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United States General Accounting Office

Report to the Chairman and Ranking
Minority Member, Subcommittee on
Environmental Protection, Committee on
Environment and Public Works, U.S.
Senate

March 1987

ENDANGERED SPECIES

Limited Effect of Consultation Requirements on Western Water Projects





United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

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March 26, 1987
The Honorable George Mitchell, Chairman
The Honorable John Chafee, Ranking
Minority Member
Subcommittee on Environmental Protection
Committee on Environment and Public Works
United States Senate

This report is in response to your request that we examine the effect of the Endangered Species Act on the exercise of water rights in western states. It specifically addresses your questions concerning the act's section aimed at protecting threatened or endangered species by requiring federal agencies to consult with the Department of the Interior before taking or authorizing development actions.

The report presents the results of a project by project analysis of the consultation process' impact on western water projects measured in terms of project delays, modifications and cost increases. It also describes the results of our review of western state water laws and their compatibility with the Endangered Species Act's goals. Finally, the report discusses the opinions of agency officials about increased use of informal consultations to accomplish the act's purposes. As arranged with your offices, we plan no further distribution of this report until 30 days from the date of this letter. At that time we will send copies to the Department of the Interior, as well as the several agencies that consulted with them during the period of our review. Copies will be made available to others on request.

This review was performed under the direction of Michael Gryszkowiec, Associate Director. Major contributors are listed in appendix IV.

J. Dexter Peach
Assistant Comptroller General

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Executive Summary

Purpose

In areas of the West where water is scarce, federal efforts to provide enough water to ensure the survival of endangered fish, animal, and plant species have generated considerable controversy. Other competitors for the available water have claimed that reserving water for these species has hampered their ability to develop water resources for irrigation, municipal water supply, industrial development, or related purposes. In particular, water developers have objected to the Endangered Species Act's provision that requires the federal agency approving or financing their project to consult with the Interior Department to help ensure that their actions will not jeopardize endangered species.

Against a backdrop of this controversy, the Chairman and Ranking Minority Member, Subcommittee on Environmental Protection, Senate Committee on Environment and Public Works, asked GAO, among other questions, to assess, on a project-by-project basis, the actual effect of the act's consultation requirements on western water development.

Background

The Endangered Species Act of 1973 was passed by the Congress because many species had become extinct or were threatened with extinction as a result of economic growth and development. The act provided for identifying endangered and threatened species and set out various requirements that would reduce their chances of extinction. Federal agencies are required to consult with Interior's Fish and Wildlife Service so that actions the agencies authorize, fund, or carry out are not likely to jeopardize the continued existence of nonmarine species.

Consultations can include simple requests for descriptions of the endangered or threatened species in a certain area, or can be as detailed as a biological investigation of a proposed project's effect on an endangered species known to be present in an area. The detailed investigation is to be completed within 90 days and concludes with an opinion by the Service on whether the proposed project would jeopardize the continued existence of the species. Suggested measures for mitigating adverse impacts normally accompany the Service's opinion, but ultimate responsibility for ensuring the species' protection rests with the agency initiating the action.

Results in Brief

The Endangered Species Act's consultation requirements have, on the whole, had little effect on western water development. In terms of overall impact, between October 1977 and March 1985 only 68 consultations (out of about 3,200 consultations concerning water development

projects) affected the projects with which they were associated. These consultations had varying, but normally limited, impact on the projects' timing, scope, and cost. Most importantly, no water project was terminated as a result of a consultation, and cost increases caused by consultation requirements generally represented a small percentage of total project costs. Further, for these affected projects, other concurrent difficulties such as lack of funding often had more serious effects than consultation requirements.

The major concerns about water project development have been centered in two river basins (representing 42 of the 68 consultations). Project developers and conservation interests in these basins, however, have frequently been able to develop compromise strategies that have allowed projects to proceed while also providing conservation measures for the affected endangered species.

Principal Findings

Overall Impact

In the 17 western states, the Service conducted about 16,700 consultations during the 7-1/2 years (1977-85) covered by GAO's review. Approximately 3,200 of the consultations concerned proposed water development projects. From these consultations, GAO identified 68 in which the consultation process had an effect on the associated projects' timing, scope, or cost. The 68 consultations affected 62 projects in 9 western states.

The major concern about the consultations' effects on projects has been centered in two river basins—the Upper Colorado and the Platte. In these basins, the Service has held that any water depletions would likely jeopardize the endangered species present. As a result, concern among water developers has been especially intense in these areas. The Service has been able to develop several compromise approaches to allow continued development of water supplies while also developing measures to protect the endangered species in these basins. One of these is the so-called Windy Gap assessment, whereby project developers wishing to use water from the Upper Colorado basin are assessed a fee that funds conservation and research activities for the endangered species in that basin. Another is the committee approach where interests from the Upper Colorado and Platte river basins meet to arrive at a strategy which can best serve both water developers and species survival.

Project Timing

With respect to the consultations' impact on project timing, GAO found that although 39 of the consultations with deadlines exceeded the prescribed 90-day time limit, they usually did not lengthen the time to complete the associated project. Many tasks such as obtaining licenses, permits, and funding are involved in getting a water project under construction. When problems are being experienced in these areas, there may be little practical effect from extended consultations. As such, for 26 of the 39 consultations that exceeded the prescribed time limit, officials with the federal agencies initiating the consultation said the consultation did not extend the time to complete the associated projects. In the remaining 13 cases, officials attributed project delays of between 1 week and 2 years to consultation requirements.

Project Scope and Cost

The consultations GAO reviewed also did not materially alter project scopes or substantially increase project costs. In 62 of the 68 cases, the consultation caused project officials to take actions which led to project modifications, cost increases, or both. Of these, GAO was able to obtain estimated cost effects for 49 consultations. These estimates ranged from less than \$100 to \$10.1 million.

The consultations' cost impacts generally represented a small percentage of total project costs. For example, the total cost of the project experiencing the \$10.1 million cost increase was \$1.6 billion—an increase of less than 1 percent. Moreover, none of the project modifications recommended during consultation caused a project to be terminated.

Recommendations

This report contains no recommendations.

Agency Comments

GAO discussed the contents of the report with responsible agency officials, and their comments were incorporated where appropriate. However, as agreed with the requesters' offices, GAO did not obtain official agency comments on a draft of this report.

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Abbreviations

DCI	data collection instrument
FERC	Federal Energy Regulatory Commission
GAO	General Accounting Office

Introduction

The Endangered Species Act of 1973 (Public Law 93-205, Dec. 28, 1973) was enacted to protect fish, wildlife, and plants whose survival as a species is in jeopardy. The Congress based its action on a finding that many species had become extinct or threatened with extinction as a result of economic growth and development. It further recognized that individual species had esthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people.

To help ensure the continued survival of threatened and endangered species, the act prescribed a variety of conservation steps including: (1) identifying and publishing a list of threatened or endangered species, (2) acquiring land and water and entering into cooperative agreements with states to conserve the species, (3) cooperating with foreign countries to conserve the species, (4) prohibiting certain actions involving the taking, buying, using, selling, and transporting of endangered species, and, the step that is the subject of this report, (5) requiring federal agencies to consult with the Secretary of the Interior to ensure that any activity authorized, funded, or carried out by the agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or degradation of its critical habitat.

Of all the act's conservation steps, perhaps the most widely discussed and controversial has been the requirement for federal agencies to consult with the Interior Secretary when initiating actions that may jeopardize endangered species. Although the consultation requirement has been applied to development projects nationwide, the controversy has been most pronounced in the West, where nearly all water development projects require federal agency involvement (hence necessitating consultations) through either the granting of a license or permit, the provision of funds or loan guarantees, or the actual construction and operation of the project.

Water in the West is often scarce and providing the water to preserve natural habitat necessary for a species' survival may be in direct competition with other potential water uses, such as irrigation, electric power production, municipal water supply, mining, and other industrial development. In this context, sponsors of potential water development projects in the western states have expressed concern that the consultation requirement could interfere with their ability to develop projects that make use of the water to which they are entitled under state water laws, and to which the states are entitled under interstate compacts and equitable apportionment decrees of the United States Supreme Court.

The highly publicized Tellico Dam and Reservoir Project in Tennessee dramatized the considerable impact consultation requirements could have on water development projects. During the consultation on the Tellico project, it was learned that the project would destroy the habitat of the snail darter, an endangered fish, and thereby jeopardize its continued survival. Applying this finding in the context of the act's requirements, the Supreme Court stopped the project in 1978 even though over \$100 million had already been spent, and construction was virtually complete. The project was ultimately completed only through a special congressional provision.

To address the concerns of development interests, the Congress made significant amendments to the act in 1978, 1979, and 1982. In these amendments, the Congress attempted to add flexibility to the manner in which the consultation requirements could be administered so that inherent conflicts between protection of threatened and endangered species and the development of water projects could be resolved. Largely because of the Tellico Dam case, the 1978 amendments created a cabinet-level Endangered Species Committee, which may exempt projects from the act's requirements.

Since the act's passage, multiyear funding authorization bills have served as the forum for debates about the act's effect on water development in the West. The act is currently up for reauthorization, and a bill to authorize continued funding that was submitted in the 99th Congress will almost certainly be resubmitted before the 100th Congress. Debate on this reauthorization has and will likely again focus on the possible conflicts between the act's consultation provisions and the development of water projects in the western states.

Overview of the Consultation Process

The act assigns each federal agency, in consultation with the Secretary of the Interior or Commerce, responsibility for ensuring that its actions are not likely to jeopardize endangered species or their critical habitat. Generally, the Secretary of Commerce is responsible for marine species while all other species are under the jurisdiction of the Secretary of the Interior, who in turn delegated this authority to the Director, Fish and Wildlife Service (Service). Our report deals only with those consultations performed under Interior's jurisdiction which involve determining the presence of listed species in the area of the proposed project, the potential effect of the project on the species and its habitat, and the

actions that need to be taken to avoid jeopardy to the species. The process makes use of informal and formal consultations.¹ A particular agency activity or project may undergo either or both of these consultations. Each type is discussed below.

Informal Consultation

The vast majority of consultations in recent years have been informal. Informal consultations include all of the discussions and correspondence that occur between the Service and a federal agency or its designated nonfederal representative, such as a permit or license applicant, before the start of a formal consultation. It could include such activities as requests for lists of endangered or threatened species in the project area, technical advice on a species' habitat needs, and preparation of a biological assessment.

The act requires federal agencies to ask the Service if any endangered or threatened species is present in the area of major construction activity (e.g., dams and pipelines). If the Service advises an agency that such species may be present, the agency must prepare and submit to the Service a biological assessment. The biological assessment identifies any listed species or critical habitat in the area of the proposed project and describes the effects that the project may have on the species and habitat.

If the Service determines that no listed species or critical habitat is in the area of a proposed project, or that there will be no effect on a listed species or habitat, the consultation ends at this informal stage. However, if the Service or the federal agency determines that a listed species or critical habitat may be affected by the proposed project, a formal consultation is required. The act prescribes no time limit for completing an informal consultation.

Formal Consultation

Formal consultation begins with a written request from a federal agency to the Service after the agency or the Service has determined that the agency's activity may adversely affect listed species or critical habitat. The agency is required by Interior regulations to include with its request a biological assessment, which it may have prepared during an informal consultation. The act requires the Service and the agency to complete a

¹The 1982 amendments to the act created another type called early consultation for prospective agency actions. It was not used in any of the consultations we reviewed.

formal consultation within 90 days after it is started unless they mutually agree to an extension.

After reviewing the agency's biological assessment and other species and habitat information available to it, the Service prepares its biological opinion and sends it to the federal agency. The biological opinions we reviewed generally contained one of three final conclusions:

1. The action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.
2. The action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.
3. The action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat provided certain modifications or conservation measures are taken.

In addition to the Service's opinion on jeopardy, the biological opinion includes: (1) a summary of the information on which the opinion was based, (2) a detailed discussion of the effects of the action on endangered species or critical habitat, (3) suggested "reasonable and prudent" alternatives to avoid jeopardy if such are needed and are available, and (4) conservation recommendations, if applicable. Conservation recommendations are suggested measures which the Service believes would be beneficial to an endangered species or its critical habitat, and would enable the federal agency to better carry out its conservation responsibilities under the act.

Once the biological opinion is issued, the consultation is completed. However, if the Service determines that the action is likely to jeopardize an endangered species or critical habitat, the federal agency shall notify the Service of its final decision on the proposed action.

Under the act, when jeopardy opinions are issued, the initiating agency is not bound by the Service's viewpoint or recommended action. The act places final responsibility for ensuring that agency actions do not jeopardize endangered species on the agency itself. However, while the Service does not have veto power over agency actions, the courts have

given considerable weight to its biological opinions in determining whether agencies have fulfilled their responsibilities under the act.

Objectives, Scope, and Methodology

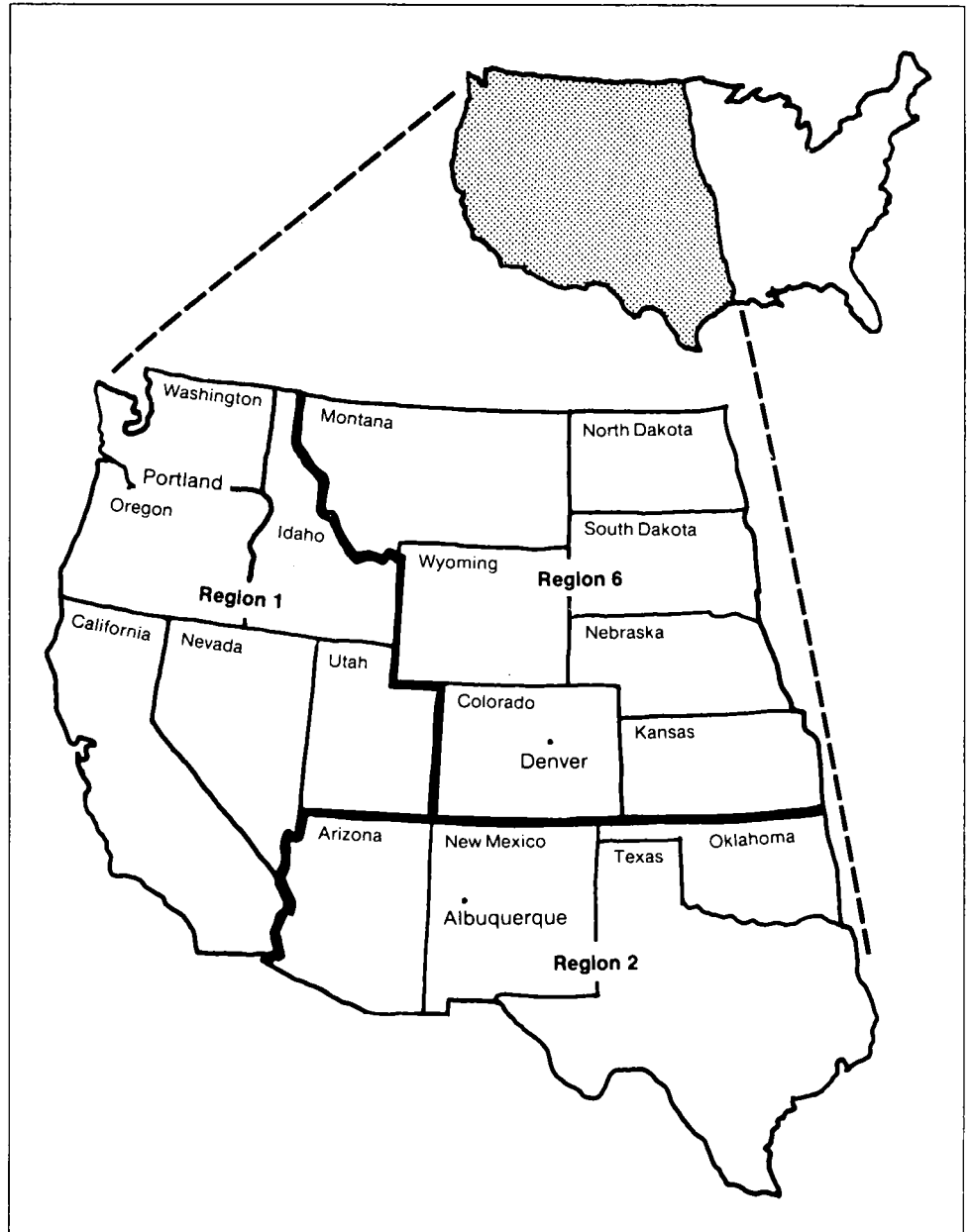
In the context of the continuing controversy over the effect of endangered species consultations on the development of water rights in the West, the Chairman, Subcommittee on Environmental Protection, Senate Committee on Environment and Public Works, requested on March 12, 1985, that we evaluate the actual extent of this effect. The Ranking Minority Member of the subcommittee subsequently joined the request.

Specifically, the requesters asked that we address the following questions as they relate to consultations conducted by the Interior Department:

- On a project-by-project basis, in what way has the exercise of western water rights been delayed or modified because of the consultation requirements spelled out in the act?
- In what way do state water laws (for example, laws which do not recognize fish and wildlife conservation as a beneficial use of water) contribute to conflicts with the act or impede the resolution of such conflicts?
- Has the informal consultation process employed by the Service helped to alleviate conflicts?

To address the first question, we agreed with the requesters' offices to examine each consultation that was initiated during the 7-1/2-year period from October 1, 1977, to March 31, 1985, and that concerned a project located or planned to be located in one of the 17 western states shown in figure 1.1. The Service does not maintain centralized consultation files organized by the type of project involved or by the kind of effect occurring on the associated projects. Accordingly, we used an exhaustive process to make sure we identified every consultation that could have affected a project aimed at exercising a western water right.

Figure 1.1: States Covered in GAO Review



Note: The boundaries shown are those of the Service's regions that cover the 17 states included in our review.

Source: Fish and Wildlife Service.

At the outset, based on our review of consultation logs maintained by each of the affected Service regional offices and frequent discussions with officials in these offices, we identified each consultation that both

met the criteria agreed to with the requesters and involved a project that was in any way water related. Once this initial search process was complete, we worked with the Service and initiating agency officials to determine which of the water-related projects actually involved the exercise of a water right (i.e., a water development project). We defined a water development project as one that used or altered the flow of water in-stream for purposes such as hydropower development or flood control, involved the diversion or withdrawal of water for out-of-stream uses such as irrigation or industrial water supply, or otherwise involved the exercise of an individual's or group's state water right. We also identified those consultations that "affected" the associated project. We determined that the consultation affected the project if the project was delayed, modified, or had its costs increased as a direct result of the consultation process.

In arriving at the listing of consultations which affected water-development projects, we first included all consultations where (1) the initiating federal agency claimed such an effect or (2) the Service had determined that the project was likely to jeopardize the continued existence of a listed species or its critical habitat. (In official terminology, this means that the project received a "jeopardy opinion.") We then followed up on each consultation included on this list by reviewing the associated project files and interviewing Service and sponsoring federal agency officials, and in some cases nonfederal project sponsors or applicants, to determine the actual nature of the consultation's effect, if any, on the project.

During the overall search process, we reviewed records of consultations maintained by 19 Service offices. These consultations were initiated by 34 federal agencies from their offices in 103 locations. We gathered information from all of these offices either in person, by mail, or by phone. Throughout this process, we restricted our efforts to determining whether the consultation affected the project's scope, cost, or timing. We did not determine whether the protection afforded the endangered species was worth the resulting project effects. Appendix I describes in detail the process we used to identify projects affected by the consultation requirements. Appendix II provides a detailed list of the agencies and office locations included in our review.

In responding to the second question involving possible conflicts between the act and western water laws, we initially reviewed available analyses prepared by the Congressional Research Service and others and sought the views of Service and agency officials. To obtain more

specific and up-to-date information on western water laws and their compatibility with the act, we also distributed a questionnaire to water law administrators in the 17 western states through the Western States Water Council, an organization of the Western Governors Association. Water agency administrators for all 17 western states responded to our questionnaire and provided documentation to support their responses.

With respect to the third question dealing with the informal consultation process, we obtained the views of Service and initiating federal agency officials on the effectiveness of the process. Further, we examined each informal consultation that affected its associated project to measure the extent and nature of that effect.

In addition to performing work specifically related to each of the three questions, we also developed background information on the consultation process. In this connection, we reviewed (1) the act and its legislative history, (2) applicable Service regulations, policies, and procedures for the consultation process, (3) records of court cases in which the act's consultation provisions had been a principal factor, and (4) activities of the Endangered Species Committee. We also discussed the effects of the consultation requirements with several environmental and water user groups having an interest in the subject.

Our review was performed between March 1985 and November 1986. During the course of our work, we obtained the views of responsible Service and sponsoring agency officials on the information we gathered during the review. Their views are incorporated where appropriate. However, in accordance with the requesters' wishes, we did not obtain official agency comments on this report. With this exception, our work was conducted in accordance with generally accepted government auditing standards.

Limited Effects of Consultations on Western Water Development Projects

The act's consultation requirements affected only a relatively small number of water development projects in the West. For the 7-1/2 years between October 1977 and March 1985, we found no consultation that led to a project's termination, and in only 68 instances did a consultation contribute to a project's delay, modification, or cost increase. This represented about 2 percent of the consultations involving water development projects during the period. In addition to being limited in number, the major concerns over the consultations' effects were centered in only two river basins. Moreover, for the projects affected by consultations, other factors such as funding availability often had a more significant effect. Finally, on many of the projects affected by consultations, initiating agencies along with project sponsors and the Service had developed strategies which enabled projects to proceed while also providing conservation measures for the endangered species involved.

Consultations Affected Relatively Few Projects

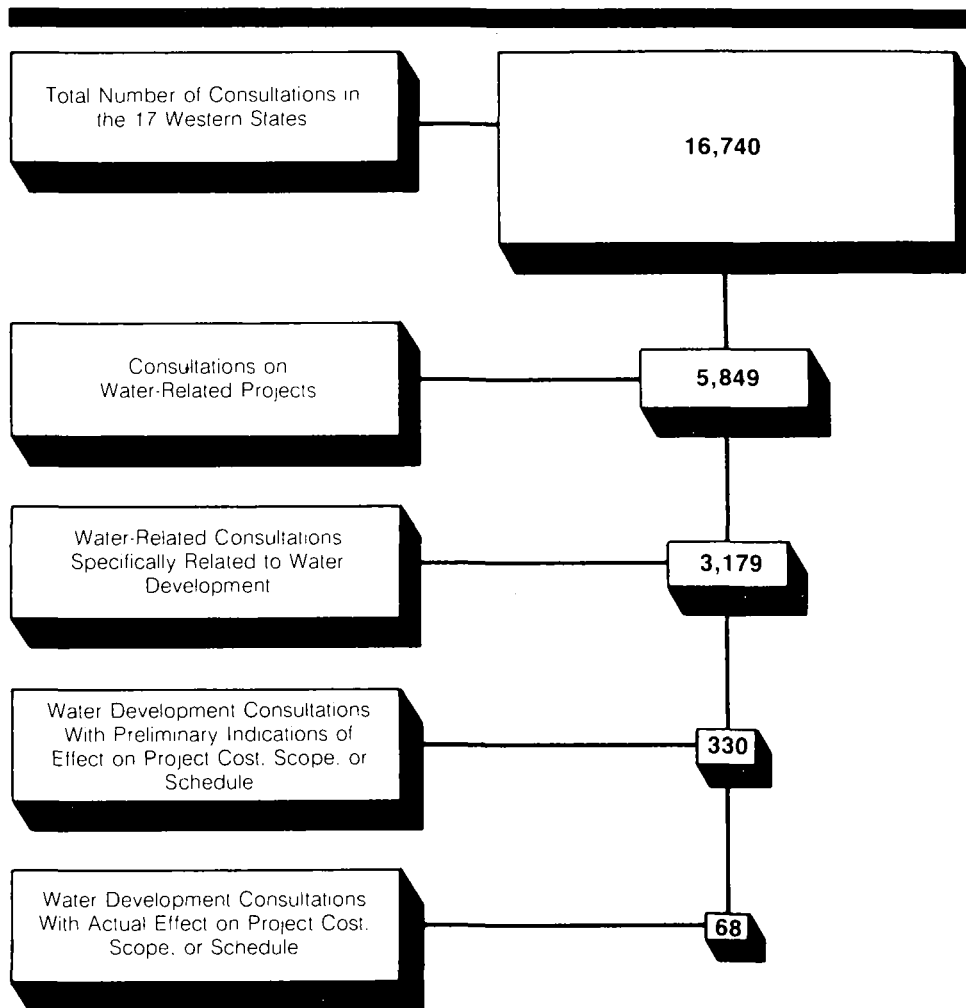
The number of consultations that affected water development projects was small in relation to the total number of consultations on such projects. In the 17 western states, 16,740 consultations were conducted during the 7-1/2 years covered by our review. Of these consultations, 5,849 involved projects or activities that were located in or near water. And of these, 3,179 involved projects that remove or otherwise affect the flow of a body of water (water development projects). Of the consultations involving water development projects, the agencies initiating the action identified 330 in which the associated projects were potentially affected by the consultation process. Based on detailed review of these 330 consultations and discussions with Service and initiating agency officials, we identified 68 in which the consultation process actually affected the associated project's timing, scope, or cost.¹ This represents about 2 percent of all consultations related to water development projects in the West during the time period we covered. (See fig. 2.1.)

The 68 consultations involved projects that had a variety of purposes. Most of the projects involved more than one type of structure and met multiple purposes. Most frequently, the projects included a dam or reservoir, or involved the diversion of water for irrigation or industrial use.

¹We also identified another 19 consultations in which the Service had given a "jeopardy opinion," but initiating agency officials told us that this had not affected the project, often because the project had been terminated during the consultation process for economic or other reasons. We reviewed these consultations in detail to assure ourselves that, in fact, the consultation process had not affected the project's timing, scope, or cost. Appendix III lists the 87 consultations we identified (68 that affected projects and 19 with jeopardy opinions but no effect).

Because more than one consultation can occur on a given project, these 68 consultations were carried out on 62 projects.

Figure 2.1: Endangered Species Act Consultations, October 1, 1977-March 31, 1985



Source: GAO analysis, based on Service and initiating agency records.

Concern Centered in Two River Basins

The 68 consultations affected projects in 9 states throughout the West. However, the major concern about the effect of the consultation requirements was centered in two river basins—the Upper Colorado and the Platte. For the Upper Colorado River basin, consultations affected 38 projects and mainly concerned the effect of proposed water depletions

on three endangered fish species—the Colorado squawfish, the humpback chub, and the bonytail chub. For the Platte River basin, consultations affected two projects involving the effect of water depletions on the critical habitat of the whooping crane. Table 2.1 shows locations and species involved in the 68 consultations.

Table 2.1: Location and Species Involved With Affected Projects

River basin or other bodies of water	Number of consultations	States	Listed species involved in consultations
Upper Colorado River	40	Colorado Utah Wyoming	Humpback chub, bonytail chub, Colorado squawfish, bald eagle, peregrine falcon, black-footed ferret, whooping crane
Lower Colorado River	3	Arizona	Bald eagle
Columbia River	3	Montana Washington	Bald eagle
Red River	3	Oklahoma	Leopard darter
Platte River	2	Colorado Wyoming	Bald eagle, whooping crane
Truckee River	2	California Nevada	Lahontan trout, cui-ui
Carson/Truckee River	2	Nevada	Lahontan trout, cui-ui
Arkansas River	2	Oklahoma	Leopard darter, bald eagle
Russian River	2	California	Peregrine falcon
Sweetwater Marsh	2	California	Light-footed clapper rail, California least tern
Bear River	1	Wyoming	Bald eagle
Piru Creek	1	California	California condor
Santa Clara River	1	California	Unarmored threespine stickleback
Mojave River	1	California	Mojave tui chub
Klamath River	1	California	Peregrine falcon
Suisun Marsh	1	California	California clapper rail, salt marsh harvest mouse
Wildcat/ San Pablo Creeks	1	California	California clapper rail, salt marsh harvest mouse
Total	68		

Source: Service and initiating agency files.

The Upper Colorado and the Platte basins have been centers of concern over the consultation process because for these rivers, the Service has maintained that any further development may jeopardize the continued existence of several endangered species present in their basins. As a result, water project developers were concerned that the federal government would be interfering with their ability to exercise their water rights under the states' water rights systems which allocate the limited water resources in the Colorado and Platte River basins. The physical shortage of water has made it difficult to arrive at actions that both

protect the endangered species and allow continued water project development. The project sponsors and the Service, however, have shown the willingness and ability to develop and agree to problem-solving strategies to resolve the conflicts.

Consultations Only One of Several Reasons for Delays, Modifications, or Increased Costs

We found that in addition to affecting relatively few western water development projects, when the consultation process did affect a project, it was often only one of several factors concurrently influencing project activities. Our review of consultation and project files showed that other factors included unfavorable economic conditions, declining local support, and the lack of funding. With respect to the time to complete projects, we found that while most of the consultations with deadlines took considerably longer than called for in the act, the agencies initiating the consultations generally did not attribute project delays specifically to extended consultations because other factors causing delays were also present. With respect to project modifications and cost increases, we found that the consultation process did not cause any projects to be terminated and generally did not cause substantial increases in project costs.

Effect of Consultations on Time to Complete Projects

Because many concurrent tasks—licensing, permitting, and funding, for example—are involved in getting a water project under construction, it is difficult to isolate the effect of any one factor on project timing. Consequently, precisely estimating the effect of the endangered species consultation process on the time to complete the projects we reviewed was not always possible. However, based on the views expressed by Service and initiating agency officials, the effect is generally not large.

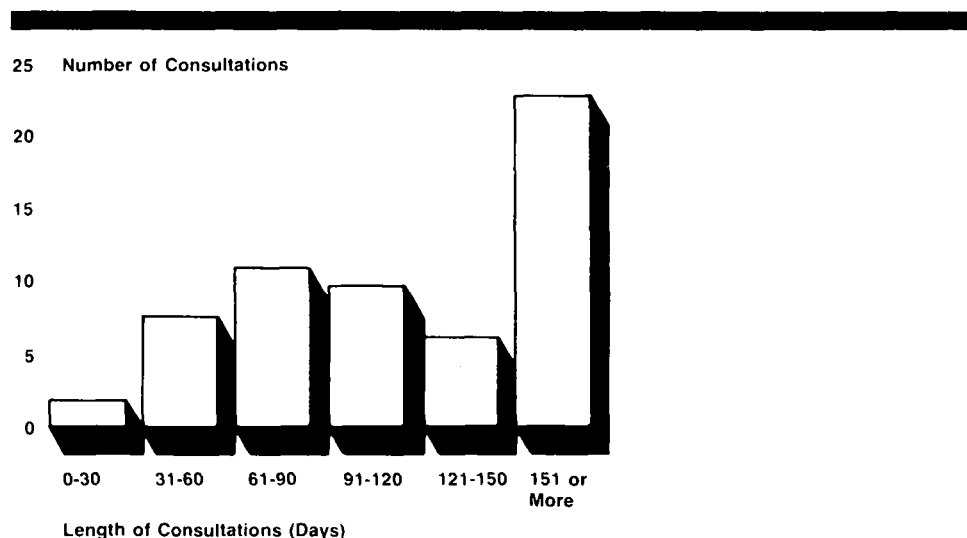
Sixty of the 68 consultations we determined to have affected projects were formal and hence were governed by the 90-day completion guideline spelled out in the act. Of these, 57 had been completed as of November 1986. These 57 consultations took an average of 206 days.² This compares with an average of 55 days for all formal consultations completed during fiscal years 1979 through the first half of 1985. The formal consultations we determined to have affected projects may have taken longer because they all involved indications that an endangered species would be adversely affected. In such cases, the sponsors and the

²All consultations not yet completed were already over 150 days in length. We did not, however, include these consultations in computing average consultation length.

Service may need more time to gather information on the species and its habitat and to develop the reasonable and prudent alternatives.

Figure 2.2 shows that 39 of the 57 completed formal consultations that we determined to have affected projects exceeded the 90 days specified in the act. The extensions beyond 90 days were generally to allow time for the Service or the initiating agency to obtain additional information needed for biological opinions.

Figure 2.2: Length of Formal Consultations Reviewed in Detail



Note: These data exclude formal consultations not completed as of Nov. 1986.
 Source: Service files.

Figure 2.2 shows that many of the formal consultations exceeded the act's 90-day guideline. However, in 26 of the 39 consultations exceeding 90 days, the initiating federal agencies did not attribute any lengthening of the time to complete the associated project specifically to consultation requirements. In the remaining 13 consultations, the initiating federal agencies said the lengthy consultation delayed project development. For 4 of the 13, the initiating agency could not specify the length of the delay. For the other nine, the initiating agency said that the consultation requirements had contributed to delays in the associated project ranging from 1 week to 2 years. For example:

- The Corps of Engineers (Corps) delayed issuing a permit for the Taylor Draw Dam and Reservoir Project in Colorado for about 17 months. The delay was agreed to by both the Service and the project sponsor to allow

(1) the Service to complete a study of the habitat requirements of three endangered fish species in the Upper Colorado River basin and (2) the project sponsor to correct deficiencies noted by the Service in the sponsor's biological assessment.

- The Lukfata Lake Dam and Reservoir Project in Oklahoma was delayed for at least 12 months in the planning phase, according to the Corps. The Corps and the Service had not been able to agree on "reasonable and prudent" alternatives to avoid adverse impact on a listed fish species and its habitat. The delay to the project was still evident as of March 1985 (our cut-off date for the review period), but project delay beyond 12 months could not be clearly attributed to the failure to develop alternatives. The other cause of the continued delay to the Lukfata project was its poor outlook for economic viability, with the Corps restudying the project to improve its economics by adding hydropower generators to the dam.

For most of the consultations, officials with the initiating agencies said that the act was just one of many laws and regulations that must be considered during the planning and development of a project and no specific delay could be attributed to the consultation process. The Narrows Unit of the Pick-Sloan Missouri Basin Program, a planned Bureau of Reclamation project to be located on the South Platte River in Colorado, provides an example. The multi-purpose project is to provide water for irrigation, flood control, recreation, fish and wildlife development, and municipal and industrial water supplies. The Service issued a biological opinion in January 1983 which stated that the project was likely to jeopardize the continued existence of the whooping crane and adversely modify its critical habitat, located on the Platte River in central Nebraska about 235 miles downstream from the Narrows Unit. In March 1983, the Service and the Bureau of Reclamation began a joint study to develop a fish and wildlife management plan for the Platte River system in central Nebraska that is to include alternatives which would remove the jeopardy opinion. The states of Colorado, Wyoming, and Nebraska are also taking part in this study. Bureau of Reclamation and Service officials told us that although the jeopardy opinion is a factor that needs to be resolved, it has not delayed construction of the project. Before the proposed project can continue, they said that the Bureau of Reclamation must also obtain construction funding from the Congress and negotiate local cost-sharing and repayment agreements for project water.

Effects of Consultations on Project Modifications and Costs

In most cases, the 68 consultations we identified caused modifications to the projects or generated increases in project costs. However, we identified no consultations that led to a project's termination.

We found that for 62 of the 68 consultations, the project sponsors took some action in response to recommendations made during the consultation, which resulted in project modifications, cost increases, or both. In order to determine the estimated cost of complying with consultation recommendations, we reviewed project files and obtained information from initiating federal agency officials and, in some cases, nonfederal project sponsors. From these sources, we obtained estimates of the cost increases for 49 of the 62 cases. For the 49 cases where we obtained estimates, the estimates ranged from amounts as low as \$70 to as high as \$10.1 million. The consultations' cost increases generally represented a small percentage of total project costs. The Grayrocks Dam Project (the project with the largest cost increase) and the "Windy Gap" assessments (representing 33 of the instances of cost increases) illustrate how the consultation process has affected project scopes and costs.

Grayrocks Dam

The Basin Electric Power Cooperative, a consumer-owned regional cooperative that supplies power for 118 rural electric member systems in 8 states, began constructing the Missouri Basin Power Project in July 1976. A major feature of this \$1.6 billion project was the Grayrocks Dam and Reservoir in Wyoming, which was to provide cooling water for a coal-fired electric-generating station. The Corps initiated consultation on the Grayrocks Dam with the Service in October 1977 because a Corps permit under Section 404 of the Clean Water Act (33 U.S.C. 1344) was required for project construction.

The Service advised the Corps in December 1977 that the project "may jeopardize the continued existence of the endangered whooping crane or result in the destruction or adverse modification of its critical habitat." The critical habitat is located on the Platte River about 300 miles downstream from the project. The Service also told the Corps that more information was needed before a biological opinion could be issued and estimated that 3 years would be needed to obtain the information.

Corps officials said they did not think the project's adverse effect had been demonstrated and issued the permit in March 1978 allowing construction to begin on Grayrocks Dam. However, the Corps included provisions in the permit stating that it could be revoked or modified if an adverse effect on the cranes was demonstrated.

In April 1978, the Rural Electrification Administration, which had given a loan guarantee for 66 percent of the project cost also agreed to consult with the Service on Grayrocks Dam. That consultation remained open when work on the project was stopped in October 1978 by a court decision which stated, in part, that the Rural Electrification Administration and the Corps had failed to adequately consult with the Service as the act required. The suit was brought by the state of Nebraska and a number of conservation, agricultural, and environmental groups.

In November 1978, the Congress amended the act to create the Endangered Species Committee to hear requests for exemption from the act's requirements. In creating the Committee, the Congress specifically directed the Committee to consider an exemption for the Grayrocks project. Based on the court decision and this legislation, the parties involved in the court action reached an Agreement of Settlement and Compromise on December 4, 1978, which in part

- limited the maximum annual water use by the project,
- called for release of specific amounts of water during various periods of the year,
- required the project to replace water withdrawn by a local irrigation district, and
- required the project to establish a trust fund of \$7.5 million for maintaining and protecting the whooping cranes' critical habitat.

On December 8, 1978, the Service issued its biological opinion, which included as a reasonable and prudent alternative the provision of the above agreement establishing a trust fund. In February 1979, the Endangered Species Committee granted an exemption for Grayrocks Dam conditioned on implementation of the terms of the agreement, and the project was allowed to continue.

Officials of the Cooperative told us that carrying out the terms of the agreement increased the costs of building the project. These increased costs included the \$7.5 million trust fund noted above, an estimated \$2.5 million in increased construction costs because of project delays, and \$135,000 in attorneys' fees. In addition to these already expended costs totaling \$10.1 million, the agreement calls upon the Cooperative to take several actions that would help maintain a minimum flow in the Platte River. These actions include cessation of water well drilling that was already under 30-year contract for \$90,000 a year, and replacement of certain irrigation withdrawals at a cost of \$40,000 a year for 35 years.

The Cooperative's officials also said the project had incurred some potential costs which they did not quantify, including potential operational limitations at the power plant for lack of cooling water, and the lost opportunity to build another proposed generating unit at the site. They said that the cost effects of the consultation requirements on their project were excessive and unreasonable.

"Windy Gap" Assessments

Consultations on 33 other projects generated actual or potential cost increases in the form of specific water depletion charges assessed on the projects to fund various conservation measures. The amount of the assessment, called a "Windy Gap" assessment after the project on which it was first used, is based on the amount of water the project will remove from the flow of the Upper Colorado basin rivers that support the affected species. The mechanics of the "Windy Gap" process are discussed in more detail on page 28. Assessments ranged from \$70 for a coal mine to \$2.2 million for a dam project. Table 2.2 lists the "Windy Gap" assessments for the period covered by our review. Many of these charges have been paid in full or in part, while payment of the remainder awaits the start of the project's use of water or some other condition.

**Chapter 2
Limited Effects of Consultations on Western
Water Development Projects**

**Table 2.2: "Windy Gap" Assessments,
October 1977-March 1985**

Project name	Maximum depletion charge
Battlement Mesa Community Development	\$14,000
Belina Mine Complex	730
Black Butte Mine	1,641
Canyonlands National Park Reconstructed Road	448
Getty, Chevron, Cities Service Joint Venture	1,090,517
Chevron Phosphate	335,800
Cheyenne Water Supply (Stage II)	138,000
Colony Shale Oil Project-Exxon	90,000
Cottonwood Creek Reservoir & Pipeline	30,500
Gordon Creek No. 2 Mine	1,125
Hiawatha Mines Complex	388
Homestake Water Collection System (Phase II)	221,000
Kemmerer Mine	1,179
Kobe-Bluestone Water Intake & Pipeline	27,083
Meeker Area Mines	507
Mobil Parachute Shale Oil	302,876
Moon Lake Power Plant	81,567
Nucla Circulating Fluidized Bed Power Plant	6,432
Pacific Shale	376,164
Paraho-Ute Shale Project-White River Intake	77,000
Price River Mine Complex	641
Red Canyon Mines	1,390
Ridges Subdivision-Grand Junction	14,000
Riley Ridge	1,850
Ruedi Round I Water Sale	36,090
South Haystack Mine	1,430
Storm King Mines Coal Ridge No. 1 Mine	5,313
Taylor Draw Dam & Reservoir	120,000
Trail Mountain Mine	70
Union Oil Parachute Creek Shale Oil, Phase II	213,499
White River Dam	2,200,000
Wilberg Mine	1,029
Windy Gap	550,000

Source: Service biological opinions for each consultation.

We found that as with project delays, several factors other than the consultation process had an effect on the modifications and cost increases experienced on the projects. Changing economic conditions, lack of local

support, and unavailability of funding frequently were central to decisions to reduce project scopes or even to cancel projects altogether. For example, the White River Dam Project in Utah was planned to provide water for energy development, principally related to oil shale. After consultation on the project was completed, the Service, the Bureau of Land Management, the State of Utah Division and Board of Water Resources, and the State of Utah Division of Wildlife Resources agreed on conservation measures required as a result of the consultation. These measures included building and operating project outlet works to facilitate Colorado squawfish management, and providing up to \$2.2 million in "Windy Gap" assessments for studies and conservation measures relating to the Colorado squawfish. However, none of these measures have been implemented, according to Bureau of Land Management and state of Utah officials. They said in November of 1986 that construction of this project has been delayed indefinitely because the need for oil shale development did not materialize, thus making the project uneconomic.

Active Use Made of Problem-Solving Strategies

When the consultation provisions of the act have produced conflict, Service and initiating agency officials told us that participants have often worked to develop new strategies to resolve the problems. The act itself provides for flexibility in the consultation process by requiring the Secretary (delegated to the Service) to suggest "reasonable and prudent alternatives" which the project sponsors can take to complete their projects without jeopardizing species or their habitat. In several of the projects affected by the 68 consultations, however, the Service determined that the project would jeopardize a species or adversely modify its habitat. The Service also determined that alternatives were either not readily available or the Service and the initiating agency did not initially agree on the alternatives that needed to be taken. In many of these cases, the participants took action beyond the normal consultation process to resolve the conflict. The main problem-solving strategies—formation of coordinating committees to develop a program of alternatives, development of the "Windy Gap" approach, and formal third-party resolution through the Endangered Species Committee and the courts—are discussed below.

Coordinating Committees for the Upper Colorado and Platte River Basins

In the early 1980's, controversy increased among water development interests, the Service, and environmental groups over the actions needed to conserve the endangered fish species in the Colorado River basin. This was due to several factors including the large number of jeopardy

opinions and “Windy Gap” assessments that the Service was issuing at that time, and a June 1983 Service plan to protect endangered fish, in part, by maintaining certain minimum flows in the basin. Water development interests said the Service’s plan would stop any future water project development.

To resolve some of the controversy, the Denver Region of the Service took the lead in forming the Upper Colorado River Basin Coordinating Committee in July 1984. The Committee is made up of representatives from the Service’s Denver Region, the Bureau of Reclamation’s Lower Missouri and Upper Colorado Regions, and the states of Colorado, Utah, and Wyoming. Various water development and environmental groups also participate in the Committee’s work although they were not signers of the Memorandum of Understanding that formed it.

The Committee’s goal is to develop and implement a program allowing continued development of water resource projects in the Upper Colorado River basin while not jeopardizing the endangered fish species present. The program is to work within existing state water rights laws and interstate compacts apportioning the Colorado River’s waters. In September 1986, the Committee issued a draft, “Recovery Implementation Program for Rare and Endangered Fish Species in the Upper Colorado River Basin” for public review and comment. Basically, the planned actions include: (1) better management of the existing water to provide the water needed by the endangered species when and where they need it, such as changes to the operations of several federal reservoirs, (2) development and maintenance of habitat, (3) stocking of rare fish species, (4) management of nonnative fish and sport fishing, and (5) research, monitoring, and data management.

Annual operating expenses for the program are planned to total about \$2.4 million. In addition, the plan proposes two capital funds—one of a minimum of \$10 million that will be used to acquire water rights for fish- and wildlife-related uses and another of \$5 million to be used for constructing fish hatcheries, fish ladders, and other related facilities. Under terms of the proposed plan, the Service and the Bureau of Reclamation would provide \$2.1 million of the \$2.4 million annual operating expense budget, and the Congress would be requested to appropriate the money necessary to establish the two capital funds. In addition, the three participating states would each contribute \$100,000 to the annual operating budget. Beyond this appropriated funding, the budget would be supplemented by one-time water use assessments (similar in nature to “Windy Gap” assessments) made on water project developers.

The plan hopes to achieve recovery of the fish in 15 years. Service officials said the plan must go through the National Environmental Policy Act's environmental review requirements before it can be implemented.

A similar coordinating committee was formed in March 1985 for the Platte River basin. According to the executive director of the committee, its purpose is to study alternatives for continuing water project development on the Platte River and its tributaries while not jeopardizing four affected birds—the whooping crane, the least tern, the piping plover, and the bald eagle—or their critical habitat. The participants on this committee, which is called the Platte River Management Joint Study, include the Bureau of Reclamation; the Service; the Corps; representatives from the states of Colorado, Nebraska, and Wyoming; and various water development and environmental groups. The executive director of the committee said no firm targets have been established for completing the committee's work.

“Windy Gap” Method of Providing Funds for Conservation Measures

Another technique, discussed earlier, that has been used for resolving conflicts in the Upper Colorado River basin is the so called “Windy Gap” method. Under this method, project developers facing a jeopardy opinion that could block the planned project pay a one-time assessment and take other conservation measures specified by the Service. In return, the Service issues a “nonjeopardy” opinion, and the project developer is allowed to proceed with the project. The assessments are then used for studies, research, habitat modifications, and other conservation measures for three endangered fish species known to be present in the river—the Colorado squawfish, the bonytail chub, and the humpback chub.

The “Windy Gap” assessments are based on the amount of water the project is expected to take from the river's flow. The Service has developed a formula for determining the amount of the assessment for each project. The formula has three parts: (1) the average annual water removal by the project in acre-feet, (2) the volume of water remaining in the Upper Colorado River (an estimated 1.675 million acre-feet) after flows required by interstate compacts are delivered to the Lower Colorado River basin, and (3) the amount planned for conservation measures (in this case, \$25 million). The depletion charge is computed as follows:

$$\begin{array}{r} \text{Projects average annual} \\ \text{water depletion (acre-feet)} \\ \hline 1.675 \text{ million acre-feet} \end{array} \quad \times \quad \$25 \text{ million}$$

Between March 13, 1981, the date of the “Windy Gap” opinion, and March 31, 1985, the end of the period covered by our review, the Service had issued 34 “Windy Gap” assessments. The total amount of water depletion for these projects was estimated by the Service to be 416,010 acre-feet a year. The maximum assessments for individual projects have ranged from as low as \$70 to \$2.2 million and totaled a maximum of about \$6 million. (See table 2.2 on p. 25.) Between March 31, 1985, and November 30, 1986, another 12 “Windy Gap” opinions had been issued.

Officials of the Denver Region of the Service said that without the “Windy Gap” method for accumulating conservation funds to offset the cumulative effects of water removal, most proposed projects involving water depletions in their region would receive jeopardy opinions. They said that without the “Windy Gap” method or some other reasonable and prudent alternatives, the resulting jeopardy opinions could result in project delay or stoppage, litigation, requests for exemptions from the Endangered Species Committee, or possibly calls for changing the act.

Environmental groups have spoken out in opposition to the “Windy Gap” approach. They have expressed concern that the measures undertaken by the Service with the funds obtained from the “Windy Gap” assessments will not result in conserving the endangered species. However, as we discussed above, the environmental groups participated with the Upper Colorado River Basin Coordinating Committee in developing a comprehensive conservation plan for the endangered fish species. The funding sources for implementing the plan include assessing water project developers with a one-time charge for water usage similar to the “Windy Gap” charges.

Third-Party Resolution of Consultation Issues

In 2 of the 68 consultations, the Service, initiating agencies, and project sponsors were unable to resolve issues arising from the consultation. One case was referred to the Endangered Species Committee, and one to the courts for resolution.

Endangered Species Committee

As discussed earlier, the Endangered Species Committee’s purpose is to review applications submitted to it and determine whether or not to grant an exemption for the applicant’s project from the act’s consultation provisions. The Committee is composed of the following members—the Secretary of Agriculture; The Secretary of the Army; the Chairman, Council of Economic Advisors; the Administrator, Environmental Protection Agency; the Secretary of the Interior; the Administrator,

National Oceanic and Atmospheric Administration; and one individual appointed by the President from each affected state.

The 1978 amendments specifically required the Committee to consider the exemption of two projects—Grayrocks in Wyoming and Tellico in Tennessee. These are the only two cases to have been considered by the Committee and, of these, the Grayrocks Project is the only project in the 17-state area covered by our review.

Lawsuits Over Consultation's Impact on Projects

Disagreements arising from the consultation process culminated in a lawsuit for another project we reviewed—the Wildcat Dam and Reservoir Project in Colorado. (The Grayrocks Project, whose ultimate resolution was discussed on p. 22, was being litigated when it came under the jurisdiction of the Endangered Species Committee.)

The proposed Wildcat Dam and Reservoir Project is a joint project of the Riverside Irrigation District (Colorado) and Public Service Company of Colorado. Based on a biological opinion by the Service which stated that the operation of Wildcat Reservoir was likely to jeopardize continued existence of the whooping crane and adversely modify its critical habitat about 260 miles downstream on the Platte River, the Corps refused to issue a Nationwide Permit under Section 404 of the Clean Water Act. The project sponsors challenged the Corps' action in court in May 1980. The U.S. District Court for the District of Colorado upheld the Corps' position in July 1983, and the Tenth Circuit Court of Appeals affirmed this decision in March 1985. The project has not been built and, according to the project sponsors, its future is uncertain for several reasons unrelated to consultation requirements. These reasons include doubts that sufficient water would be available for the project if it were built and the likelihood that other sources of cheaper electric energy will become available.

Summary

Consultations carried out under the Endangered Species Act have had little effect on western water projects. While 68 consultations affected projects over the 7-1/2-year period we examined, for the most part these effects have not been major. Further, even when the consultation affected the project, Department of the Interior and other agency officials indicated that other events occurring at the same time (such as difficulties in arranging project financing) sometimes had a more significant effect than the consultation process. The willingness and

ability of the Service and project sponsors to arrive at compromise solutions when conflicts occurred also contributed to reducing the consultation requirement's ultimate effect on project development.

No Conflicts Identified Between State Water Laws and the Act's Consultation Requirements

According to state water law administrators, water laws in the 17 western states do not contribute to conflicts with the act. All the states, with the exception of Texas, have water laws which implicitly or explicitly recognize maintenance of fish and wildlife habitat as a beneficial use of state waters and hence permit allocation of water to promote the act's conservation purposes. Further, even in Texas, the possibility may exist for using water to maintain fish and wildlife habitat. Our analysis of water-related consultations in the western states during the 7-1/2-year scope of our review disclosed no conflict between state water laws and the act's consultation provisions.

Water Laws in Western States Recognize Fish and Wildlife as a Beneficial Use of Water

If state water laws prohibited the use of water for fish and wildlife conservation, conflicts could develop between these laws and the act. Such a conflict could occur, for example, if the Service proposed maintaining a minimum instream flow of water to preserve the habitat of an endangered species but state law prohibited such water use because it did not recognize such use as being "beneficial." The concept of beneficial use is one of the principles upon which most western states' water laws are based.

According to the state water law administrators responding to our questionnaire, all western states, with the exception of Texas, have water laws which recognize fish and wildlife conservation as a beneficial use of state water. Two of these states—Utah and Wyoming—amended their laws recently to facilitate the use of water for fish and wildlife conservation. In some cases the law is specific, while in others recognition of fish and wildlife as a beneficial water use has become part of the law's interpretation. The following examples illustrate the types of consideration provided to fish and wildlife conservation in western state water laws:

- The Wyoming State Engineer stated that Wyoming's water laws provide for diversion and storage of water for fish and wildlife conservation purposes. In addition, Wyoming's Instream Flows Act provides for the appropriation of flowing water in any stream to maintain or improve existing fish resources. This act also provides for the use of storage in existing or new reservoirs for instream maintenance purposes.
- The State Engineer of Colorado stated that while Colorado laws do not specifically recognize any one particular use for water, they provide a broad definition of beneficial use. Colorado courts have traditionally ruled that this definition includes fish and wildlife conservation, and,

according to the State Engineer, they have frequently awarded such water rights.

- The Executive Director of Utah's Natural Resources Agency stated that state law allows the Division of Wildlife Resources to file a permanent or temporary change application for maintaining fish. He stated that this indicates such beneficial use could be recognized by the State Engineer.
- The Director of Nevada's Department of Conservation and Natural Resources stated that Nevada water law allows for the purchase and transfer of water rights for all beneficial uses, including fish and wildlife conservation. Similarly, the New Mexico State Engineer told us that state laws provide for the change of place and purpose of use and the point of diversion of an existing water right. Permits to make such changes for the benefit of fish and wildlife have been issued by the State Engineer.
- The Chief of the Operations Bureau, Idaho Department of Water Resources, stated that in addition to the provisions of the Idaho Code, the general water appropriation statutes allow water to be diverted and beneficially used for many purposes including conservation of fish and game. The Idaho Fish and Game Department and various federal agencies have been granted numerous water rights for these purposes.

The Executive Administrator of the Texas Water Development Board stated that Texas water law does not specifically recognize fish and wildlife conservation as a beneficial use of state water. However, he also stated that the Texas Water Code, which lists the purposes for which state water may be appropriated, provides that state water may be appropriated, stored, or diverted for "beneficial use," thereby leaving open the possibility of an appropriation for fish and wildlife conservation. Beyond the specifics of the state water code, Texas has other regulatory requirements which can allocate water for fish and wildlife purposes.

Beyond having laws that recognize fish and wildlife applications as a beneficial use of water, 9 of the 17 states¹ have other statutory, regulatory, or administrative mechanisms or procedures to resolve actual or potential conflicts with the act. In Nebraska, for example, the Assistant Legal Counsel for Nebraska's Natural Resources Commission stated that Nebraska has had its own endangered species act—the Nongame and Endangered Species Conservation Act—since 1975. This act requires

¹Colorado, Kansas, Montana, Nebraska, Nevada, New Mexico, South Dakota, Washington, and Wyoming.

consultation with the Nebraska Game and Parks Commission before local sponsors of water projects decide to proceed with a project, before the Director of Water Resources can approve a water right for a project, or before a state agency can approve funding for a project. All Nebraska State agencies must ensure that their actions do not jeopardize threatened or endangered species.

In an effort to confirm the questionnaire responses, we presented this information to the state water law administrators at the January 1987 meeting of the Western States Water Council. These officials agreed that their water laws implicitly or explicitly recognize fish and wildlife as a beneficial use of their waters. While accepting this overall assessment, several state administrators believed that it was also important to recognize that various federal requirements, including the act, Federal Energy Regulatory Commission (FERC) licensing standards, and Section 404 of the Clean Water Act permit criteria, represent impediments to their management of water rights under their state water laws. These administrators further stated that while there is no inherent conflict between the act and state water laws, friction sometimes develops because initiating federal agencies do not fully appreciate the many competing demands for and economic value of water rights under their water laws. In this context, they said federal agencies rarely seek to buy water rights for wildlife conservation purposes and instead pursue other regulatory alternatives. To this end, we noted earlier that committees in the Upper Colorado and Platte River basins are developing plans for recovery of endangered species that will include water rights purchases.

No Conflicts Found in Review of Consultations

To confirm the lack of conflict between state water laws and the act's purposes as portrayed by state water law administrators, we reviewed 5,849 water-related consultations conducted over the 7-1/2-year period ending March 31, 1985, to determine whether any conflicts occurred. In Utah and Wyoming, state water laws were amended in 1986 to facilitate the use of water for fish and wildlife conservation. For these states, the water laws might have contributed to conflicts before the changes were made. Our review disclosed no indications of any conflicts during the process.

Summary

Water laws in the 17 western states are compatible with wildlife conservation objectives of the Endangered Species Act. Because wildlife conservation is recognized as a beneficial use of water in these states, endangered species can be allocated water to preserve their critical

Chapter 3
No Conflicts Identified Between State Water
Laws and the Act's
Consultation Requirements

habitat when necessary. Our review of water project-related consultations over 7-1/2 years did not turn up any incidences of conflict between the act and state water laws.

Use of Informal Consultations Has Smoothed Consultation Process

The Service does not maintain data to demonstrate precisely how the informal consultation process has affected the resolution of conflicts between the act and the development of western water projects. However, officials we talked with in other federal agencies generally said the Service's emphasis on informal consultations has made the process more effective and less time consuming than the formal process. For the 7-1/2 years covered in our review, we identified only eight informal consultations dealing with water-development projects in the western states that resulted in delays, modifications, or cost increases to projects, and based on our analysis, the effects were minor in all cases except one.

Officials in Other Agencies Find Consultation Process Improved

In the course of our work, we asked officials in 34 federal agencies about their experience with and opinions on informal consultations. Although not providing specific examples of how the informal consultation process had helped alleviate conflicts with the act, most of these officials favored the Service's emphasis on the informal process. They also said this emphasis has resulted in a less time-consuming and more effective process than would be the case if they had to go through the formal process. *The following are examples of the comments we received:*

- The endangered species specialist at the Utah State Office of the Bureau of Land Management said the informal process is fast, convenient, and a time-saver during project review. He said the Service is responsive in furnishing information about species and about precautions that should be taken to avoid conflicts. He said that with more emphasis by the Service on informal consultation, his workload related to the consultation process had decreased significantly, with about 1 in 50 projects going to formal consultation, compared with 1 in 10 several years ago.
- The environmental specialist in the Pacific Northwest Regional Office of the Bureau of Reclamation said the informal process saves time and money by identifying and coordinating acceptable solutions among federal and sponsoring agency groups in order to avoid the formal consultation process.
- Two officials in the regulatory branch of the Sacramento District of the Corps said current consultation procedures are effective and expedite the consultation process. They said that in recent years, the Service seems to have placed more emphasis on the informal process and that this emphasis has helped to solve various problems. Before, they said, most problems would have led to formal consultation, which in effect would produce the same results but take longer.

- The biologist for the Arizona State Office of the Soil Conservation Service said the informal process saves much aggravation and is the preferred way to handle a consultation. He said that in the informal process, his agency can handle potential problems at the field level and save the time-consuming paperwork involved in the formal process. He said the informal process works well and should not be changed.

Informal Consultations Have Resulted in Few Negative Effects

We found that informal consultations represented the vast majority of the water-related consultations, consisting of about 88 percent of the 5,849 such consultations recorded. In further review of these water-related consultations, we found only eight cases where officials said the informal consultation contributed to a delay, modification, or cost increase on the associated project. Moreover, detailed analysis of these eight consultations showed that in all cases except one, the effects were minor.¹ For example, an assistant lands and minerals officer for the Klamath National Forest said the informal consultation on the Brannon Bar Dredging Project resulted in specifying when dredging could be done—a modification he described as minimal. In another instance, a biologist in the environmental section of the Los Angeles District of the Corps said the informal consultation on a project involving changes to the Mojave River Forks Dam resulted in planned but relatively minor modifications to the dam structure. He also said, however, that the project has essentially been terminated because of uncertain benefits and a lack of local support—reasons unrelated to the consultation.

Summary

The Service's implementation of the informal consultation process has been well received by federal agencies. We identified only 8 of over 5,000 informal water-related consultations that occurred during our 7-1/2-year review period that resulted in negative effects and, except for 1 case, these effects were minor. The evidence indicates that the Service's implementation of the informal process has helped alleviate conflicts between the act and the development of western water projects.

¹The one exception is the proposed Thayn Hydroelectric project in Utah. According to the project applicant, a combination of consultation requirements and other factors resulted in a lengthy project delay and about \$310,000 in additional costs. The other factors included FERC delays in processing the applicant's permit, FERC delays in providing a biological assessment to the Service, and the applicant's own problems in working with his engineering consultant.

Audit Scope and Methodology

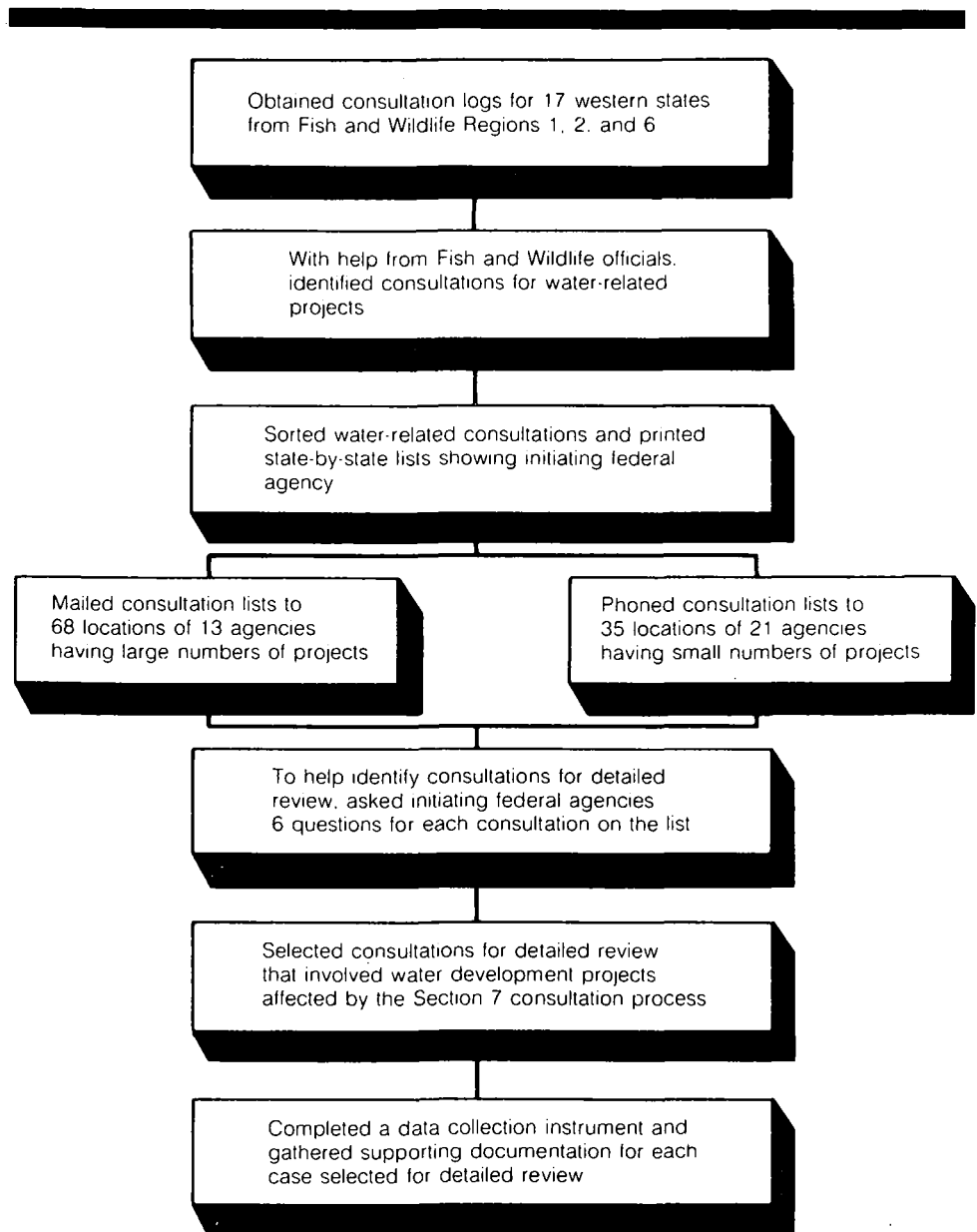
We used an exhaustive process to identify western water projects that may have been affected by the consultation requirements of the act. In identifying consultations that took place in the 17 western states covered by our review, we worked closely with officials in Fish and Wildlife Service headquarters and at the following regional and field offices:

Regional Office	Field Office
Region 1, Portland, Oreg.	Boise, Idaho Laguna Niguel, Calif. Sacramento, Calif. Olympia, Wash. Reno, Nev.
Region 2, Albuquerque, N.M.	Corpus Christi, Tex. Clearlake, Tex. Fort Worth, Tex. Tulsa, Okla. Phoenix, Ariz. Albuquerque, N. M.
Region 6, Denver, Colo.	Grand Junction, Colo. Helena, Mont. Grand Island, Nebr. Salt Lake City, Utah Pierre, S.D.

The consultations we included in our review were initiated by 34 federal agencies from their 103 offices in 48 different cities. We gathered information at all of these offices either in person, by phone, or by mail. A detailed list of the agencies and office locations included in our review is in appendix II.

Figure I.1 summarizes the major steps we took to accomplish our review. This appendix describes our procedures at each of these steps.

Figure I.1: Steps GAO Took to Determine Effect of Section 7 Requirements on Western Water Development Projects



Obtaining Consultation Logs

The Service records information about consultations in a consultation log. We requested and obtained copies of the consultation logs from Service Regions 1, 2, and 6 (whose jurisdictions cover the 17 western states) for the 7-1/2-year period covered by our review—October 1, 1977, to March 31, 1985. These logs contained about 17,000 entries.

The information in the logs generally included the following:

1. Log number of each consultation.
2. Service field location number.
3. Type of consultation—formal, informal, etc.
4. Project-sponsoring agency.
5. Project type.
6. Project location—state and county.
7. Project name.
8. Species involved.
9. Dates consultation initiated and completed.
10. Findings—a code number representing the Service's findings about the project such as whether or not it is likely to affect a listed species.

For some field offices, the logs did not include all of the informal consultations for the entire 7-1/2-year period covered by our review. Informal consultations made at the Salt Lake City and the former Billings Field Office during 1977 through 1980 were not available. Service officials told us that they were not always recording informal consultations in the logs for part of that period, although many field offices did record them. Service officials prepared a listing of the informal consultations for 1977-80 for the Salt Lake City Field Office by reviewing their files. They told us they could not do this for the former Billings Field office consultations because they could not locate those informal case files.

We were told by Service officials that the missing informal consultations from that one field office were only a small part of the consultations that occurred during the period. Their omission did not affect our ability to capture all of the consultations that affected the water project development process not only because they were a tiny fraction of the overall totals, but also because, if the responsible federal agency finds that a listed species or critical habitat may be adversely affected by the proposed agency action, a formal consultation is required. In addition, we asked the federal agencies in our review to identify any water development project not on our list for which formal or informal consultation were held.

Identifying Water-Related Projects

After assuring ourselves that the Service had provided us with all of the available consultation logs for Regions 1, 2, and 6 for the period October 1, 1977, to March 31, 1985, we then needed to identify which of the approximately 17,000 consultations concerned water-related projects. These were defined as any consultation that dealt with an activity that was in or near a body of water or stream. Because the information in the log did not always show which projects were water related, we asked the Service to indicate which consultations were for water-related projects. We followed up with Service personnel to assure that the consultations for water-related projects were properly identified. This step resulted in the identification of 5,849 consultations as water-related. Of these consultations, 668 were formal and the rest were informal.

Obtaining Project Information From Initiating Agency

We sorted the consultations that involved water-related projects by initiating agency and by state in which the projects were located. We were able to do this for 5,685 of the 5,849 consultations. The remaining 164 were not readily identifiable to a initiating agency. Our followup on these 164 is described in the section of this appendix titled "Selecting Consultations for Detailed Review." (See p. 43.)

We then sought information from the initiating agency on each of the 5,685 cases to determine whether the consultation affected the associated project. We asked the agency to answer the six questions listed below:

1. Did the project involve water use in-stream?
2. Did the project involve water use out-of-stream?
3. Does the project involve exercise of state water rights?
4. Is state water law conflict involved?
5. Was a jeopardy opinion cited?
6. Was the project modified or delayed because of the Section 7 consultation?

We took several steps to help ensure that we received answers from knowledgeable agency officials. For the agencies with a relatively large number of consultations—this included 68 office locations of 13 different federal agencies—we mailed the applicable lists on consultations to the manager of each office location with a cover letter explaining the purpose of the request and a further explanation of the questions. We also asked the agencies to give us the name and phone number of the person who responded to our questions, the location of the office responsible for project planning and development, and information on

any of their water-related projects not appearing on our lists for which consultations had been held. We followed up by telephone with each office location to answer any questions about our request.

For the agencies with a smaller number of consultations— this included 35 office locations of 21 different federal agencies—we obtained responses from knowledgeable project officials over the telephone. We also determined the location of the project files.

Of the 5,685 water-related project consultations, 2,100 concerned licenses for hydroelectric generator projects for which the Federal Energy Regulatory Commission (FERC) was the initiating agency. We subsequently identified 77 additional FERC consultations, as explained below under “Selecting Consultations for Detailed Review.” According to a FERC official, the large number of FERC consultations resulted from applications for permits to develop small hydropower projects under the provisions of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 824 a-3). Nearly all of the FERC consultations—2,171 out of the 2,177— were informal.

The information maintained by FERC on these informal consultations is in its Washington, D.C., headquarters. FERC officials said that because the consultations were for hydropower generators, each one involved in-stream water use. They also said that there were no jeopardy opinions cited because that result can only flow from the formal process; but they did not have the detailed knowledge or information to know if a project was modified or delayed because of the act’s consultation requirements. They noted that only 27 percent of the hydropower applications go beyond the application stage and most do not go further because of economic reasons.

Because of the work we had already done on informal consultations with other agencies, we knew that tracking down the information not contained in the initiating agency files could take an inordinate amount of time. In addition, FERC officials did not believe that consultations had delayed these projects.

Because of the large number of consultations and the lack of any information indicating problems on these projects, we agreed with the requesters that we would draw a small, random sample of informal consultations and attempt to find out whether the projects’ delay or modification—if any—was due, in whole or in part, to the consultation

process. We further agreed that if we found consultation-related problems, we would design and draw a representative sample rather than review each of the 2,171 informal consultations. Our small, random sample of FERC informal consultations consisted of 69 hydropower permit or license applicants.

Selecting Consultations for Detailed Review

After we received the responses from the agencies, we used two criteria to select consultations for detailed review. The first criterion was that the project that was the subject of the consultation must have been a water development project, such as a dam or water diversion, rather than a project that was merely related to water in some way, such as a power line that crossed over a stream. We defined a water development project as meeting one of the following conditions (see 6 questions on p. 41):

- using or altering the flow of water in-stream for purposes such as hydropower development or flood control,
- involving the diversion or withdrawal of water for out-of-stream uses such as irrigation or industrial water supply, or
- involving the exercise of an individual's or group's state water right.

Our second criterion was that the project had been affected by the consultation process. We determined that a project had been affected if it met one of the following conditions:

- the initiating agency responding to our six questions indicated that the project had been delayed or modified, and/or incurred additional costs as a direct result of the consultation process or
- the Service had determined that the project was likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat (in other words, the project had received a jeopardy opinion).

We also selected for our detailed review those consultations for which either the sponsoring agency or the Service had stated that a state water law had contributed to a conflict, or impeded the resolution of a conflict, between the consultation process and the project's development. We did this to respond to another of the requester's questions.

In addition to selecting consultations by analyzing agency responses to our six questions, we also took several other steps to assure that we had identified all of the relevant project consultations for review:

- The Service's logs included 164 consultations for which a initiating federal agency was not identified. We took steps to identify an initiating federal agency and obtain answers to our questions for 54 of these consultations. We were able to identify 39 others as FERC consultations, and we included them in our FERC sample. We eliminated 24 cases that could not be identified and 3 that were duplicates. The remaining 44 were informal consultations with no initiating federal agency involvement.
- Many of the agency responses we received were incomplete. To obtain complete answers, we followed up on 852 responses. We obtained answers to our questions for 484 of these consultations. For the rest, we found that 297 consultations were either duplicated on the lists we had mailed to the agencies or involved projects outside the 17-state area of our review. We also found 33 that could not be identified from the information available and 38 that should have been identified as FERC consultations. We eliminated the duplicates, the projects outside the area, and the unknowns from the lists. We included the additional FERC cases in our sample of FERC consultations.
- In response to our request, the agencies identified 124 water development projects that had not been included on the lists we had mailed them because they had not been on the Service's logs. As part of their response, they answered our questions for these projects.
- We reviewed congressional hearings and other literature on the consultation requirements and discussed the subject with water user groups, environmental interest groups, and project-initiating agency officials at each location we contacted. We did this to identify for review any consultations which may not have been identified in our other steps, but which could illustrate potential problems with the consultation requirements. We identified 15 consultations as a result of this step.

Figure I.2 summarizes these steps and numbers in flowchart form. As a result of our analysis of the agency responses to our questions and the other steps taken to identify consultations that had an effect on water development projects, we selected 330 consultations for detailed review. In selecting the 330, we included consultations that either clearly or potentially could meet our selection criteria based on the agency responses to our questions and the other steps mentioned above.

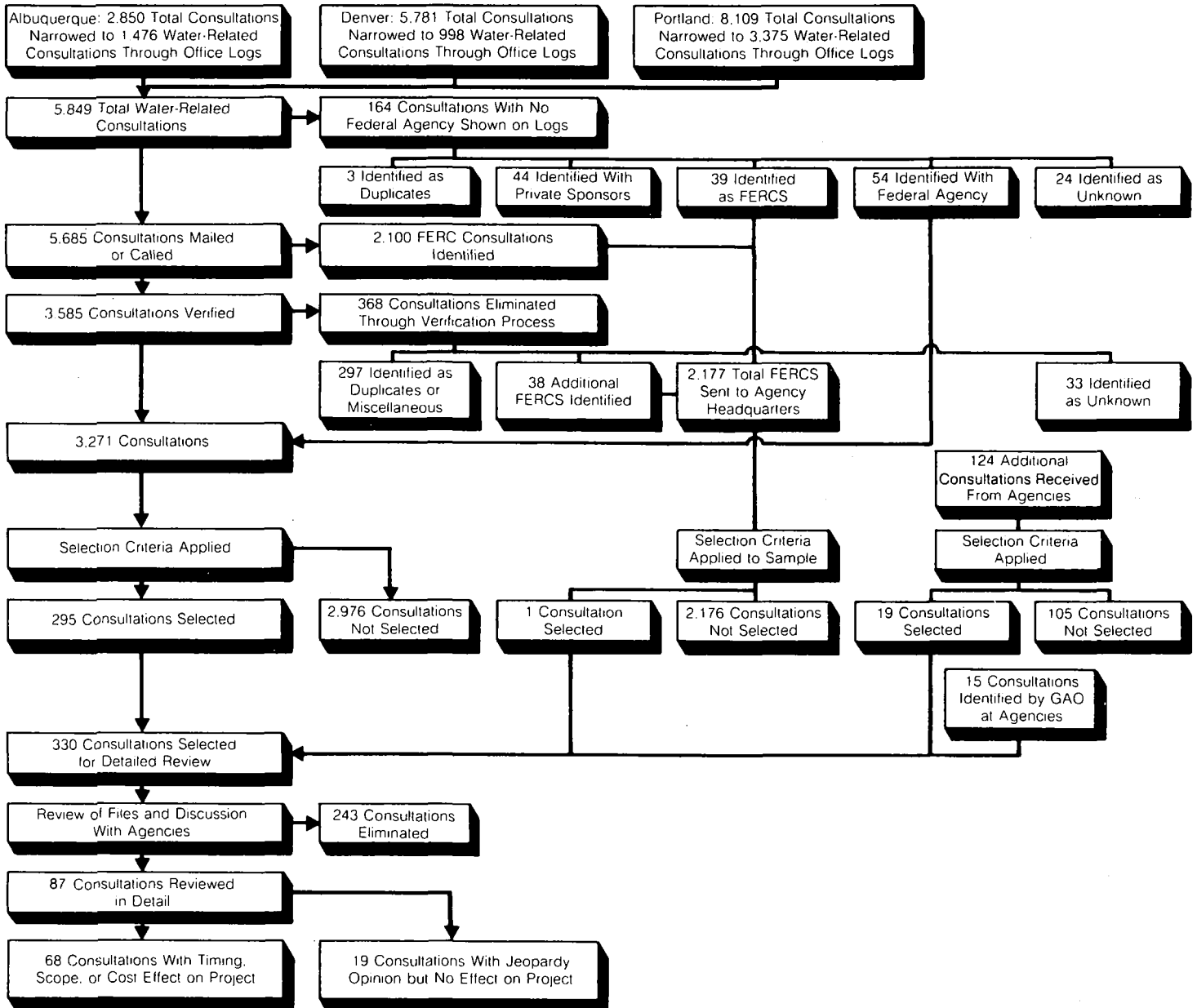
During our subsequent review of agency files and further discussions with knowledgeable agency officials, we found that many of the 330 consultations we had initially selected did not actually meet our criteria for detailed review. For example, some of the 330 consultations were

duplicates and others did not prove to have affected projects after initial scrutiny. After making these adjustments, we found 87 consultations to pursue in detail. Of these, 79 were formal consultations and 8 were informal. These consultations are listed in appendix III.

During our detailed review of the 87 consultations, we found that 68 had affected the associated water development project's timing, scope, or cost. The remaining 19 had resulted in jeopardy opinions without project effects, according to both initiating agency officials and our review of the available information.

**Appendix I
Audit Scope and Methodology**

Figure 1.2: Methodology Process



Completing Data Collection Instruments for Projects Selected for Detailed Review

We completed a data collection instrument (DCI) for each of the 87 consultations selected for detailed review. We obtained the information needed to complete the DCI by reviewing files, gathering supporting information, and interviewing officials of the Service and federal agencies that initiated the consultations. For some of the consultations, we also obtained information from nonfederal project sponsors.

The DCI was designed to give us a major portion of the information needed to answer the requesters' questions. The DCI was a 13-page document with 31 major questions, most of which had two or more subparts. The questions were divided into 20 categories, as follows:

1. General information—project name, Service region and office, field location, consultation type, and fiscal year of consultation.
2. Our six selection criteria questions. (see p. 41.)
3. Reasons for project stoppages.
4. Project name changes.
5. Species involved in the project consultation.
6. River basin affected by the project.
7. Consultation start and completion dates.
8. Consultation extension information.
9. Biological assessment dates.
10. Biological opinion dates and findings.
11. Jeopardy opinion or "Windy Gap" assessment issued.
12. Information on further discussions held.
13. Alternatives recommended by Service or project sponsor.
14. Information on appeals of jeopardy opinions.
15. Final notification to Service of sponsoring agency position on Service opinion.
16. Status of project at end of consultation and as of March 31, 1985.
17. Impact of laws other than section 7 on project.
18. Impact of factors other than section 7 on project.
19. Specific negative impacts of section 7 on project.
20. Cost of depletion charges or conservation measures for "Windy Gap" assessment.

The majority of the questions applied to most of the consultations we reviewed. After completing the DCIs, we verified the information with knowledgeable Service officials and the initiating agencies.

List of Federal Agencies and Office Locations Contacted During GAO's Review

Agency	Office	Location
Bonneville Power Administration	Headquarters	Portland, Oreg.
Bureau of Indian Affairs (BIA)	Area Office Area Office Area Office Area Office Area Office	Albuquerque, N.M. Phoenix, Ariz. Portland, Oreg. Sacramento, Calif. Window Rock, Ariz.
Bureau of Land Management (BLM)	State Office State Office State Office State Office State Office State Office State Office State Office State Office State Office	Billings, Mont. Boise, Idaho Cheyenne, Wyo. Denver, Colo. Phoenix, Ariz. Portland, Oreg. Reno, Nev. Sacramento, Calif. Salt Lake City, Utah Santa Fe, N.M.
Bureau of Reclamation (BR)	Southwest Region Upper Missouri Region Pacific Northwest Region Lower Colorado Region Lower Missouri Region Mid-Pacific Region Upper Colorado Region	Amarillo, Tex. Billings, Mont. Boise, Idaho Boulder City, Nev. Denver, Colo. Sacramento, Calif. Salt Lake City, Utah
Corps of Engineers (COE)	North Central Division Southwestern Division Missouri River Division North Pacific Division South Pacific Division	Chicago, Ill. Dallas, Tex. Omaha, Nebr. Portland, Oreg. San Francisco, Calif.
Department of Energy	Headquarters Project Office Project Office	Washington, D.C. Columbus, Ohio Albuquerque, N.M.
Economic Development Administration	Regional Office Regional Office	Austin, Tex. Seattle, Wash.
Environmental Protection Agency (EPA)	Region VI Region VII Region VIII Region IX Region X	Dallas, Tex. Kansas City, Mo. Denver, Colo. San Francisco, Calif. Seattle, Wash.
Farmers Home Administration	State Office State Office	Temple, Tex. Woodland, Calif.
Federal Aviation Administration	Southwest Regional Office	Fort Worth, Tex.
Federal Emergency Management Administration	Region 6	Denton, Tex.
Federal Energy Regulatory Commission (FERC)	Headquarters	Washington, D.C.
Federal Highway Administration	Regional Office Regional Office Regional Office Division Office	Denver, Colo. Fort Worth, Tex. San Francisco, Calif. Phoenix, Ariz.
Fish and Wildlife Service	Region 1 Region 2 Region 6	Portland, Oreg. Albuquerque, N.M. Denver, Colo.

**Appendix II
List of Federal Agencies and Office Locations
Contacted During GAO's Review**

Agency	Office	Location
Forest Service (FS)	Region 1	Missoula, Mont.
	Region 2	Lakewood, Colo.
	Region 3	Albuquerque, N.M.
	Region 4	Ogden, Utah
	Region 5	San Francisco, Calif.
	Region 6	Portland, Oreg.
	Region 8	Atlanta, Ga.
General Services Administration	Regional Office	Auburn, Wash.
Health, Education and Welfare	Area Office	Window Rock, Ariz.
Health and Human Services	District Office	Mobridge, S.D.
Housing and Urban Development (HUD)	Region VI	Forth Worth, Tex.
	Region VII	Kansas City, Mo.
	Region VIII	Denver, Colo.
	Region IX	San Francisco, Calif.
International Boundary Water Commission	Headquarters	El Paso, Tex.
Interstate Commerce Commission	Headquarters	Washington D.C.
National Oceanic and Atmospheric Administration	Area Office	Galveston, Tex.
	Field Office	Portland, Oreg.
National Park Service (NPS)	Rocky Mountain Region	Denver, Colo.
	Western Region	San Francisco, Calif.
	Southwest Region	Santa Fe, N.M.
	Pacific Northwest Region	Seattle, Wash.
Nuclear Regulatory Commission	Division Office	Bethesda, Md.
	Field Office	Denver, Colo.
Office of Coastal Zone Management	Area Office	Galveston, Tex.
	Field Office	Portland, Oreg.
Office of Surface Mining Reclamation and Enforcement (OSM)	Regional Office	Denver, Colo.
Rural Electrification Administration (REA)	Headquarters	Washington, D.C.
Soil Conservation Service	State Office	Albuquerque, N.M.
	State Office	Bismarck, N.D.
	State Office	Boise, Idaho
	State Office	Casper, Wyo.
	State Office	Davis, Calif.
	State Office	Denver, Colo.
	State Office	Huron, S.D.
	State Office	Lincoln, Nebr.
	State Office	Phoenix, Ariz.
	State Office	Portland, Oreg.
	State Office	Reno, Nev.
	State Office	Salina, Kans.
	State Office	Salt Lake City, Utah
	State Office	Spokane, Wash.
	State Office	Stillwater, Okla.
	State Office	Temple, Tex.
U.S. Air Force	Holloman Air Force Base	Albuquerque, N.M.
	Vandenberg Air Force Base	Santa Barbara, Calif.
U.S. Coast Guard	District Office	Galveston, Tex.
	District Office	San Francisco, Calif.
	District Office	Seattle, Wash.

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Contacted During GAO's Review

Agency	Office	Location
U.S. Geological Survey	Central Region Western Region	Denver, Colo. Menlo Park, Calif.
U.S. Navy (USN)	Western Division	San Bruno, Calif.
Western Area Power Administration	Headquarters	Golden, Colo.

List of Consultations Included in GAO Detailed Review

Project name	Project state	Federal agency involved	Major listed species involved	River basin or body of water involved	Project status as of March 31, 1985
Arkansas-Red River Basin Chloride Control Project ^{a, b}	Oklahoma	COE	whooping crane, bald eagle	Arkansas	Terminated
Arkansas-Red River Basin Chloride Control Project ^{a, b}	Oklahoma	COE	whooping crane	Arkansas	Terminated
Battlement Mesa Housing Project	Colorado	HUD	humpback chub, bonytail chub, Colorado squawfish, bald eagle, peregrine falcon	Upper Colorado	Construction uncertain
Belina Mine Complex	Utah	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Big Jack Lake Water Storage Reduction ^b	California	FS	bald eagle	Sacramento	Under construction
Big Sandy Unit ⁹	Wyoming	BR	Colorado squawfish, humpback chub, whooping crane, peregrine falcon, bald eagle	Upper Colorado	Construction uncertain
Black Butte Mine	Wyoming	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Brannon Bar Dredging (Salmon River Mining) (I/C)	California	FS	peregrine falcon	Klamath	Construction uncertain
Canyonlands National Park Reconstructed Road (Phase I)	Utah	NPS	Colorado squawfish, humpback chub, bonytail chub	Upper Colorado	Under construction
Carter Creek-Whitney Canyon Natural Gas Projects	Wyoming	BLM	bald eagle	Bear	Complete
Central Arizona Water Control Study ^b	Arizona	BR	bald eagle, peregrine falcon, Yuma clapper rail, gila topminnow	Lower Colorado	Under construction
Chevron Phosphate	Wyoming	BLM	whooping crane, bald eagle, peregrine falcon, humpback chub, Colorado squawfish	Upper Colorado	Under construction
Cheyenne Water Supply Project Stage II (I/C)	Wyoming	FS	humpback chub, Colorado squawfish	Upper Colorado	Under construction
Cheyenne Water Supply Project Stage II ^a	Wyoming	FS	Colorado squawfish, bonytail chub, humpback chub	Upper Colorado	Under construction
Chief Joseph Dam Raise	Washington	COE	bald eagle	Columbia	Complete
City of Rangely Intake	Colorado	COE	humpback chub, Colorado squawfish	Upper Colorado	Complete
Clarence Bean Gravel Operations	Oklahoma	COE	leopard darter	Red	Complete
Cliff Dam and Reservoir	Arizona	BR	bald eagle	Lower Colorado	Will be allowed
Colony Oil Shale Project	Colorado	COE	Colorado squawfish, humpback chub, bald eagle	Upper Colorado	Construction uncertain
Cottonwood Creek Reservoir and Pipeline	Utah	BLM	Colorado squawfish, bald eagle, peregrine falcon, black-footed ferret, bonytail chub	Upper Colorado	Terminated

**Appendix III
List of Consultations Included in GAO
Detailed Review**

Project name	Project state	Federal agency involved	Major listed species involved	River basin or body of water involved	Project status as of March 31, 1985
Craig Station Unit 3 Project	Colorado	REA	humpback chub, Colorado squawfish	Upper Colorado	Complete
Dallas Creek Project ^b	Colorado	BR	humpback chub, Colorado squawfish, bald eagle, peregrine falcon, black-footed ferret	Upper Colorado	Under construction
Dolores Project ^b	Colorado	BR	Colorado squawfish, bonytail chub, humpback chub, bald eagle, peregrine falcon	Upper Colorado	Complete
Downstream Bank Stabilization-Grand Coulee Dam	Washington	BR	bald eagle	Columbia	Under construction
Fallon Agricultural Leases (I/C)	Nevada	USN	cui-ui, lahontan trout	Carson and Truckee	Allowed with reduced scope
Fallon Naval Air Station/ Newlands Project ^a	Nevada	USN	cui-ui, lahontan trout	Carson and Truckee	Allowed with reduced scope
Flaming Gorge Reservoir Operations	Utah & Wyoming	BR	humpback chub, bonytail chub, Colorado squawfish	Upper Colorado	Complete
Frenchman Flat Reservoir	California	FS	California condor	Piru Creek	Construction uncertain
Fort McDowell Indian Reservation Rehabilitation/Betterment Irrigation Project	Arizona	BIA	bald eagle	Lower Colorado	Will be allowed
Getty, Chevron and Cities Service Joint Venture Project	Colorado	BLM/COE	Colorado squawfish, humpback chub, bonytail chub	Upper Colorado	Construction uncertain
Gordon Creek #2 Mine	Utah	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Grayrocks Dam & Reservoir	Wyoming	REA/COE	whooping crane, bald eagle	Platte	Complete
Hiawatha Mines	Utah	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Homestake Water Collection System-Phase II	Colorado	FS	humpback chub, Colorado squawfish	Upper Colorado	Will be allowed
Hydromet Soda Lake Mine ^b	California	BLM	Mojave tui chub	(N/A)	Construction uncertain
Indian Reservation Program of Rehabilitation of Irrigation System ^b	Nevada	BIA	lahontan trout, cui-ui	Truckee River	Complete
J.W. Gaston Gravel Operations	Oklahoma	COE	leopard darter	Arkansas	Complete
Jensen Unit-Central Utah Project ^b	Utah	BR	Colorado squawfish, humpback chub, bonytail chub, bald eagle, peregrine falcon	Upper Colorado	Complete
Kemmerer Mine	Wyoming	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Kobe-Bluestone Water Intake & Pipeline	Colorado	COE	Colorado squawfish, bonytail chub, humpback chub	Upper Colorado	Under construction

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Project name	Project state	Federal agency involved	Major listed species involved	River basin or body of water involved	Project status as of March 31, 1985
Larkin Irrigation Company	Colorado	COE	humpback chub, Colorado squawfish	Upper Colorado	Construction uncertain
Libby Additional Units & Reregulation Dam	Montana	COE	bald eagle	Columbia	Construction uncertain
Lukfata Lake Hydropower Study (I/C)	Oklahoma	COE	leopard darter	Red	Construction uncertain
Lukfata Lake Project ^a	Oklahoma	COE	leopard darter	Red	Construction uncertain
Meeker Area Mines	Colorado	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Mobil Parachute Shale Oil Project	Colorado	BLM	bonytail chub, humpback chub, Colorado squawfish	Upper Colorado	Construction uncertain
Mojave River Forks Dam Changes (I/C)	California	COE	Mojave tui chub	Mojave River Sink	Terminated
Moon Lake Power Plant Project	Utah & Colorado	BLM/ REA	Colorado squawfish, humpback chub, bonytail chub, bald eagle, black-footed ferret	Upper Colorado	Complete
Monkstone Waterwell (I/C)	California	FS	unarmored three-spine stickleback	Santa Clara	Complete
Narrows Unit	Colorado	BR	bald eagle, peregrine falcon, black-footed ferret	Platte	Construction uncertain
Narrows Unit/Pick-Sloan Missouri Basin ^{a, b}	Colorado	BR	whooping crane	Platte	Construction uncertain
New Waddell Dam and Reservoir	Arizona	BR	bald eagle	Lower Colorado	Will be allowed
Nucla Circulating Fluidized Bed	Colorado	REA	bonytail chub, Colorado squawfish	Upper Colorado	Under construction
Operation of Glen Canyon Dam ^b	Arizona	BR	humpback chub, Colorado squawfish	Upper Colorado	Complete
Pacific Shale Project	Colorado	BLM	bonytail chub, humpback chub, Colorado squawfish, bald eagle	Upper Colorado	Construction uncertain
Paraho-Ute Shale Project	Utah	COE	Colorado squawfish, bald eagle	Upper Colorado	Construction uncertain
Price River Mine Complex	Utah	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Proposed Potash Development in Ten Mile Area ^b	Utah	BLM	Colorado squawfish, black-footed ferret, peregrine falcon, humpback chub	Upper Colorado	Will be allowed
Red Canyon Mine	Colorado	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Reno/Sparks Interim Water Service Contract	California	BR	lahontan trout, cui-ui	Truckee	Complete
Ridges Subdivision- Grand Junction	Colorado	HUD	humpback chub, Colorado squawfish	Upper Colorado	Under construction
Riley Ridge/Exxon's La Barge	Wyoming	BLM	whooping crane, bald eagle, humpback chub, Colorado squawfish	Upper Colorado	Construction uncertain

**Appendix III
List of Consultations Included in GAO
Detailed Review**

Project name	Project state	Federal agency involved	Major listed species involved	River basin or body of water involved	Project status as of March 31, 1985
Ruedi Reservoir Round II Water Sale	Colorado	BR	humpback chub, Colorado squawfish	Upper Colorado	Being studied further
Ruedi Round I Water Sale ^a	Colorado	BR	humpback chub, Colorado squawfish, bald eagle, peregrine falcon, bonytail chub	Upper Colorado	Complete
Sahara Sand Permit (I/C)	Oklahoma	COE	bald eagle	Arkansas	Complete
Santa Margarita River Reservoirs ^b	California	BR	light-footed clapper rail, California least tern	Santa Margarita	Construction uncertain
South Haystack Mine	Wyoming	OSM	humpback chub, Colorado squawfish	Upper Colorado	Being studied further
Storm King Mines Coal Ridge No. 1 Mine	Colorado	BLM	Colorado squawfish, peregrine falcon, humpback chub, bald eagle, bonytail chub	Upper Colorado	Under construction
Strawberry Aqueduct and Collection System ^b	Utah	BR	bald eagle, peregrine falcon, humpback chub, Colorado squawfish	Upper Colorado	Under construction
Suisun Marsh Management Study	California	BR	California clapper rail, salt marsh harvest mouse	Suisun Marsh	Will be allowed
Sweetwater Flood Control Project	California	COE	light-footed clapper rail, California least tern	Sweetwater Marsh	Under construction
Sweetwater-Paradise Marsh Project ^a	California	COE	light-footed clapper rail, California least tern	Sweetwater Marsh	Under construction
Taylor Draw Dam & Reservoir	Colorado	COE	bonytail chub, humpback chub, Colorado squawfish, whooping crane, peregrine falcon	Upper Colorado	Complete
Thayn Hydroelectric Project(I/C)	Utah	BLM & FERC	Colorado squawfish	Upper Colorado	Being studied further
Trail Mountain Mine	Utah	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Truckee River Water Quality Standards ^b	Nevada	EPA	lahontan trout, cui-ui	Truckee	Will be allowed
Truckee River Water Quality Standards-1984 Review ^a	Nevada	EPA	lahontan trout, cui-ui	Truckee	Being studied further
Union Oil Parachute Creek Shale Oil Project	Colorado	COE	Colorado squawfish, bonytail chub, humpback chub	Upper Colorado	Construction uncertain
Upalco Unit-Central Utah Project ^b	Utah	BR	humpback chub, Colorado squawfish	Upper Colorado	Construction uncertain
Warm Springs Dam (Lake Sonoma)	California	COE	peregrine falcon	Russian	Complete
Warm Springs Dam (Lake Sonoma) Master Plan ^a	California	COE	peregrine falcon	Russian	Complete
West Divide Project ^b	Colorado	BR	Colorado squawfish, humpback chub, bonytail chub, bald eagle, peregrine falcon	Upper Colorado	Terminated

**Appendix III
List of Consultations Included in GAO
Detailed Review**

Project name	Project state	Federal agency involved	Major listed species involved	River basin or body of water involved	Project status as of March 31, 1985
White River Dam Project	Utah	BLM	Colorado squawfish, humpback chub, bonytail chub, bald eagle, peregrine falcon	Upper Colorado	Construction uncertain
Wilberg Mine	Utah	OSM	humpback chub, Colorado squawfish	Upper Colorado	Complete
Wildcat Dam & Reservoir (Riverside Irrigation)	Colorado	COE	whooping crane, bald eagle	Platte	Construction uncertain
Wildcat/San Pablo Creeks Project	California	COE	California clapper rail, salt marsh harvest mouse	Wildcat/San Pablo	Will be allowed
Windy Gap Project	Colorado	BR	bald eagle, humpback chub, Colorado squawfish, whooping crane, peregrine falcon	Upper Colorado	Complete

^aTwo entries with same or similar project name indicates we reviewed two consultations for the project.

^bThose consultations that had jeopardy opinions but no discernable effect from the consultation.

I/C = informal consultations.

N/A = not applicable.

Major Contributors to the Report

Resources, Community,
and Economic
Development Division,
Washington, D.C.

Michael Gryszkowiec, Associate Director, (202) 275-7756
Rich Hembra, Group Director-in-charge
Bob Robinson, Group Director
Lamar White, Assignment Manager
Sharon Keesee, Typist

Seattle Regional Office,
Portland Sublocation,
Portland, Oregon

Larry Feltz, Regional Assignment Manager
Jim Luckeroth, Evaluator-in-charge
Joe Gibbons, Site Senior
Dave Hilliard, Evaluator
Kevin Perkins, Evaluator
Rich Sugimura, Evaluator
Stan Stenerson, Writer/Editor
Jacqueline Kleffman, Typist
Lyn Nutter, Administrative support



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