More complete and consistent proposals can be developed when there is a clear cue that proposals are to be submitted, and there is adequate lead time between solicitation and due date.**
10. **Specific evaluation criteria are less important for acceptance than where, and by when, the review is carried out. Local people may be best able to judge the value of local projects.**
11. **Large groups with many agency representatives are inefficient at reaching consensus; prior review by constituent groups (e.g., all representatives from a state) can aid in reducing the number of opinions and thus speed consensus-building.**
12. **Two types of post-project evaluation are desirable:**
  - (a) **evaluation of the study or project itself (meeting objectives, etc.)**
  - (b) **evaluation of accomplishments derived from the study conclusions.**
13. **Project officers' jobs are easier when the "up front" project definition is most clear.**
14. **The time Project Officers spend on oversight will vary greatly among projects, preventing any general estimate of number that can be handled.**
15. **Potential contractors for specific projects differ in their ability to perform adequately; projects will be most successful when contractor abilities (usually based on past performance) are rated and included in selection criteria.**
16. **Certain federal and state laws require that some types of projects be done by the state agencies; the Fish and Wildlife program would benefit from a careful determination of which projects fall in this category.**
17. **Projects differ in complexity and thus may need different levels and durations of evaluation at all stages.**

**STRENGTHS: Planning documents.**

**WEAKNESSES: Solely internal administrative review of project proposals and accomplishments.**

**APPENDIX B**  
**SUMMARY OF AGENCY EVALUATION PRACTICES**



**APPENDIX C**

**POSSIBLE BPA CRITERIA FOR JUDGING FISH AND WILDLIFE PROPOSALS**

**APPENDIX C: POSSIBLE BPA CRITERIA FOR JUDGING EFFECTIVENESS  
OF FISH AND WILDLIFE PROPOSALS**

The following criteria are suggested as a means of quantitatively evaluating projects. Each criterion has a short title, a few sentences of justification, and a checklist of several alternative characterizations of how well the project matches the criterion (ranging from a high agreement with the criterion at the top of the list to unacceptable agreement at the bottom). Criteria are judged quantitatively using numerical factors, a weighting factor for the criterion and a score for the characterization of how well the criterion is met. Weighting factors (e.g., 1 through 10) are best assigned by the project officers or evaluation team to reflect the relative importance of various criteria for a particular subject area. Scores for alternative characterizations (a range from 0 to 1) are suggested here. The points gained for each criterion are the weighting factor multiplied by the characterization score. The points for all criteria are summed to yield an overall evaluation score,

$$\text{Total Evaluation Score} = \sum \text{criteria (weighting factor x score)}.$$

These criteria are general to all projects and may need to be supplemented with more specific ones for certain topics by the project officer or review team. Total evaluation scores for several projects can be compared directly only when they are summed from the same list of weighted criteria. A score of zero on any criterion is generally a fatal flaw and grounds for elimination of the project from further consideration.

**A. GENERAL CRITERIA (All Projects)**

**CRITERION 1. Completeness of Proposal**

A proposal accepted for consideration should include all elements requested in the BPA annual proposal solicitation and in the required format so that the elements are quickly and easily compared with selection criteria.

	<u>Score</u>
-- The proposal contains a clear presentation of all elements In the requested format.	1.0
-- The proposal contains all elements, but they are not clearly presented in the requested format.	0.5
-- The proposal lacks requested elements, or the organization is inadequate to show whether the requested elements are provided.	0.0

**CRITERION 2: Need for the Project****Weighting Factor** \_\_\_

Projects should be justified on the basis of potential utility for meeting defined needs as demonstrated by citation of a specific need statement in an accepted planning document or by a narrative that clearly develops a case for needing the work in preference to alternatives for meeting the need.

	<u>Score</u>
-- Project should be highly useful; need is documented by citation of BPA annual program planning document and proposal solicitation.	1.0
-- Proposal develops a persuasive narrative on need and potential utility of the work based on other planning documents or newly perceived needs.	0.8
-- Need and utility are probable, but not persuasively demonstrated.	0.4
-- Need and utility are not demonstrated, and may not exist.	0.0

**B. CRITERIA FOR RESEARCH****CRITERION 3: Status of the Target Species in Relation to Hydropower****Weighting Factor** \_\_\_

The target species must be important for Pacific Northwest fisheries and either at risk from hydroelectric development in the Columbia River Basin or an indirect cause of risk to desirable species.

	<u>Score</u>
-- Current risk from hydropower is <u>established</u> to be large, and an extensive or highly valued resource at risk.	1.0
-- Current risk from hydropower is <u>implicated</u> to be large, and an extensive or highly valued resource is at risk.	0.7
-- Current risk from hydropower is established to be large and the resource is not extensive or highly valued.	0.7
-- Current risk from hydropower is implicated as a contributing factor, resource not extensive or highly valued.	0.3
-- Resource is currently believed to be essentially without risk from hydropower or otherwise unimportant.	0.0

**CRITERION 4: Efficacy of Study Technique****Weighting Factor \_\_\_\_\_**

**The technique should have a high likelihood of success, based either on proven performance at various scales or on indirect measures.**

	<u>Score</u>
-- Proven effective in a majority of applications.	1.0
-- Effective in selected trials. unproven but probably acceptable for general application.	0.7
-- Unknown effectiveness, technique needs refinement and verification, but success believed likely.	0.2
-- Effectiveness unlikely, technique definitely flawed.	0.0

**CRITERION 5: Experimental or Project Design****Weighting Factor \_\_\_\_\_**

**The experimental or project design should be adequate to provide definitive answers to questions asked (hypotheses) in the context of the overall conceptual framework or model; alternative explorations should be ruled out or explicitly considered.**

	<u>Score</u>
-- The experimental or project design is likely to yield definitive answers to the questions posed.	1.0
-- The experimental or project design does not exclude alternative explanations, answers, etc., but will provide confidence in certain tasks.	0.8
-- The experimental or project design is inadequate to yield either definitive explanations or confidence in trends; alternative explanations remain equally valid.	0.3
-- There is no clear experimental or project design.	0.0

**CRITERION 6: Project Organization**Weighting Factor     

**Projects should be carefully planned and organized to assure satisfactory conduct of all phases of the work, both scientific/technical and administrative. Conduct of experiments and interpretation of results should be primarily the responsibility of scientific/engineering staff, while managerial functions and responsibilities of controlling budgets, allocating staff, and other contractual obligations are explicitly assigned.**

	<u>Score</u>
-- The project proposal demonstrates an organizational structure that provides confidence that all necessary functions, both scientific/technical and administrative, can be carried out effectively.	1.0
-- Project organization appears adequate; functions are not always explicitly designated.	0.7
-- Project organization is questionable; many functions are vague.	0.3
-- Lack of project organization to demonstrate ability to conduct all phases of the work.	0.0

**CRITERION 7: Creativity and Originality**Weighting Factor     

**Research projects should exhibit a high degree of creativity and originality of ideas, concepts, or approaches.**

	<u>Score</u>
-- Highly original and creative; new to our perception of the problem	1.0
-- A novel and innovative extension of previous ideas or existing train of logic or events.	0.8
-- A logical extension of earlier work; no special creativity or originality, routine.	0.4
-- Rote continuation of earlier work or dogma, pedestrian or sub-professional in character.	0.0

**CRITERION 8: Qualifications of Investigators**

Weighting Factor \_\_\_\_\_

Principal investigators should have a demonstrated competence in the area of study and a record of accomplishment that indicates an ability to complete the proposed work in a timely manner. Younger investigators should provide evidence of their potential for conducting the proposed work with a proper understanding of the problem

	<u>Score</u>
-- Qualifications show an exceptional record of competence and accomplishment in the topic and high promise to complete the proposed work in a timely manner.	1 . 0
-- Qualifications show an adequate level of competence, accomplishment and promise in the topic.	0.8
-- Qualifications lead to uncertainty because, for example, topic is new to staff, competence is questionable, understanding seems incomplete.	0.4
-- Qualifications clearly deficient based on record of past poor performance.	0.0

**CRITERION 9: Conceptual Framework for the Problem**

Weighting Factor \_\_\_\_\_

The proposed work and its parts should be logical components of an overall conceptual framework or model that integrates existing knowledge of the problem with the project's long term goals, short term strategies, and specific objectives.

	<u>Score</u>
-- The proposed work is well unified by an explicitly discussed conceptual framework or model.	1.0'
-- The proposed work fits within a general rationale. but there is no explicit framework or model.	0.6
-- The proposed work is composed of generally related, but largely independent pieces with separate links to existing knowledge.	0.4
-- There is little rationale for the proposed work.	0.0

**CRITERION 10: Hypothesis****Weighting Factor** \_\_\_\_\_

The proposed work should show evidence of being directed by distinct hypotheses or expected results that lead from and contribute to the overall conceptual framework or model for the project.

	<u>Score</u>
-- Distinct hypotheses have been formulated for testing.	1.0
— The work is guided by some non-explicit notions about the kinds of results that may appear.	0.5
-- The work is strictly empirical, e.g., "try it and see what happens."	0.2

**CRITERION 11: Specific Objectives****Weighting Factor** \_\_\_\_\_

Specific objectives or other action plans are described in the proposal in a form that allows a reviewer of ongoing or completed work to determine whether they have been pursued and accomplished satisfactorily, on schedule, and within budget.

	<u>Score</u>
-- Specific objectives or action plans are described in detail appropriate for review of ongoing and completed work, and in the form specified by the BPA proposal solicitation.	1.0
-- Specific objectives or action plans are described in a manner sufficient for review of ongoing and completed work, but are not in the format required by BPA.	0.8
-- Specific objectives or action plans are vague and not amenable to easy review.	0.4
-- The work has no specific objectives or action plans.	0.0

**CRITERION 12: Data Analysis and Interpretation**

Weighting Factor \_\_\_\_\_

Analysis of data should be accomplished using state-of-the-art methods of statistics, data management, and summarization (as appropriate). Interpretation of the analyses should follow standard procedures for deduction and inference.

	<u>Score</u>
-- Proposed methods of analysis and interpretation are innovative and exceptional.	1.0
-- Proposed methods are adequate and typical of current usage.	0.8
-- Proposed methods are insufficiently described to allow judgment.	0.1
-- Proposed methods are clearly less than current usage would indicate as adequate.	0.0

**CRITERION 13: Facilities**

Weighting Factor \_\_\_\_\_

Facilities should be available that are suitable under contemporary standards for conduct of work, including (as appropriate) field equipment, vehicles, laboratory and office space, laboratory equipment, life support systems for organisms, computational and data-handling equipment, copy machines, a security system for material and information.

	<u>Score</u>
-- Facilities are exceptional and readily available to the project staff.	1.0
-- Most normal facilities are available on staff request.	0.8
-- Some facilities that meet contemporary standards are available, others are only marginally acceptable.	0.5
-- Facilities are clearly deficient in critical areas.	0.0

**CRITERION 14: Services****Weighting Factor** \_\_\_

The organization should demonstrate that it provides, according to contemporary standards, services associated with conduct of the work, including (as appropriate) libraries, word processing, secretarial assistance, graphic arts, record keeping, security.

	<u>Score</u>
-- Services are exceptional; they are not only available but they are used by the project as part of the standard operating procedures of the organization.	1.0
-- Most normal services as available on demand to project staff.	0.8
-- Services are provided in some, but not all, areas of a level that meets contemporary standards.	0.5
-- Services provided are clearly deficient in certain critical areas.	0.0

**CRITERION 15: Personnel Deployment****Weighting Factor** \_\_\_

Personnel should be assigned and tasks planned in a manner consistent with attaining the goals of the project with maximum use of the appropriate levels of training.

	<u>Score</u>
-- Personnel assignments are consistent with attaining maximum benefit from all levels of training.	1.0
-- Personnel are assigned in ways generally suited to training, but that do not evoke maximum potential.	0.6
-- Personnel seem to be assigned in a manner inappropriate to training.	0.2

**CRITERION 16: Time and Effort Efficiency****Weighting Factor** \_\_\_

Projects should be designed to have a minimum of waste of personnel time and effort.

	<u>Score</u>
-- Tasks are planned and organized to expressly make efficient use of personnel time and effort.	1.0
-- Tasks are planned with little thought to efficient use of personnel time and effort.	0.5
-- Tasks are planned that do not make efficient use of personnel time and effort.	0.0

**CRITERION 17: Cost Effectiveness****Weighting Factor** \_\_\_\_\_

Anticipated costs of a proposed project should be commensurate with the personnel used, effort expended, and results to be obtained. There should be a clear demonstration that the organization plans to use accepted cost accounting and personnel timekeeping methods that are compatible with BPA financial procedures.

	<u>Score</u>
-- Anticipated costs are low for the quality, quantity, and utility of expected results; BPA compatibility.	1.0
-- Anticipated costs are within usual limits for the personnel time devoted, equipment needed, and results expected; BPA compatibility.	0.8
-- Anticipated costs are difficult to relate to effort and expected results; BPA compatibility.	0.3
-- Anticipated costs are excessively high compared to planned effort and expected results; BPA compatibility.	0.2
-- Organization lacks an acceptable cost accounting system that is compatible with BPA procedures.	0.0

**CRITERION 18: Interaction****Weighting Factor** \_\_\_\_\_

A project should be able to demonstrate interaction of its activity with the needs, plans, and ongoing activities of other related BPA projects, Northwest Power Planning Council goals, and state-of-the-art work outside the BPA/NPPC framework.

	<u>Score</u>
-- Active interaction through receipt and use of others' data or provision of data to others.	1.0
-- Administratively coordinated for information only.	0.7
-- Little or no interaction or coordination, but no duplication or conflicts obvious.	0.2
-- Duplicates or conflicts with activities of others.	0.0

**CRITERION 19: Technology Transfer**

Weighting Factor \_\_\_\_\_

The project should have explicit plans for transferring the information gained to user sectors where it is needed and can be applied.

	<u>Score</u>
-- Specific, direct plans for transfer of data, results, hardware, etc., have been made with user groups.	1.0
-- Plans have been made for information transfer (e.g., publications, data bases, demonstrations, workshops) to possible users.	0.8
-- General plans made for indirect transfer via publication of results in publicly available journals or reports without targeted users.	0.5
-- Internal agency reporting only.	0.0

**CRITERION 20: Quality Control**

Weighting Factor \_\_\_\_\_

The project should have a demonstrated plan for assuring high quality in data gathering, recording, analysis, and reporting, including (as appropriate) standardized procedures, replicate sampling, analytical standards or blanks, maintenance of record books, and technical review of draft manuscripts or data bases.

	<u>Score</u>
-- Assurance of high quality has been built into study plans explicitly.	1.0
-- Staff are entrusted to do a good job without supervision.	0.7
-- The project uses procedures of unknown and unchecked quality.	0.4
-- The project uses procedures of suspect quality without control.	0.2

**CRITERION 21: Scale of Effort**

Weighting Factor \_\_\_\_\_

Projects should be designed to be of a scale appropriate to accomplishing stated objectives, where "scale" includes such factors as size of facility, manpower, duration, cost, etc.

	<u>Score</u>
-- Scale is appropriate to the objectives as judged by a long-range plan for solving the problem with realistic availability of resources.	1.0
-- Scale is determined <u>ad hoc</u> by resources, not the requirements to solve the problem e.g., available funds, facilities, manpower, etc.	0.6
-- Scale has no evident basis in relationships to objectives or resources.	0.3
-- Scale seems clearly inappropriate to the need.	0.0

**CRITERION 22: Knowledge Base**

Weighting Factor \_\_\_\_\_

The project should contribute to greater knowledge or comprehension of a problem and its solution.

	<u>Score</u>
-- Increased knowledge/comprehension is highly probable.	1.0
-- Knowledge/comprehension may be increased by accumulation of data.	0.7
-- Data gathering seems to be an end in itself.	0.3
-- Little knowledge or comprehension is likely to be gained.	0.0

**CRITERION 23: Resource Conflicts**

Weighting Factor \_\_\_\_\_

The project should not create an unreasonable conflict for the resource under investigation; e.g., among studies or between studies and resource utilization (harvest, wild or hatchery brood stock, natural spawners, etc.).

	<u>Score</u>
-- A quantitative evaluation of resource use clearly demonstrates that the project impact is insignificant among competing uses, or that the impact (if large) is short-term and justified by the need.	1.0
-- A general survey suggests that unreasonable conflict is not likely.	0.8
-- Some important conflicts may arise.	0.4
-- The work is clearly competing for a limited resource without overwhelming demonstration of need.	0.0

**CRITERION 24: Measurable Endpoints**

Weighting Factor \_\_\_\_\_

All projects should have well-defined endpoints that can be measured and compared with stated goals in order to evaluate project effectiveness.

	<u>Score</u>
-- Endpoint(s) well defined, measurable, and in the same terms as project goals.	1.0
-- Endpoint(s) defined but poorly measurable in a form comparable to project goals.	0.7
-- Endpoints poorly defined.	0.3
-- No endpoints that relate to goals, or incompatible with goals.	0.0

**CRITERION 25: Monitoring**

Weighting Factor \_\_\_\_\_

Projects should include a method for monitoring to demonstrate that the desired results are attained; such monitoring will vary markedly among projects but can include documented publication of research results in the appropriate literature (research projects) or increases in numbers of adults returning to a rehabilitated stream (habitat modification projects).

	<u>Score</u>
-- Provision has been made for quantitative monitoring of results.	1.0
-- Provision has been made for a qualitative monitoring of results.	0.6
-- There is little or no provision for monitoring results, but such monitoring is feasible.	0.4
-- There is no known way in which results can be evaluated.	0.0

**C. CRITERIA FOR HABITAT MODIFICATION AND OTHER NON-RESEARCH PROJECTS****CRITERION 26: Efficacy of Treatment Method**

Weighting Factor \_\_\_\_\_

The ultimate treatment of the target species or the stressing agent should have a high likelihood of success, based either on proven performance at various scales or on indirect measures.

	<u>Score</u>
-- Proven effective in a majority of applications.	1.0
-- Effective in selected trials, unproven but probably acceptable for general application.	0.7
-- Unknown effectiveness, treatment method needs refinement and verification but success believed likely.	0.2
-- Effectiveness unlikely, treatment method definitely flawed.	0.0

**CRITERION 27: Extent of Target Species Amenable to Treatment-Weighting Factor** \_\_

The technique must be able to treat a significant proportion of the target species.

	<u>Score</u>
-- Majority (>50%) of target amenable.	1.0
-- 10% to 50% of the target amenable.	0.8
-- A small but important proportion of the target amenable.	0.6
-- Less than 10% of the target amenable.	0.5
-- An insignificant proportion of the target amenable.	0.0

**CRITERION 28: Availability of Technique or Treatment**                      **Weighting Factor** \_\_

The technique or treatment being proposed should have a high probability of being available for full-scale application now or in the near future, as demonstrated by commercial availability, extensive prior use, large-scale testing, or similar measures.

	<u>Score</u>
-- Currently available and immediate benefits expected.	1.0
-- Technique/treatment is known only from small scale experiments, but probably can be made available and benefits expected by 1990.	0.7
-- Probably not available soon for full-scale application and benefits not expected until after 1990.	0.3
-- Little likelihood that the technique or treatment will ever be available for full-scale application.	0.0

**CRITERION 29: Economics of Technique/Treatment**      **Weighting Factor** \_\_\_\_\_

The probable range of costs of implementing the technique/treatment should be relatively inexpensive when compared to the probable costs of competing techniques/treatments, but should not be excluded on economic grounds alone if it is the only method available for restoring or protecting the target.

	<u>Score</u>
-- Only or least expensive option available.	1.0
-- Cost uncertain, but technique/treatment has a high likelihood of being least expensive.	0.7
-- A less expensive option (<1 order of magnitude) exists or could probably be found.	0.4
-- A significantly less expensive option (>1 order of magnitude) exists.	0.2
-- Cost is prohibitive in relation to benefits.	0.0

**CRITERION 30: Secondary impacts of Technique/Treatment**      **Weighting Factor** \_\_\_\_\_

The technique should be relatively free from serious secondary adverse environmental impacts, or the balance between adverse and beneficial secondary impacts should be positive. If a significant potential exists for occurrence of adverse secondary impacts, then reliable methods to prevent, control, or confine such effects should be presently available.

	<u>Score</u>
-- Secondary beneficial effects are likely and probably outweigh adverse effects.	_____
-- No uncontrollable secondary effects; or secondary beneficial effects, along with the primary benefits, essentially balance secondary adverse effects.	_____
-- Uncontrollable secondary adverse effects probably outweigh secondary beneficial effects, but are significantly less than the primary benefit.	_____
-- Uncontrollable secondary adverse effects probably outweigh both primary and secondary benefits.	_____

**CRITERION 31: Institutional Considerations in Implementation****Weighting Factor**     

**It should be possible to implement the technique/treatment within the framework of existing institutional and policy constraints; local, state, and federal regulations; existing resource management programs; and public attitudes. If institutional changes are required, they should be amenable to resolution within existing institutional frameworks.**

	<u>Score</u>
-- Existing regulations/policies will facilitate implementation.	1.0
-- Existing regulations/policies are not expected to significantly hinder implementation.	0.7
-- Institutional constraints exist that may hinder near-term implementation.	0.4
-- Not likely to be implemented.	0.0

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**Total evaluation score =  $\sum$  criteria (weighting factor x score).**

**APPENDIX D**

**RECOMMENDED GUIDANCE FOR PROJECT SITE EVALUATIONS**

**APPENDIX D: RECOMMENDED GUIDANCE FOR PROJECT SITE EVALUATIONS'****0.1 PURPOSE**

The purpose of this guidance is to provide a uniform protocol for the use of BPA Project Offices in conducting onsite evaluations of BPA-sponsored field projects, stations, or laboratories. It is to be used as a general basis for such evaluations, subject to variations as may be required by particular projects, local differences, or special situations.

**0.2 BACKGROUND AND SCOPE**

The purpose of field project evaluations is to verify whether EPA-sponsored projects are being executed effectively and efficiently by the recipients of BPA funds. This information will then be used to facilitate improvement where needed, to recognize superior performance, or to justify redirection of the project. The paragraphs that follow provide uniform guidelines for the project evaluators (generally including the BPA Project Officers) and incorporate the following features:

- a. The guidelines focus on the onsite review, in which the principal evaluator and a review team visit BPA-funded institutions as a means of evaluating on-the-ground project execution. Installations may include field research stations, hatcheries, laboratories of cooperating agencies or tribes, habitat improvement sites, or other entities chosen by the principal evaluator as consistent with the project evaluation goals.
- b. The guidelines are intended to assure that the evaluation process is carried out as cost-effectively as possible with an appropriate amount of uniformity, maximum communication between interested parties, and minimum duplication or disruption to ongoing operational activities. They intentionally do not specify every detail of the review process, since flexibility to suit individual projects and divergent project types (e.g., habitat modification, genetics research) is important. Project officers are encouraged to develop more detailed checklists and evaluation criteria based on the pre-determined goals of individual projects.

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<sup>1</sup>Based In part on U.S. Fish and Wildlife Service "Guidance for Field Station Evaluations"

### 0.3 FREQUENCY AND SCHEDULING

As a minimum, formal onsite evaluations should be conducted once every three years for projects that have a duration of four years or longer. This includes related, sequential projects funded independently but having a common contractor. This minimum requirement does not preclude more frequent reviews if they are needed, e.g., major construction projects that may require close attention. Evaluations should be scheduled in advance in the annual project renewal proposal for the following year, or through other appropriate means. The Director, EPA Division of Fish and Wildlife, is responsible for prescribing these schedules.

### 0.4 TEAM SIZE AND COMPOSITION

For each evaluation, the Director, BPA Division of Fish and Wildlife, will appoint an evaluation team leader (generally the Project Officer for the work being reviewed) who in turn will be responsible for recommending an evaluation team (generally of three to five members) for the Director's approval. The size of the evaluation team should involve no more people than necessary to conduct a thorough and effective evaluation. Team members will ordinarily be distributed among the BPA office, cooperating agencies or tribes, and external organizations, and will be technical peers for the project being evaluated. Membership should be drawn from as broad a spectrum of relevant expertise as possible, a measure that can provide a valuable cross-fertilization of ideas as well as useful training for the individuals involved. Using teams whose members represent more than one professional discipline may also be a useful approach. BPA Project Officers should concentrate on evaluation activities in order to improve through experience the quality, continuity, and consistency of the evaluations. Teams should be organized 4 to 6 months prior to the onsite review to allow adequate time for planning and preparation of review materials. Reviewers not supported by BPA funds (i.e., not BPA staff or contractors) should be compensated for their time and expenses.

### D.5 PRE-EVALUATION PREPARATION

Prior to the evaluation, two preparatory steps are required:

- a. The evaluation team will outline the specific intent of the evaluation by identifying the major topics and issues which will be addressed. They will also develop detailed technical evaluation criteria, if these are deemed appropriate. These will be based on the Work Statement in the BPA contract, the Northeast Power Council's Fish and Wildlife Plans for the relevant years, and any other established plans or goals that may be relevant.

- b. The evaluation team must identify prior to its arrival, (a) any preparations required of the installation such as the compilation of data, and (b) staff to be made available. These required preparations, along with a confirmation of the evaluation dates and identification of the team members, should be transmitted by memorandum at least one month in advance of the evaluation.

Materials provided to review team members by the project or installation contractor will vary among the different types of project funded by BPA, but will generally consist of:

- (I) a summary of the NPPC and BPA plans, goals or objectives that provide the basis of or justification for the work;
- (II) a description of the project scope, conceptual framework, objectives, usually as contained in the project proposal(s);
- (III) a summary of work accomplished to date, backed-up with copies of reports and manuscripts;
- (IV) a summary of the use of resources (people, funds, facilities, etc.);
- (v) a proposal for project continuation (if desired) that includes the elements required of any proposal to BPA, many of which will have been covered above.
- (vi) a summary of the facilities (laboratories, field sites, etc.) that will be inspected during the visit.

## 0.6 CONDUCT OF EVALUATIONS

The following guidelines are prescribed to insure a degree of uniformity in the basic approach. They are not intended to identify every step in conducting an evaluation.

- a. **Initial Briefing.** The evaluation team leader will brief the station or office supervisor at the beginning of the evaluation. Items to be discussed in the briefing might include:
- Agenda and time frame.
  - Programmatic areas to be emphasized.
  - Any special issues/problems or situations.
  - Agreement as to which portion (if any) of the evaluation will be conducted in private and with whom
  - Concerns not previously identified.

b. Making the Review.

- (1) **Members of the review team will meet with staff members individually or collectively as best suits the circumstances to discuss station and project activities. A tour of the principal facilities used in the work is desirable and the main reason for holding the review at the site. The team should not confine its efforts to BPA-funded personnel only, since the effectiveness of the project or station also relates to its relationship with other agencies or organizations, the community, or individuals. Accordingly, contacts in person or by telephone with appropriate outsiders should be made by the team in conjunction with the site visit to get their evaluation of the project and relationships. This includes organizations with cooperative agreements, officials of nearby Federal, State, or local agencies doing business with the project, adjoining landowners, and special interest groups, as appropriate.**
- (2) **During the review team members should not only take notes but should also prepare, time permitting, brief statements of any problems or praiseworthy accomplishments with proposed actions. These statements will be used in the close-out meetings with the project supervisor and will form a basis for the final report.**

- c. **Close-Out Briefing. A close-out briefing should be held with the project supervisor (and staff if desired) to discuss findings of the review. The purpose of this briefing is to make the supervisor aware of the team's tentative conclusions, provide an opportunity for project personnel to comment on them, and if there is agreement on minor corrective actions, enable them to be implemented immediately. The supervisor should be made aware that the conclusions in the written evaluation report might be somewhat different as the result of further discussion or additional information obtained after the team departs.**

## D.7 EVALUATION REPORT

**A written report must be prepared by the team. While brevity is desirable, the report must contain sufficient detail to be meaningful to non-participating but knowledgeable readers. To provide a degree of standardization and to insure that all essential elements are covered, the evaluation report will consist of the following sections:**

- a. **General Observations. This section provides an overview of the evaluation. It briefly summarizes in a few sentences the overall status of those activities that are within acceptable accomplishment levels. Performance achievements worthy of special mention should also be noted, as should significant problems. Any other summary information that adds to a better appreciation of the total evaluation may be addressed here.**

At the option of the BPA Project Officer, this section might be developed as an Executive Summary and provided to the BPA Director of Fish and Wildlife Immediately upon completion of the evaluation, with the detailed report following later. If this is done, the field station project supervisor should be apprised of its contents first.

- b. **Required Evaluation Elements.** Since a major purpose of these evaluations is to provide the BPA Director of Fish and Wildlife with a mechanism for assessing the overall effectiveness of BPA-funded projects and installations under his jurisdiction, some common elements must be covered in each evaluation. For this reason -- to facilitate the cumulative assessment of all evaluations -- standard criteria to be covered in the evaluations are prescribed as listed in Attachment I. Other elements may be added if desired, and some may not apply for every project.

The technical aspects of a performance evaluation will differ markedly among projects and installations being reviewed. General criteria for project evaluation such as those presented here must be supplemented by detailed technical criteria. Such criteria would include specific interactions of the project with other BPA-funded work, and work funded through other sources. The review team should develop as many detailed technical criteria as are necessary to fairly review the specific project. These criteria should be developed in advance of the site review and provided to the Project Contractor. Care should be taken in selection of the review team to assure that the appropriate technical expertise of the agencies and tribes is used fully in developing the technical aspects of performance evaluation.

- c. **Special Issues.** This section will address issues identified prior to the evaluation in the pre-evaluation memorandum during the initial briefing, or developed during the evaluation that deserve special attention (if not already covered under one of the required evaluation elements). Essentially it is an addendum to the required elements in Section D.
- d. **Problems/Action.** This section of the report is used to briefly describe deviations from results or standards, or other problem situations requiring attention. They could be related to previously identified special issues or to new issues that surfaced during the evaluation process. If the deviation requires some type of action by the project (or by others such as the BPA office), a recommendation is included to that effect for each item. Each such item must briefly but clearly state the situation, the action to be taken, who is responsible for the action, and a target date for completion of the action. If desired, as an alternative to approving the report as a whole, an Approval block and/or Comment space might be provided with each item for use of the person approving the report.

## **0.8 REPORT PREPARATION AND APPROVAL**

The draft evaluation report should be completed as soon as possible but no later than two weeks after the team returns. Delay in preparation may result in loss of benefits and will diminish the credibility of the evaluation effort.

- a. The evaluation team leader will sign the report and forward it to the supervisor of the project, head of the installation, or other action official. The latter will prepare a response within 15 days covering recommendations not agreed with or report statements believed incorrect and return it to the team leader.
- b. Upon receipt of the response, the team leader will within two weeks revise the report as may be necessary, prepare it in final form, sign it, and forward it for review and approval by the BPA Director of Fish and Wildlife.
- c. After approval, the report will be forwarded to the supervisor of the project or installation for action. A copy will also be sent to any other organizational element that may be involved, especially in an action item. For example, a project report may require action by a contractor's Washington Office component.
- d. A response must then be made within 15 days by the contractor that addresses each action item in the report, and indicates what corrective action that has been or will be taken, the responsible official, and the expected completion date. In the case of further dissent with a report item, the BPA Director of Fish and Wildlife will make the final decision on the action to be taken.

## **D.9 FOLLOW UP**

- a. One response from the contractor may not be enough. BPA Project Officers should maintain a follow-up on each action item, perhaps by means of required periodic progress reports, until it has been satisfactorily resolved. Teams making future evaluations of the same organization should consult previous evaluation reports and check onsite whether recommended actions have been accomplished and problems resolved. If not, their reports should so indicate as a new action item.
- b. Within the BPA office a central file of evaluation reports shall be maintained, so that they will be readily available for future evaluations. Such reports can also be used in connection with broader evaluations, and can serve as a useful resource for providing feedback into planning and budgeting efforts.

Attachment 1: Criteria for Project Site Evaluations<sup>1</sup>

## A. OBJECTIVES/PLANS

**CRITERION 1: Consistency with Goals of Northwest Power Planning Council's Fish and Wildlife Plan**                      **Weighting Factor** \_\_\_

Efforts and accomplishments of ongoing EPA-funded work should show evidence of consistency with the goals and objectives stated in the Fish and Wildlife plans of the Northwest Power Planning Council, as amplified by implementation plans or other appropriate planning documents (assuming that the project was authorized within the plans).

Score

- |  |     |
|--|-----|
| -- Project efforts and accomplishments are linked explicitly to NPPC Fish and Wildlife Plan elements and BPA's implementation plans. | 1.0 |
| -- Project efforts generally conform to broad goals of NPPC and BPA  | 0.7 |
| -- NPPC or other appropriate goals and objectives.   | 0.0 |

**CRITERION 2: Specific Objectives**    **Weighting Factor** \_\_\_

The review should show that specific objectives or other action plans described in funded proposals or statements of work have been pursued and accomplished satisfactorily, on schedule, and in accordance with the stated plans (or a summary should be provided that explains why the plans were not met).

Score

- |   |     |
|---|-----|
| -- More has been accomplished than had been anticipated.  | 1.0 |
| -- Specific objectives/action plans were met as proposed, or a more appropriate course was taken consistent with general plans. | 1.0 |
| -- Specific objectives/action plans were incompletely met, or the substitute course was tangential to general plans.            | 0.4 |
| -- Efforts and accomplishments show little relationship to the proposed specific objectives/action plans                        | 0.0 |

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<sup>1</sup>Weighting factors for the several criteria (e.g., factor of 1-10) are to be selected in advance by the evaluation team; this will accommodate the widely varying types of projects that may be evaluated.

**B. CONDUCT****CRITERION 3: Scale of Effort****Weighting Factor \_\_\_\_\_**

Projects are carried out on a scale appropriate to accomplishing the objectives, where "scale" includes such factors as size of facility, manpower, duration, cost, etc.

	<u>Score</u>
-- Scale of project is appropriate to the objectives as judged by a long-range plan for solving the problem with realistic availability of resources.	1.0
-- Scale is determined <u>ad hoc</u> by resources, not the requirements to solve the problem e.g., available funds, facilities, manpower, etc.	0.5
-- Scale has no evident basis in relationships to stated objectives or resources.	0.2
-- Scale is inappropriate to the need.	0.0

**CRITERION 4: Conceptual Framework****Weighting Factor \_\_\_\_\_**

Work that has been underway for a period of several years should have a clear conceptual framework or model that integrates existing knowledge and the project's various field, laboratory or modeling experiments and observations so that the long-term goals and short-term strategies of the work are evident.

	<u>Score</u>
— The work is well unified by a conceptual framework or model.	1.0
-- The work has an underlying rationale that ties it together, but no clear conceptual model.	0.6
-- The work seems to be composed of generally related, but largely independent pieces.	0.4
-- There seems to be no coherence among diverse subprojects.	0.0

**CRITERION 5: Hypotheses****Weighting Factor** \_\_\_\_\_

**Work completed or underway shows evidence of having been directed toward distinct hypotheses that lead from and contribute to the overall conceptual framework or model for the project.**

	<u>Score</u>
-- Distinct hypotheses have been formulated and tested	1.0
-- The work has been guided by some non-explicit notions about the kind of results that may show up.	0.5
-- The work has been mostly empirical, e.g., "try It and see what happens."	0.2

**CRITERION 6: Experimental or Project Designs****Weighting Factor** \_\_\_\_\_

**The experimental or project designs should have been adequate to provide definitive answers to questions asked (hypotheses) in the context of the overall conceptual framework or model; alternative explanations have been ruled out or explicitly considered as the project has progressed.**

	<u>Score</u>
-- The experimental or project design has been adequate, or has been modified to be adequate, to yield definitive answers to the questions posed.	1.0
-- The experimental or project design(s) have not been capable of excluding alternative explanations but provided confidence in trends.	0.8
-- The experimental or project design(s) have been inadequate to yield either definitive explanations or confidence in trends; alternative explanations remain equally valid.	0.3
-- There has been no clear experimental or project design.	0.0

**CRITERION 7: Creativity and Originality****Weighting Factor** \_\_\_\_\_

**The level of creativity and originality that was apparent in the proposal should be exhibited throughout conduct of the work.**

	<u>Score</u>
-- The project has continued to show a high degree of creativity and originality as it has evolved with new information.	1.0
-- The creativity and originality of the proposed work has shown notable decline as the work evolved.	0.7
-- The creativity and originality expressed in the proposal has not been borne out in conduct of the work.	0.0

**CRITERION 8: Data Analysis and Interpretation****Weighting Factor** \_\_\_

Analysis of data should be accomplished using state-of-the-art methods of statistics, data management, and summarization (as appropriate). Interpretation of the analyses should follow standard procedures for deduction and Inference.

	<u>Score</u>
-- Project has applied innovative and exceptional methods of analysis and Interpretation.	1.0
-- Project has applied methods typical of current usage.	0.8
-- Project has applied methods that are clearly less than current usage would indicate are adequate.	0.0

**CRITERION 9: Project Organization****Weighting Factor** \_\_\_

Projects should demonstrate an organizational structure that assures satisfactory conduct of all phases of the work, both scientific/technical and administrative. Conduct of experiments and interpretation of results is primarily the responsibility of scientific/engineering staff, while managerial functions and responsibilities of controlling budgets, allocating staff, and other contractual obligations are explicitly assigned.

	<u>Score</u>
-- The project demonstrates an organizational structure that effectively carries out both scientific/technical and administrative functions.	1.0
-- Project organization is adequately conducting all phases of the work, but functions are not always explicitly assigned.	0.8
-- Project organization is vague and of questionable effectiveness.	0.3
-- Project organization is inadequate to accomplish all phases of the work.	0.0

**CRITERION 10: Personnel Deployment****Weighting Factor** \_\_\_\_\_

Personnel should be deployed in a manner consistent with attaining the goals of the project, with maximum use of the appropriate levels of training.

	<u>Score</u>
-- Personnel have been and are deployed for maximum use of appropriate levels of training.	1.0
-- Personnel are deployed in ways generally suited to training, but that do not evoke maximum potential	0.2
-- Personnel are deployed in a manner inappropriate for training <u>or</u> there is evident waste of time and effort.	0.6

**CRITERION 11: Techniques**

Weighting Factor \_\_\_\_\_

Techniques employed should be appropriate for the work, and evaluated periodically (and revised if appropriate); generally, they will be those proposed when the work was contracted for by BPA.

	<u>Score</u>
-- Techniques are those proposed and still appear appropriate; continuation is based on periodic reviews.	1.0
-- Techniques different from those proposed appear appropriate, and there is adequate justification for change.	1.0
-- Techniques in use may not be the most appropriate, even though approved in proposal review.	0.3
-- Techniques being used are inappropriate.	0.0

**CRITERION 12: Quality Control Evaluation**

Weighting Factor \_\_\_\_\_

The project should demonstrate an evaluation and assurance of high quality in data gathering, recording, analysis, and reporting, including (as appropriate) standardized procedures, replicate sampling, analytical standards or blanks, maintenance of record books, and technical review of draft manuscripts or data bases.

	<u>Score</u>
-- Assurance of high quality has been built into study plans explicitly and quality assurance procedures have been followed.	1.0
-- Staff are entrusted to do a good job without supervision or explicit QC plans.	0.7
-- The project uses procedures of unknown or an unchecked quality.	0.4
-- The project uses procedures of suspect quality without evidence of quality control evaluation.	0.2

**CRITERION 13: Time and Effort Efficiency**

Weighting Factor \_\_\_\_\_

Projects should be conducted with a minimum of waste of personnel time and effort.

	<u>Score</u>
-- Tasks are organized and conducted to expressly make efficient use of personnel time and effort.	1.0
-- Tasks are organized and conducted with little thought to efficient use of personnel time and effort.	0.5
-- Tasks are conducted in ways that do not make efficient use of personnel time and effort.	0.0

**CRITERION 14: Facilities**

Weighting Factor \_\_\_\_\_

Facilities that meet contemporary standards should be shown to be available and used by project staff for conduct of the work, including (as appropriate) field equipment, vehicles, laboratory and office space, laboratory equipment, life support systems for organisms, computational and data handling equipment, copy machines, a security system for material and Information, etc.

	<u>Score</u>
-- Facilities being used by project staff are exceptional.	1.0
-- Staff have most normal facilities available on request.	0.8
-- Some facilities used by project staff are marginally acceptable under contemporary standards.	0.5
-- Facilities are clearly deficient in critical areas.	0.0

**CRITERION 15: Services**

Weighting Factor \_\_\_\_\_

The organization should demonstrate a capability to provide, according to contemporary standards, services associated with conduct of the work, including (as appropriate) libraries, word processing, secretarial assistance, graphic arts, record keeping, security.

	<u>Score</u>
-- Services are exceptional; they are not only available but their use is a part of the standard operating procedures of the organization.	1.0
-- Most normal services are available on demand to project staff.	0.8
-- Services are provided in some, but not all, areas at a level that meets contemporary standards.	0.5
-- Services provided are clearly deficient in certain critical areas.	0.0

**CRITERION 16: Cost Effectiveness**

Weighting Factor \_\_\_\_\_

**Projects under way should be able to show through accepted cost accounting and personnel time keeping procedures that the effort expended and results obtained are commensurate with the funds used.**

	<u>Score</u>
-- Costs are low for the quality and quantity of results obtained	1.0
-- Costs are within usual limits for the personnel time devoted and results obtained.	0.8
-- Costs are difficult to relate to effort and results.	0.3
-- Costs are excessively high compared to effort expended and results obtained.	0.2
-- Organization lacks an acceptable cost accounting system	0.0

**C. USE OF INFORMATION****CRITERION 17: Interaction**

Weighting Factor \_\_\_\_\_

**A project should be able to demonstrate interaction of its activity with the needs, plans, and ongoing activities of other related BPA projects and state-of-the-art work and understanding outside the BPA/NPPC framework.**

	<u>Score</u>
-- Active interaction through receipt and use of others' data or provision of data to others.	1.0
-- Administratively coordinated for information only.	0.7
-- Little or no interaction or coordination, but no duplication or conflicts are apparent.	0.2
-- Duplicates or conflicts with activities of others	0.0

**CRITERION 18: Technology Transfer****Weighting Factor** \_\_\_\_\_

The project should have explicit mechanisms for transferring the information (product) gained to sectors where it was needed can be applied.

	<u>Score</u>
-- Specific, direct mechanisms are in place for transfer of data, results, hardware, etc., to identified user groups that expect to receive the results of the work.	1.0
-- Information transfer (e.g., publications, data bases, demonstrations, workshops) is being made to possible users.	0.8
-- General plans and procedures are in place for indirect transfer via publication of results in publicly available journals or reports without targeted users.	0.5
-- Internal agency reporting only.	0.0

**CRITERION 19: Knowledge Base****Weighting Factor** \_\_\_\_\_

The project contributes to greater knowledge or comprehension of a problem and its solution, not just to specific project objectives.

	<u>Score</u>
-- Increased knowledge/comprehension is demonstrated or is highly probable.	_____
-- Knowledge/comprehension may be increased by accumulation of data.	_____
-- Data gathering seems to be an end in itself	_____

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$$\text{Total evaluation score} = \sum_{\text{criteria}} (\text{weighting factor} \times \text{score}).$$

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