REPORT TO THE CONGRESS

Inappropriate Source Of Power Used As Basis For Allocating Costs Of Water Resources Projects

B-168798

Corps of Engineers (Civil Functions)
Department of the Army
Department of the Interior
Water Resources Council

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

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To the President of the Senate and the
Speaker of the House of Representatives

This is our report demonstrating that an inappropriate source of power is used by the Corps of Engineers and Department of the Interior as a basis for allocating costs of water resources projects. This review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Bureau of the Budget; the Secretary of Defense, the Secretary of the Army, the Secretary of the Interior, the Chairman, Federal Power Commission, and the Chairman, Water Resources Council

Comptroller General
of the United States

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ABBREVIATIONS

FPC Federal Power Commission

GAO General Accounting Office

SCRB Separable costs-remaining benefits

TVA Tennessee Valley Authority

COMPTROLLER GENERAL'S REPORT TO THE CONGRESS

INAPPROPRIATE SOURCE OF POWER USED AS BASIS FOR ALLOCATING COSTS OF WATER RESOURCES PROJECTS

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D I G E S T

WHY THE REVIEW WAS MADE

The Army Corps of Engineers (Civil Functions) plans, constructs, and operates water resources projects authorized by the Congress for navigation, flood control, and related purposes such as irrigation, hydroelectric power development, water supply, and recreation.

In some instances, the Congress has authorized Federal contributions toward construction costs of reservoirs owned by other governmental units--such as States or counties--that will provide flood-control benefits. These are called partnership projects.

Since costs associated with hydroelectric power, irrigation, and water supply purposes are reimbursable to the Federal Government, the cost of a project must be distributed equitably among its several purposes. A survey by the General Accounting Office (GAO) indicated, however, that costs were not being equitably distributed to project purposes, therefore, GAO made a review of the procedures followed by the Corps in allocating project costs to hydroelectric power.

Although GAO's review was directed primarily to Corps procedures, the Bureau of Reclamation, Department of the Interior, uses essentially the same procedures as the Corps. Therefore, comments in this report concerning the Corps' procedures are equally applicable to the Bureau.

The Federal Power Commission reviews all Corps cost allocations that include power as a purpose prior to final approval of the cost allocation by the Chief of Engineers.

On May 15, 1962, the President approved a statement of policies, standards, and procedures for use in the planning and development of water and related land resources. This statement, subsequently printed as Senate Document 97, was to be used for planning purposes only. Although Senate Document 97 states that the standards to be used in allocating the costs of multiple-purpose water resources projects will be forthcoming, such standards had not been established as of March 31, 1970. Responsibility for establishing such standards has been delegated by the President to the Water Resources Council.

FINDINGS AND CONCLUSIONS

In a multiple-purpose water resources project, where the cost of one or more of the project's purposes is to be paid for by users, an equitable allocation of project costs among the several purposes is required. This allocation is a prerequisite for establishing the selling price of hydroelectric power and water and for determining the appropriate Federal contribution to partnership projects providing flood-control benefits. Before costs can be allocated to the project's purposes, the Corps must determine the cost of an alternative single-purpose project for each project purpose- that is, the cost of the most economical project likely to be developed in the absence of the multiple-purpose project.

The cost of an alternative source of power generally is determined by the Corps on the basis of the estimated cost of providing power by a federally financed steam plant. GAO believes that the use of such an alternative is inappropriate because the Congress has not authorized the construction of federally financed steam plants outside the area served by the Tennessee Valley Authority.

The alternative source of power used for cost allocation purposes should be that source most likely to be developed in the absence of the multiple-purpose project and should be viable in terms of engineering and financing.

The use of the estimated cost of a federally financed steam plant results in a lower allocation of the project costs to the hydroelectric power purpose than would be the case if the costs were allocated on the basis of the estimated cost of an appropriate alternative, such as a privately financed steam plant. For a discussion in detail of the Corps' procedure for allocating costs to project purposes, see pages 9 to 14.

GAO has reviewed 22 multiple-purpose water resources projects which represent Federal expenditures of $2 billion. GAO is of the opinion that the procedures followed by the Corps in allocating the costs of these projects to hydroelectric power will result in

- --an underallocation of costs to power features on 20 Federal projects by as much as $134 million,
- --an overallocation of costs to irrigation and water supply on 10 of the 20 projects by about $16 million, and
- --a substantial amount of interest, which is ordinarily reimbursable with power investment costs, on the 20 Federal projects not being recovered.

Therefore, unless the Corps' procedures for allocating costs are revised for the 20 Federal projects, the Federal Government will not

recover about $118 million in allocated costs, nor will it recover substantial interest charges that are ordinarily reimbursable on Federal water resources projects. Moreover, the cost allocation procedures followed by the Corps have resulted in an increase in Federal participation in two partnership projects by about $5 million.

Eighteen of the 20 Federal projects are included in three existing Federal power systems--the Central Valley Project, the Southeastern Power Administration, and the Southwestern Power Administration. GAO estimates that the Corps' allocation of costs to these projects will result in an understatement of the Federal investment allocated to reimbursable power purposes for these systems by about 5 percent, 3 percent and 12 percent, respectively.

RECOMMENDATIONS OR SUGGESTIONS

Because there is a need for a more appropriate allocation of the costs of multiple-purpose water resources projects, GAO is recommending that

--the Water Resources Council establish uniform policies, standards, and procedures for allocations of the costs of water resources projects for consideration in reimbursement and cost-sharing arrangements, and

--until such time as these are promulgated, the Secretaries of the Army and the Interior (1) revise their procedures to provide that a more appropriate alternative source of power be used for measuring power benefits and (2) apply the revised procedures to all current and future projects where the cost allocations have not yet become final.

AGENCY ACTIONS AND UNRESOLVED ISSUES

The Water Resources Council acknowledged the significance of GAO's comments and stated that it was actively reviewing the entire subject of evaluation of water resources projects in accordance with section 103 of the Water Resources Planning Act (Public Law 89-80). (See p. 19)

The Departments of the Army (see p. 20) and the Interior (see p. 24) generally disagreed with GAO's position. The Department of the Interior, however, agreed that the subject was worthy of further analysis and endorsed the recommendation that the Water Resources Council undertake the task of establishing uniform policies, standards, and procedures for cost allocations.

The Federal Power Commission generally agreed with GAO's position and stated that it uses a different alternative source of power than that used by the Corps in allocating project costs. GAO found that the alternative source of power used by the Federal Power Commission would result in a greater allocation of cost to power than the alternative used by the Corps. (See p. 25.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

This report is being submitted to the Congress to inform it of the effect of the Corps' use of an inappropriate alternative source of power for making cost allocations and to express GAO's views relating to the

--significant effect that a change in the alternative source of power would have upon costs allocated to reimbursable purposes and

--need for the Water Resources Council to establish uniform policies, standards, and procedures for allocating costs of water resources projects.

CHAPTER 1

INTRODUCTION

The General Accounting Office has examined into the procedures followed by the Corps of Engineers in allocating costs of multiple-purpose water resources projects to power. We reviewed the Corps' cost allocations for 22 projects which represent Federal expenditures of about $2 billion. The scope of our review is described on page 29.

Although the procedures of the Corps and the Bureau of Reclamation, Department of the Interior, are essentially the same for allocating costs of multiple-purpose water resources projects to power, there have not been any Bureau water resources projects authorized for construction by the Congress which would be affected by the procedures discussed in this report. However, since the Bureau's procedures will apply to future projects, our comments concerning the Corps' procedures are equally applicable to the Bureau.

The Corps plans, constructs, and operates water resources projects authorized by the Congress for navigation, flood control, and related purposes such as irrigation, hydroelectric power development, and recreation. In a number of instances, the Congress has also authorized Federal contributions toward the construction cost of non-Federal reservoirs that will provide flood-control benefits; these are referred to as partnership projects.

In a multiple-purpose water resources project, where the cost of one or more of the project purposes is to be reimbursed by project users, an equitable allocation of costs among the project purposes is required. This allocation is a prerequisite for establishing the selling price of power and water from Federal projects and for determining the appropriate Federal contribution for flood-control benefits afforded by partnership-type projects. The cost allocations for multiple-purpose projects are made so that each purpose will share on an equitable basis in the savings resulting from the combining of purposes in multiple-purpose development.

There are several methods of cost allocation used by the Federal agencies that construct multiple-purpose water resources projects. One of these, the separable costs-remaining benefits (SCRB) method, is the method generally preferred. The SCRB cost allocation method is explained on page 9 of this report, and the two examples included in appendix VI show how costs are allocated under the SCRB method.

On May 15, 1962, the President approved for application by agencies of the executive branch a statement of "Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources." This statement, which was subsequently printed as Senate Document 97 of the Eighty-seventh Congress, second session, was developed in response to the need for an up-to-date set of uniform standards for the formulation and evaluation of water resources projects, and was to be used for planning purposes only.

One of the criteria established by Senate Document 97 for the formulation and evaluation of plans for water resources projects is usually referred to as the "comparability test." The purpose of the test is to ensure that there is no more economical means, evaluated on a comparable basis, of accomplishing the same purpose or purposes whose development would be precluded if the plan were undertaken. This limitation refers only to those alternative possibilities that would be physically displaced or economically precluded from development if the project were undertaken. In addition to meeting the comparability test, project benefits must equal or exceed project costs; and power features within projects must pass the financial feasibility test--that is, the cost of the power generating facilities can be recovered through charges to power users.

Although Senate Document 97 states that the standards to be used in allocating the costs of multiple-purpose water resources projects will be forthcoming, such standards had not been established as of March 31, 1970. Section VI(a) of Senate Document 97, however, states that all project purposes shall be treated comparably in cost allocations and that each purpose is entitled to its fair share of the advantages resulting from the multiple-purpose project or program.

The responsibility for establishing the necessary policies, standards, and procedures applicable to water and related land resources was delegated by the President to the Water Resources Council. Membership of the Council is composed of the Secretary of the Interior; Secretary of Agriculture; Secretary of the Army; Secretary of Health, Education, and Welfare; Secretary of Transportation; and the Chairman of the Federal Power Commission.

The principal management officials responsible for the administration of activities discussed in this report are listed in appendix VII.

CHAPTER 2

CORPS' PROCEDURES USED IN ALLOCATING PROJECT COSTS TO POWER

We believe that the Corps is using inappropriate cost allocation procedures in allocating the costs of multiple-purpose water resources projects to the various project purposes. The use of inappropriate cost allocation procedures by the Corps in its allocation of the costs of 20 multiple-purpose water resources projects has, in our opinion, resulted in an underallocation of cost to power of as much as $134 million, exclusive of related interest costs. This underallocation represents about 24 percent of the nearly $562 million that the Corps has allocated to the power features of these 20 projects. Conversely, the costs allocated to other project purposes, such as water supply, irrigation, recreation, and flood control have been overstated. The costs allocated to power, water, and irrigation are reimbursable to the Federal Government. The costs allocated to purposes such as recreation and flood control are not reimbursable.

Our review of the cost allocations for 22 projects showed that the total costs allocated to power were understated because the Corps used the estimated cost of a federally financed steam plant for determining the amount of project costs to be allocated to power. The use of the estimated cost of a federally financed steam plant for the purpose of allocating costs is not appropriate because the Congress has not authorized the construction of federally financed steam plants outside the area served by TVA.

Our analysis showed that (1) for 20 Federal projects, the costs allocated to power were understated by as much as $134 million and (2) for 10 of the 20 projects, the costs allocated to irrigation and water supply were overstated by about $16 million. Thus, for the 20 projects, the Government will not recover costs of about $118 million, exclusive of substantial interest costs that are ordinarily capitalized as part of the Federal investment to be recovered through power revenues. Moreover, Federal

participation in the costs of two partnership projects was increased by about $5 million. See appendix V for a list of the 22 projects included in our analysis.

Eighteen of the 20 Federal projects are facilities of three existing Federal power systems--the Central Valley Project, the Southeastern Power Administration, and the Southwestern Power Administration. We estimate that the Corps' allocation of costs to these projects will result in an understatement of the Federal investment allocated to reimbursable power purposes for these systems by about 5 percent, 3 percent, and 12 percent, respectively.

To better assess the effect of the Corps' allocation of costs of multiple-purpose water resources projects, we examined in detail the cost allocations for one Federal project and for one partnership project in the State of California. Our findings regarding these two projects are discussed on pages 15-18 of this report.

CORPS' PROCEDURES FOR ALLOCATING COSTS TO PROJECT PURPOSES

The Corps has generally used the SCRB method as the preferred method of making cost allocations for multiple-purpose projects. This cost allocation method was adopted in a 1954 interagency agreement among the Department of the Army, the Department of the Interior, and the Federal Power Commission.

Under the SCRB method of allocating multiple-purpose project costs, the separable costs--that is, the additional or incremental costs necessary to include the purposes in the project--are assigned to each project purpose. The remaining costs, referred to as joint costs, are allocated to the project purposes in the following manner. An estimate is made of the benefits associated with each project purpose. If there is an alternative method of accomplishing any project purpose which would cost less than the amount of benefits estimated for that purpose, the estimated cost of the alternative method is used in lieu of the estimated benefits. The difference between the benefits for each project purpose (or the estimated cost of accomplishing a project purpose by an alternative method) and the separable costs for each project purpose is referred

to as the remaining benefits. The joint costs of the project are then allocated to the various purposes on the basis of the relationship between the remaining benefits for each purpose and the remaining benefits for all purposes.

A very simple example demonstrating the above method for allocating joint costs follows. All amounts shown in the example are computed on an annual basis.

Example of Allocation of Costs

By SCRB Method

Item	Flood control	Power	Irrigation	Total
		thousands		
a. Total cost of project				$1,500
b. Benefits	$500	$1,500	$350	$2,350
c. Alternative cost	400	1,000	600	2,000
d. Benefits limited by alternative cost (lesser of items b and c)	$400	$1,000	$350	$1,750
e. Separable costs	380	600	170	1,150
f. Remaining benefits (d less e)	$ 20	$ 400	$180	$ 600
g. Percent of remaining benefits (f divided by total of f)	3.3%	66.7%	30%	100%
h. Allocated joint costs (g multiplied by remaining cost which is a less e)	$ 12	$ 233	$105	$ 350
i. Total allocated project cost (e and h)	$392	$ 833	$275	$1,500

This report is directed toward the Corps' use of a federally financed steam plant instead of a realistic alternative in determining the alternative cost for power shown on line c of the example.

The 1954 interagency agreement which prescribed the SCRB method of allocating water resources project costs did not set forth the specific criteria to be followed in computing benefits, separable project costs, or the alternative project costs to be used as the benefit limitation for the purpose of allocating joint costs. Such criteria, however, have been developed by the agencies on the basis of their interpretation of the water resources planning standards in force at the time cost allocations were made.

The Corps' procedures for allocating project costs to power generally require that the power benefits be based on the cost of producing power by privately financed steam plants. In determining the cost of an alternative source of power for the purpose of setting a limitation on the power benefits, the Corps adjusts the cost of a privately financed steam plant to the estimated cost of a federally financed steam plant by eliminating the excess of private-financing costs over Federal-financing costs, taxes, and insurance.

Since the Corps' use of the estimated cost of a federally financed steam plant as an alternative source of power results in a cost that is less than the cost on which the power benefits are computed, the estimated cost of the federally financed steam plant becomes the limitation on power benefits for the purpose of allocating the joint costs of a multiple-purpose project to the various project purposes. This reduction in power benefits results in a corresponding reduction in the remaining benefits and in the percentage of joint costs that is allocated to power. Since the joint costs of a multiple-purpose project are constant, the reduction in the cost that is allocated to power results in an increase in the costs allocated to other project purposes, such as flood control, irrigation, and water supply.

Prior to the issuance of Senate Document 97, the cost of an alternative means of providing power was computed by the Corps on the basis of the estimated cost of a privately financed steam plant, or on the basis of a single-purpose hydroelectric power project. The selection in each case was determined on the basis of the alternative source that would be the most economical project likely to have been

developed in the absence of the multiple-purpose project. Also, the alternative costs of other project purposes (flood control, navigation, irrigation, etc.) included in a multiple-purpose project were based upon the estimated cost of single-purpose Federal river projects. Accordingly, all of the alternatives used in the Corps' cost allocation procedures prior to Senate Document 97 were viable in terms of engineering and financing.

Subsequent to Senate Document 97, the Corps changed its procedures for computing the alternative cost of power as indicated by the cost allocations for the 22 multiple-purpose projects included in our review. The selected alternative source for power in each of the 22 projects was a federally financed steam plant, and the alternatives for all other project purposes were single-purpose Federal river projects. Accordingly, the change in the Corps' procedures subsequent to Senate Document 97 affected only power features of multiple-purpose projects since the selected alternatives for other project features remained the same.

The use of a federally financed steam plant as the alternative source of power for the purpose of establishing a limitation on power benefits is not an appropriate alternative because the Congress has not authorized the construction of federally financed steam plants outside the area served by TVA, and TVA's present power construction programs are not federally financed. We found that the use of an appropriate alternative source of power would have resulted in a greater allocation of project costs to power and a smaller allocation of project costs to water supply and irrigation.

An appropriate alternative for power could be a single-purpose federally financed hydroelectric plant, which, incidentally, is the power alternative used by the Federal Power Commission (FPC) in its cost allocations. However, the Corps' cost allocation reports for the 22 projects included in our review did not contain sufficient information to enable us to determine the cost of a single-purpose federally financed hydroelectric plant for all of the 22 projects. Therefore, to show the effect of the Corps' use of a federally financed steam plant as the alternative source

of power for the 22 projects, we used the Corps' estimate of the cost of a privately financed steam plant as the alternative cost.

We believe that the Corps' use of a federally financed steam plant as an alternative source evolved from an interpretation of the comparability test contained in Senate Document 97 for purposes of plan formulation. (See p. 6.)

The Corps contends that all alternative project costs must be comparable in terms of financing--meaning federally financed. It is our opinion that alternative project costs are not comparable unless they are viable in terms of both financing and engineering. The alternative used should be a real alternative--one that could and would likely be undertaken in the absence of the project. This position is consistent with that taken by the Water Resources Council with respect to alternative costs used as a measure of benefits.

All the alternative single-purpose project costs for the 22 multiple-purpose projects we examined were viable in terms of engineering and financing with the exception of the power alternatives. We believe that, to provide an equitable allocation among project purposes, the alternative projects should be the projects most likely to be utilized in the absence of the multiple-purpose project.

In response to a Corps request concerning the use of a federally financed steam plant for plan formulation purposes, the Chairman of FPC, in a letter dated June 3, 1965, advised the Chief of Engineers that:

> "We are unable to agree completely with this interpretation of the language in Senate Document No. 97. We construe the language as having reference to alternatives that could in fact be substitute sources of power. Except in the area served by the Tennessee Valley Authority, the Congress has not authorized the construction of Federal steam-electric plants. In most cases, therefore, the Corps' use of the comparability test results in comparing the cost of potential

hydroelectric power with the cost of power from an alternative which may be unrealistic."

Although we recognize that this comment relates to the use of a federally financed steam plant for plan formulation purposes, we believe that the concept is equally applicable to cost allocations.

We discussed our views on the Corps' procedures for allocating costs with officials of FPC who indicated to us that any alternative used or recommended in a cost allocation by FPC would have to be a realistic alternative which would preclude the use of a federally financed steam plant.

EVALUATION OF SELECTED CORPS PROJECT COST ALLOCATIONS

Federal project

The New Melones Reservoir project in California was authorized by the Flood Control Act of 1944, subsequently modified by the Flood Control Act of 1962. The project was authorized as a multiple-purpose project with reimbursable irrigation and power features. When placed in service, the project will become an integral part of the Central Valley Project through which water and power will be marketed by the Bureau of Reclamation.

At the time the authorization for the New Melones project was modified in 1962, the Corps estimated that the total investment in the project would amount to about $123 million. In the Corps' preliminary cost allocation, the values assigned for the annual power benefits and the alternative power costs both were $3,993,000. These values were based on FPC's cost estimates for private interests to furnish power from a steam plant, equivalent to that power to be generated by the project. The Corps' New Melones project report, included in House Document 453 of the Eighty-seventh Congress, second session, was prepared prior to the issuance of Senate Document 97, and showed that a privately financed steam plant was the cheapest alternative source of power to that of the proposed project.

Subsequent to Senate Document 97, the Corps in 1965 revised its cost allocation for the New Melones project on the basis of an estimated increase in the cost of the project to about $139 million and on the basis of a federally financed steam plant as the alternative source of power. The value assigned to the project's annual power benefits was decreased to $3,180,000, on the basis of values developed by the Bureau of Reclamation in evidence of the cost of producing equivalent power by a privately financed steam plant. The Corps estimate of the annual cost of the alternative source of power, however, was only $2,380,000 because of the Corps' use of a federally financed steam plant as the alternative. Therefore, $2,380,000 became the limit on benefits used for the purpose of allocating costs to power. (See app. VI.) Officials of the Sacramento

District of the Corps acknowledged that a federally financed steam plant was not the most likely alternative to have been developed if power features were not included in the New Melones project.

The Corps' 1965 allocation of the total estimated cost of $139 million resulted in $47 million being allocated to power and $47 million being allocated to irrigation; a total of $94 million being allocated to these reimbursable features. As noted above, this cost allocation was based on a federally financed steam plant as the alternative source of power. We estimate that, if the Corps had used a privately financed steam plant as the alternative source of power in its 1965 cost allocation--as it did in its 1962 report to the Congress on this project--costs of $55,906,000 would have been allocated to power, or $8,906,000 more than the amount that was allocated.

An increase in the costs allocated to power would have resulted in a corresponding decrease in the costs allocated to all other project features, and only $42,409,000 would have been allocated to irrigation. Thus, the total amount allocated to the reimbursable features would have been $98,315,000, or $4,315,000 more than was allocated by the Corps. (See app. VI.) In addition to the increase in costs allocated to reimbursable features, a substantial amount of interest costs on the Federal investment would be realized.

The Corps' continued use of a federally financed steam plant as the alternative source of power in its cost allocations will have an effect on the Central Valley Project because such use results in understating the cost allocable to the reimbursable power features and in understating the related interest costs on the Central Valley Project's power investment costs. The current repayment study for the Central Valley Project shows that the power from the New Melones project will become available in fiscal year 1976 and that the costs allocated to power will be paid in full by 1993.

Partnership project

The Congress has authorized Federal contributions toward the cost of several non-Federal dam and reservoir projects (referred to as partnership projects) to provide flood-control protection. We reviewed the New Bullards Bar Dam and Reservoir partnership project, located on the North Yuba River, about 30 miles northeast of Marysville, California, for which the Flood Control Act of 1965 (79 Stat. 1073) authorized a Federal contribution to the Yuba County Water Agency in recognition of the project's flood-control features.

At the time of the authorization, the Federal contribution was estimated at $8.7 million--the estimated amount that would have been allocable to flood control under the SCRB method of allocating costs of multiple-purpose water resource projects to the various project purposes, if the dam and reservoir had been built and financed by the Federal Government.

The estimated Federal contribution of $8.7 million was equal to 11.5 percent of a base amount of $75,041,000, representing the estimated cost of $152,410,000 for the dam and reservoir less the estimated cost of $77,069,000 for specifically identified power and recreation features and the estimated Federal engineering and administrative costs of $300,000. (See app. VI for a detailed explanation of the computation of the Federal contribution for this project.)

In our opinion, the Corps' use of an inappropriate alternative source of power in its determination of the cost of the dam and reservoir, which would have been allocable to flood control if the project had been constructed by the Federal Government, resulted in a significant increase in the amount of the estimated Federal contribution. Had the Corps based its cost allocations on the use of a privately financed steam plant rather than a federally financed steam plant as the alternative source of power, the estimated Federal contribution would have amounted to $6,071,000, or 8.1 percent of the base amount of $75,041,000.

The Federal contribution was stated as a percentage of a base amount to permit a ready determination of the amount of the contribution computed on the actual cost of the dam and reservoir. Because of the potential for significant changes in the identified power and recreation features, the costs of these features were not included in the base for computing the actual amount of the Federal contribution.

In May 1966, the Corps entered into a contract with the Yuba County Water Agency which provided for an estimated Federal contribution of $12.6 million representing 11.5 percent of the increased base amount of $109.9 million.

If the Corps had based its determination on the use of an appropriate alternative source of power, the Federal contribution (exclusive of engineering and administrative costs of $300,000) would have been 8.1 percent of the base amount of $109.9 million, or $8.9 million; about $3.7 million less than the amount provided for in the contract.

CHAPTER 3

AGENCY COMMENTS AND OUR EVALUATION

WATER RESOURCES COUNCIL

In a draft of this report we proposed that the Water Resources Council (1) evaluate the effects of using the federally financed steam plant alternative on the development of national water resources when updating planning standards included in Senate Document 97 and (2) preclude the use of this alternative in the standards and procedures to be established in accordance with Senate Document 97 for making cost allocations.

In a letter dated July 25, 1969, the Executive Director of the Water Resources Council acknowledged the significance of our comments. (See app. I.) He stated that the Council was actively reviewing the entire subject of evaluation of projects and plans in accordance with section 103 of the Water Resources Planning Act (Public Law 89-80) and that a special task force of the Council had prepared a report which was the subject of public hearings during August and September 1969.

The Executive Director stated also that the development of the more thorough and complete evaluation system, which is now under way, will permit examination and clarification of the concepts and techniques specified in our report and will also provide guidance for implementation and application.

The special task force report mentioned by the Executive Director relates principally to the development of planning standards for water resources projects and contains limited comments relative to cost allocation procedures. Such procedures, the report indicates, would require further study.

We noted, however, the following comments in the report relative to the measurement of benefits based on alternative project costs.

"Where the cost of an alternative means to achieve an objective is to be used as the measure of benefits, the Task Force recommends that such alternative source would, in fact, be the most likely utilized in the absence of a project. It must be a viable alternative in terms of engineering and financing and must be institutionally acceptable. It must be more than a hypothetical project or source of benefits, but a real alternative--one that could and would likely be undertaken in the absence of a water project. It is not necessary that such alternatives necessarily be water projects per se provided that the alternative provides a similar flow of effects."

We believe that, although the statement above relates primarily to benefit evaluations, the reasoning is appropriate for cost allocation purposes.

Although our report is directed primarily toward questioning the appropriateness of the use of a federally financed steam plant as an alternative source of power for cost allocation purposes, we believe that consideration should be given by the Water Resources Council to the effect of such an alternative when updating the planning standards included in Senate Document 97. Because the Water Resources Council is actively reviewing the entire subject of project evaluation we are making no recommendation with respect to planning at this time. However, we continue to believe that there is a need, as indicated in Senate Document 97, for up-to-date policies, standards, and procedures relating to cost allocations for reimbursement and cost-sharing arrangements.

DEPARTMENT OF THE ARMY

In a draft of this report, we proposed that the Secretary of the Army revise the cost allocation procedures to preclude the use of the federally financed steam plant alternative in making final cost allocations for all active and future power projects and, where appropriate, to use the privately financed steam plant as the most likely alternative.

The Department of the Army, in commenting on our draft report in a letter dated July 18, 1969 (see app. II), stated that, in making the comparability test, it makes no contention that a federally financed steam plant is a realistic alternative in the sense that such a plant would be constructed by the Federal Government. The Department indicated that, from an economic standpoint, who constructs the alternative is not a significant element of the analysis and that the language of Senate Document 97 implies the requirement to convert interest, taxes, insurance, and other cost factors to a Federal basis to achieve comparability with separable project costs.

The Department indicated, however, that its use of the federally financed steam plant alternative in cost allocations was not an extension of the comparability test calculation developed to meet the planning standards in section V.C. 2(d) in Senate Document 97. The Department stated that:

> "The basis for using a comparably financed alternative as a limit on benefits in cost allocations is founded in Section VIa of S-97. This section specifically requires that all purposes be treated comparably in cost allocations and that each purpose is entitled to its fair share of the advantages resulting from multiple-purpose program or project construction. The Corps practice is consistent with this principle. If equity is to be served in the distribution of project costs, it is essential that costs of all single-purpose alternatives used as a limit on benefits (line 2 of cost allocation) be determined on the same financial basis. Use of the project interest rate and other project associated financing factors in the determination of these alternative costs provides for a degree of equivalence which effectively meets the objective of Section VIa, i.e., that all purposes be treated comparably in the cost allocations. Use of the alternative power costs suggested in your report appears to be directed toward achieving a maximum power reimbursement rather than an equitable distribution of project costs."

The contention by the Department that its use of the federally financed steam plant alternative in cost allocations was not an extension of the comparability test does not appear to be consistent with a March 1966 memorandum to the Director of Civil Works from the Planning Division, which stated:

> "While the comparability test may preclude the development of some of the less attractive power plants, it is not believed that it will appreciably slow down our program or that it would have made any great difference in the past had it been applied to those projects that have already been built. Paradoxically, it appears that the test will actually be a boon to the power users. We have applied the comparability principle to the alternative which is used as a limit on the allocation of cost to power. This significantly reduces the cost allocated to power ***." (Emphasis supplied.)

We agree in principle with the Department's position that the costs of all single-purpose alternatives used as limits on benefits should be determined on comparable bases. However, we believe that, to provide an equitable allocation among the project purposes, the alternative sources should be the ones most likely to be utilized in the absence of the project and the ones most viable in terms of engineering and financing.

We noted that, in the cost allocations for the 22 projects we examined, all of the estimates (benefits, alternative project costs, separable project costs) used in the allocations were developed from realistic engineering and financial data with the exception of the federally financed steam plant alternative for power features. We noted also that the costs of all the alternatives for multiple-purpose project features were developed on the basis of a single-purpose Federal river project except for the power feature which was based on a federally financed steam plant.

If the ultimate objective based on section VIa of Senate Document 97 is to achieve comparability of alternative

projects used to limit benefits in the cost allocation, it would, in our opinion, be more appropriate for the Corps to use a single-purpose Federal power dam as the most likely alternative for power because this would equate the power alternative in terms of both engineering and financing to the alternatives used to limit benefits for other purposes in the project. In this regard, FPC has indicated to us that it ordinarily uses a single-purpose Federal river project in its cost allocations as the most likely and most viable alternative power source.

We believe, however, that section VIa of Senate Document 97 was merely a restatement of the basic objective of the SCRB process; that is, each project purpose should be treated equitably in the cost allocation. We believe, therefore, that the alternatives used in cost allocations should not only be realistic but that they should be selected objectively with a view toward an alternative for each project purpose that would be likely to be developed in the absence of the proposed project.

In accordance with Senate Document 97 standards, the Corps generally computes power benefits on the basis of privately financed steam plant costs. In determining the cost of an alternative source of power for the purpose of establishing a limitation on power benefits, however, the Corps adjusts the privately financed steam plant costs to federally financed steam plant costs. (See p. 11.) This procedure results in a reduction in power benefits and in the amount of joint costs allocated to power. We found this to be the case in each of the 22 multiple-purpose projects we reviewed.

We do not agree with the Corps' interpretation of Senate Document 97, and we note that the Corps has not consistently applied its interpretation in determining alternatives for other project purposes. The Corps has elected to use single-purpose Federal river projects as alternatives for determining limitations on benefits for all other project purposes; that is, the Corps does not select likely privately financed alternatives and adjust the cost of such alternatives to the cost of a similar federally financed project. For example, of the 20 Federal multiple-purpose projects we reviewed, 11 had navigation features. For

these projects, the Corps used Federal single-purpose dam and locks projects as the most likely alternative basis for a limitation on navigation benefits. However, if the multiple-purpose projects were not built, private trucking or railway freight lines might carry cargo and, therefore, could be considered a likely alternative for providing the navigation benefits.

To be consistent with its method of setting a limitation on power benefits, the Corps should convert the costs of privately financed trucking or railway freight lines to federally financed trucking or railway freight lines. We found no cost allocations where this had been done. We believe that the use of a federally financed steam plant as an alternative source of power is as inappropriate as would be the use of a federally financed trucking or railway freight line as an alternative to providing navigation since neither alternative is likely to be developed in the absence of a multiple-purpose water resources project.

DEPARTMENT OF THE INTERIOR

In commenting on our draft report (see app. III), the Department of the Interior generally disagreed with our conclusions and proposals but agreed that the subject matter was worthy of further analysis and endorsed our proposal that the Water Resources Council undertake the task of establishing up-to-date allocation methods and of developing uniformity in procedures and applications.

The Department of the Interior also stated:

> "We note that applying the method in the manner you propose would increase costs allocated to hydropower in eleven projects in the Southwestern Power Administration marketing region over $81 million from present methods. We are making a special study of the economics, financing, and marketing situation in that region now, and so it would be premature to comment conclusively on your estimates until that study is completed."

It is our understanding that power reimbursement established on the basis of a sound cost allocation is

subjected to the financial feasibility test to determine if repayment can be made within 50 years. The Department's comments indicate that marketing conditions for power in the Southwestern Power Administration marketing region might dictate the reasonableness of the repayment requirements generated by our proposal concerning the appropriate alternative source of power to be used in making cost allocations. In our opinion, the repayment requirements for power should not dictate the propriety of the standards for making cost allocations.

We agree that our proposal could have a significant impact on the cost of power marketed in the Southwestern Power Administration marketing region. We also believe that it would be appropriate for the Department to consider such impact in the study it now has in progress.

FEDERAL POWER COMMISSION

In commenting on a draft of this report, FPC, in a letter dated July 28, 1969 (see app. IV), stated that its practice with regard to the comparability test is set forth in its letter to the Chief of Engineers dated June 3, 1965 (see p. 13), which indicates that FPC is in disagreement concerning the use of a federally financed steam plant as the alternative source of power in making the comparability test required by Senate Document 97.

FPC stated also that it does not consider the cost estimate for a federally financed steam plant as a measure of the alternative cost in the cost allocation process. FPC stated, however, that it had not been afforded the opportunity to comment on any of the 20 Federal projects listed in appendix V of the draft report but that it had commented on the cost allocation for the New Bullards Bar project. FPC indicated that, although it disagreed with the alternative selected by the Corps for use in the cost allocation, the alternative that it would use (a single-purpose river project), in this instance, would yield essentially the same results as the Corps' cost allocation would yield.

Representatives of the Bureau of Power, FPC, have informed us that it is their current practice to use a single-purpose Federal river project as the alternative

power source in project cost allocations. They have informed us also that, in those cases where a single-purpose river project is not the most economical alternative, then the power benefits, usually measured by the cost of a privately financed steam plant, would act as the limiting factor in the cost allocation. They said that, in any case, the alternative used or recommended in cost allocations by FPC must be a viable alternative which would preclude their use of a federally financed steam plant.

In our review of the multiple-purpose projects, we did not attempt to determine which source of power--steam or hydroelectric generation--would most likely be developed in the absence of the multiple-purpose project. In our review, we presumed that the Corps had selected the most likely alternative source of power--steam generation. However, in view of the FPC comments, we reexamined the Corps' cost allocation reports for the 22 projects included in our review. We found that, for nine of these projects, there was sufficient information available to determine the cost of a single-purpose Federal river project for power. In seven of these cases, the cost of a single-purpose Federal river project for power exceeded the amount of the power benefits and, hence, yielded the same allocation of costs to power as the procedure we used. In the other two cases, the FPC procedure yielded an allocation of costs to power in excess of the costs yielded by the Corps' procedure but less than the costs yielded by our procedure.

Because the FPC had not had an opportunity to comment on any of these allocations, we asked representatives of its Bureau of Power to evaluate our calculations. These officials did not verify our calculations but indicated that the procedure FPC would use for the nine projects would yield essentially the same results as those to be obtained from the cost allocation procedures we proposed in our draft report.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

In our opinion, the Corps and the Bureau have administratively adopted procedures for cost allocation purposes, which require the use of an inappropriate alternative source for power--a federally financed steam plant. The use of a federally financed steam plant as the alternative source of power generally limits the costs allocated to power and increases the costs allocated to other project purposes. In our opinion, multiple-purpose project costs should not be allocated to project purposes on the basis of alternative projects that are unrealistic. We believe that a federally financed steam plant is an inappropriate alternative because the Congress has not authorized the construction of such plants outside the area serviced by TVA.

We believe, therefore, that the Corps and the Bureau should not allocate multiple-purpose project costs to the various project purposes on the basis of a federally financed steam plant as an alternative source of power but that the costs should be allocated on the basis of the alternative source of power that is most likely to be developed in the absence of the multiple-purpose project.

As shown by the 22 Corps projects we examined, the Corps' utilization of an unrealistic alternative power source for cost allocation purposes significantly affects the allocation of project costs and, in our opinion, results in an inequitable allocation of costs to power and other reimbursable features.

RECOMMENDATIONS TO THE WATER RESOURCES COUNCIL, THE SECRETARY OF THE ARMY, AND THE SECRETARY OF THE INTERIOR

Because of the effect that a more equitable allocation of costs will have upon cost recoveries by the Federal Government, we recommend that the Water Resources Council establish, as soon as possible, policies, standards, and

procedures for allocating costs of water resources projects for consideration in reimbursement and cost-sharing arrangements.

Until such time as uniform cost allocation standards are promulgated by the Water Resources Council, we recommend that the Secretary of the Army and the Secretary of the Interior revise their procedures for allocating water resources project costs to provide that a more appropriate alternative source of power be used for limiting power benefits. We recommend also that such a revised procedure be applied to all current and future projects where the cost allocations have not yet been finalized.

CHAPTER 5

SCOPE OF REVIEW

Our review included an evaluation of the effects of the Corps' use of a questionable alternative for providing power for the purpose of making cost allocations for 20 Federal and 2 partnership projects. These projects represented all Corps projects for which the use of a federally financed steam plant as an alternative affected the allocation of project costs.

During our review of these projects, we examined survey feasibility reports, cost allocation reports, relevant supporting data, contracts with local interests, and applicable legislation and Congressional hearings. We discussed the issues included in this report with Corps officials in the Office of the Chief of Engineers in Washington, D.C., and in the Sacramento District; FPC officials in Washington, D.C., and the San Francisco Regional Office; and Department of the Interior officials in Washington, D.C., and in Region 2, Sacramento.

Since our review was limited to an evaluation of the financial effects of the use of a federally financed steam plant as an alternative in the cost allocations, we did not make a detailed evaluation of the reasonableness of the Corps' cost allocations to other purposes of the 22 projects except as they were affected by the power alternative. Also, we did not examine into the reasonableness of the unit value of power as determined by the FPC for federally and privately financed steam plants used in the Corps' cost allocations.

APPENDIXES

WATER RESOURCES COUNCIL
SUITE 900
1025 VERMONT AVENUE NW
WASHINGTON D C 20005

JUL 25 1969

Mr. Allen R Voss
Associate Director
Civil Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Voss

Thank you for your letter of May 15 transmitting the draft report of the General Accounting Office entitled "Need to Revise Method of Allocating Water Resources Costs to Project Purposes", with particular reference to Corps of Engineers projects.

We have examined the draft report with interest and acknowledge the significance of your comments. It is noted that the report refers to the so-called comparability test, Section V.C.2(d), Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources, Senate Document No. 97, 87th Congress, 2d Session, May 29, 1962. The comparability test of that document refers to plan formulation, and has been interpreted by the individual agencies. It is further noted that your report specifically recommends preclusion of a Federally financed steam generator as the alternative utilized in the allocation of project costs to power and requests that the Council evaluate the effects of using the Federal steam generator as an alternative in plan formulation.

In March 1954, a general agreement on cost allocation procedures was reached by the Departments of the Army and Interior and the Federal Power Commission and to the extent not modified by Senate Document No 97, remains in effect. The preferred method is commonly referred to as the "separable costs-remaining benefits" method. The general agreement does not set forth all the detailed

refinements for the cost allocation procedures. The selection of an alternative to power is one of the details not covered in the agreement.

We believe the report should refer to the work of the Council under Section 103 of the Water Resources Planning Act (P. L. 89-80). The Council is actively reviewing the entire subject of evaluation of projects and plans in accord with Section 103. A special task force of the Council has prepared a report which will be the subject of public hearings during August and September to permit complete discussion and later revision and refinement after field testing. A copy of the evaluation report is enclosed for your information. A new evaluation document will be prepared when all comments have been received and evaluated.

The development of the more thorough and complete evaluation system which is now under way will permit examination and clarification of the concepts and techniques specified in your report and will also provide guidance for implementation and application. We shall keep you informed of our progress.

Sincerely yours,

Henry P Caulfield Jr.
Executive Director

Enclosure

DEPARTMENT OF THE ARMY
WASHINGTON, D C 20310

18 JUL 1969

Mr. Allen R. Voss
Associate Director
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Voss:

The Secretary of Defense and Secretary of the Army have asked that I reply to your recent request for comments on the draft report prepared by your office entitled "Need to Revise Method of Allocating Water Resources Costs to Project Purposes" dated May 15, 1969 (OSD Case #2945).

A review of the report indicates that the findings and recommendations contained therein are based on the following two basic premises: (a) in making the comparability test the Corps compares the project's separable power cost with the cost of an alternative Federally financed thermal power plant, and (b) the power alternative used by the Corps in cost allocations is an extension of the power comparability test to allocations.

A review of Corps practices and requirements of Senate Document No. 97 does not support these premises.

As your report correctly points out, the comparability test is made in compliance with subparagraph V.C. 2(d) of S-97 which states: "There is no more economical means, evaluated on a comparable basis, of accomplishing the same purpose or purposes which would be precluded from development if the plan were undertaken. This limitation refers only to those alternative possibilities that would be physically displaced or economically precluded from development if the project is undertaken." This requirement is very precise in requiring that the alternative selected for comparison be evaluated on a basis comparable to that used in evaluating the Federal project. In applying this comparability test the Corps of Engineers makes no contention that a Federally financed thermal plant is a realistic alternative in the sense that such a plant

Mr. Allen R. Voss

would be constructed by the Federal government. From an economic standpoint, who constructs the alternative is not a significant element of the analysis. The comparability requirement is further defined in the following language of subparagraph V.D. 2 of S-97. "When costs of alternatives are used as a measure of benefits, the cost should include the interest, taxes, insurance, and other cost elements that would actually be incurred by such alternative means rather than including only costs on a comparable basis to project costs as is required in applying the project formulation criteria under paragraph V.C. 2(d)." The fact is that, in the majority of instances, the alternative used for benefit determinations is a privately financed thermal plant. However, in view of the foregoing provisions of S-97, it seems very apparent that the cost of the private alternative must be determined using the same financial factors applicable to the Federal project in order to make the required comparability test.

Aside from the question of the correct application of the principles of S-97, it is the Corps view that the test affords a correct and equitable way of comparing the true economic merits of alternative projects. As an example, a comparison of the economic merit of a project proposed for construction by the Federal government with an identical project proposed for non-Federal construction would show a decided advantage for the Federal development simply because of differing financial factors. The Corps application of the comparability test precludes such false conclusions.

The second premise in your report is that the Corps extends the requirements of Section V.C. 2(d) (the comparability test) to cost allocations. This is not the case. The basis for using a comparably financed alternative as a limit on benefits in cost allocations is founded in Section VIa of S-97. This section specifically requires that all purposes be treated comparably in cost allocations and that each purpose is entitled to its fair share of the advantages resulting from multiple-purpose program or project construction. The Corps practice is consistent with this principle. If equity is to be served in the distribution of project costs, it is essential that costs of all single-purpose alternatives used as a limit on benefits (line 2 of cost allocation) be determined on the same financial basis. Use of the project interest rate and other project associated financing factors in the determination of these alternative costs provides for a degree of equivalence which effectively meets the objective of Section VIa, i.e., that all purposes be treated comparably in the cost allocations. Use of the alternative power costs suggested in your report appears to be directed toward achieving a maximum power reimbursement rather than an equitable distribution of project costs.

Mr. Allen R. Voss

It is my understanding that the Water Resources Council already has under consideration formulation and cost allocation criteria with the view to developing uniform methods and procedures for all Federal agencies involved in water resources development. In view of the requirements of S-97 and the Water Resources Council consideration of the matters discussed in your report, there appears to be no basis for modifying Corps procedures at this time.

It is obvious that the fundamental principles underlying the Corps procedures in project formulation and cost allocations must be fully understood for an objective appraisal of the matters discussed in your report. My comments regarding these matters are directed to that end and, I trust, are sufficient to suggest that a reappraisal of the report findings and recommendations may be warranted. However, should the report be forwarded to the Congress in its present form it is requested that a copy of my comments be appended thereto.

The opportunity to review the draft report is appreciated. It is requested that 10 copies of the report as finally prepared be furnished the Office, Chief of Engineers.

Sincerely yours,

Robert E. Jordan, III
Special Assistant (Civil Functions)

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D C 20240

AUG 15 1969

Dear Mr. Voss:

Thank you for your letter of May 15 transmitting the draft report of the General Accounting Office entitled "Need to Revise Method of Allocating Water Resources Costs to Project Purposes," with particular reference to Corps of Engineers projects.

We have examined the draft report with interest and acknowledge the significance of your comments on the so-called comparability test, Section V C 2(d), Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources, Senate Document No. 97, 87th Congress, 2nd Session, May 29, 1962. The report says that the present method of cost allocation as applied to the hydropower function in multiple-purpose projects "is not appropriate" because the comparability test is interpreted incorrectly by using the project interest rate instead of the private interest rate if calculating alternative costs. The report seems to confuse cost allocation with project evaluation. The cost allocation procedure is not intended to determine whether the hydropower function should be included in the project or not. That question is answered in the formulation process when the costs of the most likely alternative in the absence of the project are compared to the separable costs of the purpose in the project.

The phrase "evaluated on a comparable basis" from the section of the Senate Document cited above gives rise to the expression "comparability test" for this step in the process, as you note on page three of your report. That phrase also provides the authority for using the same interest rate for the alternative facility as is used for the Federal project, for the interest rate is part of the "comparable basis" of the evaluation. The non-project interest rate, usually a private investor's interest rate for electric power facilities, is used in calculating benefits.

Cost allocation is not a part of the economic evaluation process, and so one cannot look to economic theory for authority or conclusive guidance. Allocation is an accounting procedure which proceeds by definition and deductive logic and is necessitated in these multiple-purpose water resource projects by requirements that the Federal Government charge for some of the products or services or be reimbursed in whole or in part for some of the investments. Some features or functions are neither intended to be reimbursable nor to be charged for.

Cost allocation methods are not specified in the statutes nor is there much statutory guidance as to cost definitions. The general rule is that project costs should be distributed equitable among the purposes served or functions. The language of the Federal Water Pollution Control Act, Section 3(b)(4) is typical in this regard and pertinent because it eferes to reservoir storage and multiple uses. "...and costs shall be allocated...in a manner which will insure that all project purposes share equitably in the benefits of multiple-purpose construction."

The method now in most common use--"separable costs-remaining benefits"--has a long history, dating at least from May 1950, when the Federal Interagency River Basin Committee published a report prepared by the Subcommittee on Benefits and Costs entitled Proposed Practices for Economic Analysis of River Basin Projects.

That report has become known as the "Green Book" from the color of its cover. It was revised and republished in 1958 without substantial change in the cost allocation chapter. The separable costs-remaining benefits method recommended by that report became the basis for a general agreement on cost allocation in March 1954 among the Department of the Interior and the Army and the Federal Power Commission.

The agreement remains in effect today, modified by the pertinent provisions of Senate Document No. 97, notably Section V C 2(d) (the comparability reference), and Section VI(a), "Relation to Cost Allocation, Reimbursement, and Cost Sharing Policies, Standards, and Procedures." The latter section notes that the three subjects of allocation, reimbursement, and sharing "are not generally included herein." Recommendations were made that these subjects also be studied, as is stated in the letter of transmittal and urged in the President's letter of approval. Both letters are published with the Document.

Section VI of the Document also restates the basic cost allocation rule that "all project purposes shall be treated comparably in cost allocation and each is entitled to its fair share of the advantages resulting from the multiple-purpose project or program." The section then says further "Project purposes to which costs may be allocated on a par with all other purposes without restriction regarding reimbursement or cost-sharing policies shall include (but not be limited to) the following:" Then ten conventional project purposes are listed, including water supply, irrigation, navigation, hydropower, recreation, and flood control, among others. Please note that the references cited above indicate positively that there is no distinction among project purposes for cost allocation. In other words, hydropower should not be subjected to a different interest rate in the cost allocation procedure than are the other project purposes. The practice now in cost allocation is to use the project interest rate for each of the alternatives for each of the purposes. Your proposal would treat the hydropower alternative differently than the other alternatives.

Cost allocation is intended to determine what costs are properly attributable to each purpose when several purposes are served by a facility. The separable costs-remaining benefits method has long been used successfully in water resources project allocations. Its proponents rate it highly on equitability because joint costs are distributed according to the portion each purpose has of the excess of benefits over separable costs. Critics say the method is difficult to comprehend, and hydropower advocates feel it does them less than justice in regard to a fair share of multipurpose project savings. In any event, allocation is entirely an accounting problem to distribute joint and other costs to facilitate pricing, rate-making, and reimbursement. Allocation is not involved in questions of who would build or own an alternative for any or all of the purposes.

On the basis of the foregoing we disagree with your conclusions on cost allocation procedures. We note that applying the method in the manner you propose would increase costs allocated to hydropower in eleven projects in the Southwestern Power Administration marketing region over $81 million from present methods. We are making a special study of the economics, financing, and marketing situation in that region now, and so it would be premature to comment conclusively on your estimates until that study is completed.

We disagree also with your recommendation that the present method of using the alternative in cost allocation should be precluded immediately without further study. We do agree, however, that the entire subject is worthy of further analysis. We endorse your recommendation that the Water Resources Council undertake the task of establishing up-to-date allocation methods and of developing uniformity in procedures and applications.

As you know, the Secretary is Chairman of the Council by appointment of the President, so studies and procedures will have strong impetus from the Secretary's Office. The Council is already well under way on a thorough and complete reappraisal of the procedures and standards for water resources project evaluation. Cost allocation, cost sharing, and reimbursement are closely related to the evaluation system, and their study will benefit by the Council's evaluation reappraisal. Furthermore, this Department is now developing a completely up-to-date Federal power policy taking into account changes in technology, management practices, power pooling and interties, environmental considerations, marketing situations, and economic and financial arrangements. Cost allocation and repayment must be judged within this context as well as within the general context of water resources planning and development on a multiple-purpose and river basin systems approach. Hydropower is a major aspect of such planning and development.

Therefore, we suggest that completion of your report be deferred until the Department and Council studies are finished to enable you to consider more thoroughly and completely the questions of allocation and reimbursement. However, if it is decided to transmit the report to the Congress before the completion of the studies, we request that these comments be attached.

Sincerely yours,

James R. Smith
Assistant Secretary

Mr. Allen R. Voss
Associate Director, Civil Division
General Accounting Office
Washington, D. C. 20548

FEDERAL POWER COMMISSION
WASHINGTON, D C 20426

IN REPLY REFER TO

JUL 28 1969

Honorable Elmer B. Staats
Comptroller General of the United States
United States General Accounting Office
441 G Street, N. W.
Washington, D. C. 20548

Dear Mr. Staats:

This is in reply to the letter of May 15, 1969, from Mr. Irvine M. Crawford, Assistant Director, Civil Division, in regard to a proposed report to the Congress entitled, "Need to revise method of allocating water resources costs to project purposes, Corps of Engineers (Civil Functions), Department of the Army."

The proposed report is based on a review of cost allocations for 80 multiple-purpose projects of the Corps of Engineers and the finding that the Corps' method of cost allocation would result in an under-allocation of project costs to power for 22 projects. The under-allocation of costs to power is attributed to using the estimated cost of power from a federally financed steam-electric plant as an upper limit on the amount of project costs allocated to power.

Senate Document No. 97, 87th Congress, approved by the President on May 15, 1962, provides that projects to be included in a comprehensive basin plan should satisfy the criterion that "there is no more economical means, evaluated on a comparable basis, of accomplishing the same purpose or purposes which would be precluded from development if the plan were undertaken." As noted in Senate Document No. 97, "this limitation refers only to those alternative possibilities that would be physically displaced or economically precluded from development if the project is undertaken."

The aforementioned standard for formulation of plans is commonly referred to as the comparability test. As applied to power development by certain agencies, the procedure requires that the cost of power that could be produced at a Federal project would be compared with the cost of producing equivalent power from an alternative thermal-electric or other type of plant assumed to be federally financed. The practices of the Federal Power Commission in regard to this matter are set forth in its letter of June 3, 1965, to the Chief of Engineers. A portion of that letter is quoted on page 18 of the proposed report.

The Federal Power Commission, in evaluating Federal hydroelectric power developments, does not use the estimated cost of power produced by federally financed thermal-electric plants as a measure of the power benefits. Also, it has not used such estimated cost as a measure of the alternative cost in making cost allocations. Its practice in cost allocation procedures has been to use as the alternative the most economical single-purpose river-development power project available to provide the same benefits to the same area as are provided by the inclusion of power as a purpose in the multiple-purpose development. Such an alternative has been used in cost allocations made by the Commission, such as the cost allocation for the Ice Harbor project on the Snake River in Washington.

As noted in the proposed report, the use of the cost of a federally financed steam-electric plant as an alternative cost in making cost allocations may reduce the cost allocated to power. If the procedures which have been used by the Commission were applied, however, such a result could occur only if the cost of power from a federally financed steam-electric plant were lower than the cost of equivalent power from the most economical alternative single-purpose river-development power project. This may be illustrated by reference to the cost allocations shown for the New Bullards Bar project on page 2 of Appendix III of the draft report. Under the "GAO Method" the annual alternative power cost is shown as $8,776,000, which is the same as the annual power benefits, whereas under the "Corps Method" the annual alternative power cost is $5,955,000, which is the estimated cost of producing power from a federally financed steam-electric plant. The annual cost of the multiple-purpose project is only $5,958,000, so, in this case, the annual cost of an alternative single-purpose river-development power project would be less than the annual alternative power cost of $5,955,000 based on a federally financed steam-electric plant. The result of using the river-development alternative would be to allocate to power an amount slightly less, and to flood control an amount slightly greater, than the corresponding amounts shown in the Corps' allocation.

The Commission, by letter to the Chief of Engineers dated November 10, 1964, commented on the Corps' allocation of costs for the New Bullards Bar project. It noted that the results of independent cost allocation studies by its staff, using the separable costs-remaining benefits method but with some differences in application of the method, were nearly identical to those in the Corps' report. The Commission concluded, therefore, that the proposed contribution by the Federal Government to the Yuba County Water Agency in return for flood control benefits to be provided by the New Bullards Bar project, amounting to 11.5 percent of the construction cost of the project exclusive of the power and recreation facilities, was reasonable.

With few exceptions, no agency has been given the specific responsibility for allocating the costs of multiple-purpose projects constructed by the Corps of Engineers. Normally, cost allocations for such projects are prepared by the Corps of Engineers and reviewed by an interdepartmental

work group consisting of staff members of the Corps of Engineers, the Department of the Interior, and the Federal Power Commission. Following review by this work group, the Chief of Engineers submits the cost allocation report to the other two agencies for comments. If the comments are favorable, he adopts the cost allocation as final. The Commission has not been requested to comment on the cost allocations for any of the 20 projects listed on page 1 of Appendix II of the proposed report. Except for the cost allocation for the New Bullards Bar project, mentioned above, the Commission has not submitted comments on a cost allocation report in which a federally financed steam-electric plant was used as a measure of alternative power costs.

The Commission notes that the procedures it has used in applying the separable costs-remaining benefits method of allocating costs of multiple-purpose water resources projects differ from both the "Corps Method" and the "GAO Method" as described in the proposed report to the Congress. It believes the procedures it has followed provide reasonable results and suggests that they be considered in the report.

Sincerely,

Lee C. White
Chairman

EFFECTS OF THE CORPS' PROCEDURE FOR

COST ALLOCATION ON REIMBURSABLE FEATURES

OF FEDERAL PROJECTS EXAMINED

Project (note a)	Costs allocated to reimbursable power features		Increased reimbursable cost to Federal Government	Less over-allocation to other reimbursable features		Net increased reimbursable cost to Federal Government for all reimbursable features
	Corps procedure of allocation	GAO procedure of allocation		Water supply	Irrigation	
	(000 omitted)					
DeGray, Ark	$ 20,793	$ 26,600	$ 5,807	$ 962		$ 4,845
Ozark, Ark (note b)	39,332	44,427	5,095			5,095
Clarence F Cannon, Mo	15,095	23,273	8,178	610		7,568
Kaysinger Bluff, Mo (note b)	36,823	46,107	9,284			9,284
Stockton, Mo (note b)	14,613	18,901	4,288			4,288
Broken Bow, Okla	21,747	29,157	7,410	905		6,505
Eufaula, Okla (note c)	33,334	42,586	9,252	479		8,773
Robert S Kerr, Okla (note b)	41,146	51,101	9,955			9,955
Keystone, Okla (note c)	26,842	35,330	8,488	223		8,265
Webbers Falls, Okla (note b)	25,385	32,731	7,346			7,346
Sam Rayburn, Tex (notes b and c)	21,747	28,354	6,607	989		5,618
Spewrell Bluff, Ga	29,718	41,671	11,953			11,953
West Point, Ga	28,648	36,079	7,431			7,431
Barkley, Ky and Tenn (notes b and c)	43,328	48,237	4,909			4,909
Cordell Hull, Tenn (note b)	29,812	32,199	2,387			2,387
J Percey Priest, Tenn (note b)	8,052	9,088	1,036			1,036
Tocks Island, Pa	31,809	39,344	7,535	3,434		4,101
Lost Creek, Ore	15,117	15,686	569	31	$ 10	528
Marysville, Calif	31,501	39,270	7,769	3,448		4,321
New Melones, Calif	47,000	55,906	8,906		4,591	4,315
	$561,842	$696,047	$134,205	$11,081	$4,601	$118,523

[a]The cost allocation report we examined for Barkley was prepared in final form but had not received FPC approval The cost allocation reports for the remaining projects were in tentative form

[b]We were able to develop sufficient data for these 9 projects to apply FPC's procedure of cost allocation The FPC procedure yielded the same results as GAO's procedure for 7 of the projects. For the other two projects, Ozark and Robert S Kerr, the FPC procedure resulted in net increased allocated costs to reimbursable features of $1,911,000 and $8,083,000, respectively, as compared with GAO's calculation of $5,095,000 and $9,955,000

[c]The power plants in these projects are currently in operation.

EFFECTS OF THE CORPS PROCEDURE FOR

COST ALLOCATION ON THE FEDERAL CONTRIBUTION

FOR FLOOD CONTROL ON PARTNERSHIP PROJECTS

Project	Federal contribution for flood control		Increased cost to Federal Government
	Corps procedure of allocation	GAO procedure of allocation	
	(000 omitted)		
New Bullards Bar, Calif.	$12,639	$ 8,902	$3,737
New Exchequer, Calif.	10,587	9,433	1,154
Total	$23,226	$18,335	$4,891

NEW MELONES PROJECT

COST ALLOCATION JULY 1965

SEPARABLE COSTS-REMAINING BENEFITS METHOD

100-YEAR LIFE, 3-1/8 PERCENT INTEREST

	Explanation of computations	Corps procedure (federally financed steam plant) Flood control	Irrigation	Power	Water quality control	Recreation	Fish and wildlife	Total
		(thousands)						
I. Allocation of annual costs								
a Benefits (note 1)		$ 1,420	$ 3,610	$ 3,180	$ 180	$ 910	$ 640	$ 9,940
b. Alternative costs (note 2)		1,674	3,146	2,380	1,304	1,815	1,679	11,998
c. Benefits limited by alternative cost	Lowei of Ia and Ib	1,420	3,146	2,380	180	910	640	8,676
d. Separable costs		173	231	1,700	-	163	20	2,287
e Remaining benefits	Ic - Id	$ 1,247	$ 2,915	$ 680	$ 180	$ 747	$ 620	$ 6,389
f. Percent of remaining benefits	Ie ÷ Total of Ie	19.52%	45.63%	10 64%	2.82%	11.69%	9.70%	100%
g. Allocated joint cost	If x Total of Ig	$ 607	$ 1,422	$ 332	$ 88	$ 364	$ 302	$ 3,115
h Total allocated economic costs	Id + Ig	780	1,653	2,032	88	527	322	5,402
i. Adjustment for loss of land productivity		16	31	5	1	17	5	75
j. Total allocated project costs	Ih - Ii	764	1,622	2,027	87	510	317	5,327
II Allocation of operation and maintenance								
a Separable costs		20	3	280	-	92	14	409
b Allocated joint cost	If x Total of IIb	34	78	18	5	20	17	172
c. Total allocation--operation and maintenance	IIa + IIb	54	81	298	5	112	31	581
III Allocation of major replacement								
a Separable costs		-	-	190	-	-	-	190
b. Allocated joint costs	If x Total of IIIb	1	3	1	-	1	-	6
c. Total allocation--replacement	IIIa + IIIb	1	3	191	-	1	-	196
IV Allocation of investment								
a Annual investment cost	Ij - (IIc + IIIc)	$ 709	$ 1,538	$ 1,538	$ 82	$ 397	$ 286	$ 4,550
b Percent of annual investment cost	IVa ÷ Total of IVa	15.58%	33 80%	33.80%	1.80%	8.73%	6.29%	100%
c Allocated investment	IVb x Total of IVc	$21,700	$47,000	$47,000	$2,500	$12,100	$8,700	$139,000

Reimbursable features	Allocated investment cost of Power	Irrigation	Increased investment costs to the Federal Government
	(thousands)		
GAO procedure (privately financed steam plant)	$55,906	$42,409	
Corps procedure (federally financed steam plant)	47,000	47,000	
Difference between methods	8,906	(4,591)	$4,315

[1] Benefits

Flood control - Based on physical damages, cost of flood fighting, and business losses prevented.
Irrigation - Based on new water supply to unirrigated land, considering types of crops to be grown, less the costs of pumping the water to the new area.
Power - Cost of producing equivalent power from a privately financed steam plant.
Water quality control - Based on the cost of water from an alternative source providing the desired quality of water and on increased fisherman days due to preservation of warm-water fisheries.
Recreation - Based on recreation days of use made possible by construction of New Melones.
Fish and wildlife - Based on the product of various fishing-day values and the expected annual fisherman days--developed by the Department of the Interior and the Corps of Engineers.

			GAO procedure (privately financed steam plant)			
ood trol	Irri-gation	Power	Water quality control	Recre-ation	Fish and wildlife	Total
			(thousands)			
,420	$ 3,610	$ 3,180	$ 180	$ 910	$ 640	$ 9,940
,674	3,146	3,180[3]	1,304	1,815	1,679	12,798
,420	3,146	3,180	180	910	640	9,476
173	231	1,700	-	163	20	2,287
,247	$ 2,915	$ 1,480	$ 180	$ 747	$ 620	$ 7,189
.35%	40 55%	20 59%	2.50%	10 39%	8.62%	100%
540	$ 1,263	$ 641	$ 78	$ 324	$ 269	$ 3,115
713	1,494	2,341	78	487	289	5,402
16	31	5	1	17	5	75
697	1,463	2,336	77	470	284	5,327
20	3	280	-	92	14	409
30	70	35	4	18	15	172
50	73	315	4	110	29	581
-	-	190	-	-	-	190
1	2	1	-	1	1	6
1	2	191	-	1	1	196
646	$ 1,388	$ 1,830	$ 73	$ 359	$ 254	$ 4,550
.20%	30.51%	40.22%	1.60%	7.89%	5 58%	100%
,738	$42,409	$55,906	$2,224	$10,967	$7,756	$139,000

lternative cost

Flood control - A single-purpose project with a reservoir capacity of 560,000 acre-feet at the New Melones site.
Irrigation - A single-purpose project with a reservoir capacity of 1,900,000 acre-feet.
Power - Cost of producing power, equivalent to that provided by the project, based on a federally financed steam plant.
Water quality control - A single-purpose project with a reservoir capacity of 300,000 acre-feet.
Recreation - A single-purpose project with a reservoir capacity of 600,000 acre-feet and a nearly stable water level.
Fish and wildlife - A single-purpose project with a reservoir capacity of 600,000 acre-feet would provide adequate storage for fish releases.

ıe basic difference between the Corps' and GAO's cost allocation procedures is that, by the Corps rocedure for allocation, the alternative cost is based on the value of power produced from a federally financed steam plant whereas, by GAO's procedure for allocation, the alternative cost is ased on the value of power produced by a privately financed steam plant.

NEW BULLARDS BAR PROJECT

COMPUTATION OF FEDERAL CONTRIBUTION FOR FLOOD CONTROL

	Explanation of computations	Corps procedure (federally financed steam plant) Flood control	Recre-ation	Irri-gation	Power	Tota
		(thousands)				
I. Allocation of annual cost						
a Benefits (note 1)		$ 630	$ 230	$ 1,887	$ 8,776	$ 11,5
b Alternative costs (note 2)		1,328	230	1,626	5,955	9,1
c Benefits limited by alternative cost	Lower of Ia and Ib	630	230	1,626	5,955	8,4
d Initial separable cost		88	33	57	3,646	3,8
e Remaining benefits before dual cost	Ic - Id	$ 542	$ 197	$ 1,569	$ 2,309	$ 4,6
f Percent for dual cost allocation (note 3)			7.9%		92.1%	100
g Allocated dual cost	If x Total of Ig	$ -	$ 47	$ -	$ 546	$ 5
h Total separable cost	Id + Ig	88	80	57	4,192	4,4
i Total remaining benefits	Ie - Ig	$ 542	$ 150	$ 1,569	$ 1,763	$ 4,0
j Percent of remaining benefits	Ii ÷ Total of Ii	13 5%	3.7%	39.0%	43 8%	100
k Allocated joint cost	Ij x Total of Ik	$ 208	$ 57	$ 601	$ 675	$ 1,5
l. Total allocation, economic cost	Ih + Ik	296	137	658	4,867	5,9
m Land productivity loss		-	-	-	5	
n Total allocation, financial cost	Il - Im	296	137	658	4,862	5,9
II Allocation of operation, maintenance and replacement cost						
a Initially separable cost		6	20	1	770	7
b Dual cost	If x Total of IIb	-	1	-	9	
c Residual cost	Ij x Total of IIc	14	4	41	47	1
d Total operation, maintenance, and replacement cost		20	25	42	826	9
III Allocation of investment cost						
a Annual investment cost	In - IId	$ 276	$ 112	$ 616	$ 4,036	$ 5,0
b Percent of annual investment cost	IIIa ÷ Total of IIIa	5 5%	2.2%	12 2%	80 1%	100
c Allocated investment cost	IIIb x Total of IIIc	$ 8,721	$3,539	$19,464	$127,526	$159,2
IV. Computation of Federal contribution						
a Allocated first cost (note 4)	IIIb x Total of IVa	8,347	3,387	18,628	122,048	152,4
b Capitalized operation, maintenance, and replacement cost (note 5)	IId x 31 599	632				
c Estimated total Federal first cost	IVa + IVb	8,979				
d Federal costs for engineering and administration of funds		300				
e Estimated Federal contribution to local interests	IVc - IVd	8,679				
f Project first cost less power, recreation facilities, and Federal cost for engineering and administration of funds (note 6)		$ 75,041				
g Federal contribution	IVe ÷ IVf	11 5%				
h. Estimated allowable construction costs (note 7)		$109,900				
i Estimated Federal contribution	IVg x IVh	12,639				
j. Difference between Corps method and GAO method (increased cost to Federal Government)		$ 3,737				

[1]Benefits

Flood control - Based on physical damages prevented, emergency losses incurred, and business and other financia losses prevented in or beyond the flood plain
Recreation - Based on increase in visitor days and downstream salmon fishery enhancement.
Irrigation - Based on the increase in net income accruing to the land, brought about by the application of irrigation water, less appropriate reductions for diversion, conveyance, distribution and drainage.
Power - Based on the cost for furnishing equivalent power, from a privately financed steam-electric pla

[2]Alternative cost

Flood control - A single-purpose, 200,000-acre-foot-capacity reservoir located at the Bullards Bar site
Recreation - A single-purpose, 260,000-acre-foot-capacity reservoir located at the Bullards Bar site The annual cost was not estimated because it was evident that annual costs would exceed the $230,00 annual benefit
Irrigation - A single-purpose, 465,000-acre-foot-capacity reservoir located at the Bullards Bar site
Power - Cost of producing power based on a federally financed steam plant.

	GAO procedure (privately financed steam plant)			
ood trol	Recre-ation	Irri-gation	Power	Total
	(thousands)			
630	$ 230	$ 1,887	$ 8,776	$ 11,523
1,328	230	1,626	8,776	11,960
630	230	1,626	8,776	11,262
88	33	57	3,646	3,824
542	$ 197	$ 1,569	$ 5,130	$ 7,438
	3 7%		96 3%	100%
-	$ 22	$ -	$ 571	$ 593
88	55	57	4,217	4,417
542	$ 175	$ 1,569	$ 4,559	$ 6,845
9%	2.6%	22.9%	66.6%	100%
122	$ 40	$ 353	$ 1,026	$ 1,541
210	95	410	5,243	5,958
-	-	-	5	5
210	95	410	5,238	5,953
6	20	1	770	797
-	-	-	10	10
8	3	24	71	106
14	23	25	851	913
196	$ 72	$ 385	$ 4,387	$ 5,040
.89%	1.43%	7 64%	87.04%	100%
5,195	$2,277	$12,167	$138,611	$159,250
5,929	2,179	11,644	132,658	152,410
442				
5,371				
300				
5,071				
5,041				
8 1%				
9,900				
3,902				

i this project, the Corps allocated dual costs only to the recreation and power atures. The percentage breakdown is determined on the basis of the remaining nefits attributable to recreation and power

tal first cost is calculated by subtracting interest during construction from e total allocated investment cost

e capitalized operation, maintenance, and replacement cost is determined by ltiplying the annual amounts of these costs by the present worth factor of i annual payment continuing for the 100-year life of the project at 3 percent terest In this case, the factor is 31 599

is figure, developed by the Corps to reflect July 1, 1963, prices, represents e total estimated first cost of the project, less estimated Federal engineering and administration costs and estimated first costs of specifically identified power and recreation features

is figure is obtained from the contract between the Corps and the Yuba County ter Agency prescribing a Federal contribution for flood protection. It repreents the estimated allowable construction cost of the dam and reservoir exclusive of power and recreational facilities.

PRINCIPAL MANAGEMENT OFFICIALS

RESPONSIBLE FOR ADMINISTRATION OF

ACTIVITIES DISCUSSED IN THIS REPORT

	Tenure of office	
	From	To
DEPARTMENT OF DEFENSE		
SECRETARY OF DEFENSE:		
Melvin R. Laird	Jan. 1969	Present
Clark Clifford	Mar. 1968	Jan. 1969
Robert S. McNamara	Jan. 1961	Feb. 1968
DEPARTMENT OF THE ARMY		
SECRETARY OF THE ARMY:		
Stanley R. Resor	July 1965	Present
Stephen Ailes	Jan. 1964	July 1965
Cyrus R. Vance	July 1962	Jan. 1964
Elvis J. Stahr, Jr.	Jan. 1961	June 1962
CHIEF OF ENGINEERS:		
Lt. Gen. Frederick J. Clarke	Aug. 1969	Present
Lt. Gen. William F. Cassidy	July 1965	Aug. 1969
Lt. Gen. Walter K. Wilson, Jr.	May 1961	June 1965
DEPARTMENT OF THE INTERIOR		
SECRETARY OF THE INTERIOR:		
Walter J. Hickel	Jan. 1969	Present
Stewart L. Udall	Jan. 1961	Jan. 1969
ASSISTANT SECRETARY FOR WATER AND POWER DEVELOPMENT:		
James R. Smith	Mar. 1969	Present
Kenneth Holum	Jan. 1961	Jan. 1969

PRINCIPAL MANAGEMENT OFFICIALS

RESPONSIBLE FOR ADMINISTRATION OF

ACTIVITIES DISCUSSED IN THIS REPORT (continued)

	Tenure of office	
	From	To
DEPARTMENT OF THE INTERIOR (continued)		
COMMISSIONER OF RECLAMATION:		
Ellis L. Armstrong	Nov. 1969	Present
Floyd E. Dominy	May 1959	Oct. 1969
WATER RESOURCES COUNCIL		
SECRETARY OF THE INTERIOR:		
(See previous page.)		
SECRETARY OF AGRICULTURE:		
Clifford M. Hardin	Jan. 1969	Present
Orville L. Freeman	Jan. 1961	Jan. 1969
SECRETARY OF THE ARMY:		
(See previous page.)		
SECRETARY OF HEALTH, EDUCATION, AND WELFARE:		
Robert H. Finch	Jan. 1969	Present
Wilbur J. Cohen	Apr. 1968	Jan. 1969
John W. Gardner	Aug. 1965	Mar. 1968
Anthony J. Celebrezze	July 1962	Aug. 1965
SECRETARY OF TRANSPORTATION:		
John A. Volpe	Jan. 1969	Present
Alan S. Boyd	Apr. 1967	Jan. 1969
CHAIRMAN OF THE FEDERAL POWER COMMISSION:		
John N. Nassikas	Aug. 1969	Present
Lee C. White	Mar. 1966	July 1969

PRINCIPAL MANAGEMENT OFFICIALS

RESPONSIBLE FOR ADMINISTRATION OF

ACTIVITIES DISCUSSED IN THIS REPORT (continued)

	Tenure of office	
	From	To
WATER RESOURCES COUNCIL (continued)		
CHAIRMAN OF THE FEDERAL POWER COMMISSION: (continued)		
David S. Black (acting)	Dec. 1965	Mar. 1966
Joseph C. Swidler	Sept. 1961	Dec. 1965
EXECUTIVE DIRECTOR:		
W. Don Maughan	Mar. 1970	Present
Reuben J. Johnson (acting)	Aug. 1969	Mar. 1970
Henry P. Caulfield, Jr.	Dec. 1965	Aug. 1969

U S. GAO, Wash , D.C