

Colorado River Basin

Senator Daniel K. Inouye Papers

House records, Legislation, Correspondence, Box HR8, Folder 25

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**TRI-STATE
GENERATION AND TRANSMISSION ASSOCIATION, INC.**

WENDELL J. GARWOOD
Manager

Phone AComa 2-4155

618 MAJESTIC BLDG.
Denver 2, Colorado

December 28, 1961

Coim...

JAN 3 1962

The Honorable Daniel K. Ineuye
U. S. House of Representatives
House Office Building
Washington 25, D. C.

Dear Congressman Ineuye:

The Board of Directors has asked me to express to you on behalf of themselves and the Association's thirty Members their sincere appreciation for your support of the all-Federal transmission system for the Colorado River Storage Project during the first session of the 87th Congress. This transmission system, as well as the Project itself, is vitally important to Tri-State's Members and their 200,000 customers since it is the only economically feasible way to guarantee not only the delivery of Project power and energy to the consumer at reasonable cost, but also to ensure repayment of the Project with interest on schedule and still provide monies for the Basin Fund for the ultimate development of irrigation within the Project area.

Please accept, too, my personal gratitude for your efforts on our behalf; be assured that Tri-State will make every effort to cooperate with all agencies and utilities which must of necessity be involved in the marketing of power from the Colorado River Storage Project.

Warmest Holiday Greetings to you and your very able staff.

Yours very sincerely,

Wendell J. Garwood

Wendell J. Garwood

WJG:gv

September 21, 1961

Honorable Stewart Udall
Secretary of the Interior
Washington 25, D.C.

Dear Stew:

Please forgive me for this very belated reply to your letter of September 11, 1961, advising me of your support of the transmission system for the Upper Colorado River Project. As you know, I supported this measure.

Please be assured that I am on your team.

Sincerely,

DANIEL K. INOUE
Member of Congress

DKI:sb



THE SECRETARY OF THE INTERIOR
WASHINGTON

September 11, 1961

Dear Dan:

One of the few remaining key issues which the House must deal with before adjournment concerns the basic power program of the Kennedy Administration. I refer, of course, to the vote on the Public Works Appropriations Bill which I am informed Chairman Cannon will present to the House sometime on Tuesday, September 12. This is a clearcut issue and I want to be certain that you understand these essential facts:

1. A central axiom of the power policy during the Roosevelt-Truman Administrations was that where the waters of a river basin were harnessed through a series of federal dams, the "backbone" transmission lines to marketing load centers should also be constructed with federal funds in order to protect the integrity of the basic federal investment. The architects of this policy were Roosevelt, Ickes, Norris and others, and this pattern of development is the traditional one that has been followed in river basins where major federal investments have been made.

2. The soundness of this principle was affirmed by my Republican predecessor, Secretary Fred Seaton, when he recommended federal construction of the backbone transmission system for the Upper Colorado River Project on January 16, 1961. Unfortunately, this decision has become the center of controversy and some members of the opposition party will lead a fight to reverse the Seaton decision and strike from the Appropriations Bill the transmission line funds which Chairman Cannon and his colleagues have approved.

As you can see, there is much at stake in this issue. The cold fact is that Congress authorized federal lines in the Upper Colorado Project Act of 1956, and I want to strongly emphasize that the action taken by the Appropriations Committee does not in any way create "new" policy, but rather it affirms the traditional policy of the Democratic Party.

Consequently, I strongly urge you to support the Appropriations Committee on this matter when it reaches the Floor.

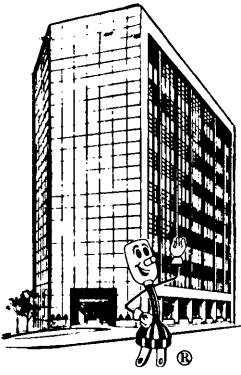
Sincerely,


Secretary of the Interior

Honorable Daniel Inouye
House of Representatives
Washington 25, D. C.

P.S. If you cannot see your way clear to support the Committee position--or have any questions or reservations--please call me so that we can "reason together" on this vital issue.

SLU



2000 FLORIDA AVE., N.W. • WASHINGTON 9, D. C. • COLUMBIA 5-7400

SEP 12 1961

September 11, 1961

Honorable Daniel K. Inouye
U. S. House of Representatives
Washington 25, D. C.

Dear Mr. Inouye:

I am enclosing excerpts from a speech I made Saturday at Limon, Colorado on the transmission lines for the Upper Colorado River Storage Project.

I sincerely hope you can vote for the all-Federal transmission system when the Public Works Appropriation bill is considered by the House on Tuesday.

Sincerely yours,

A handwritten signature in cursive script that reads "Clyde T. Ellis".

Clyde T. Ellis
General Manager

CTE:fmp

Enclosure

Excerpts of remarks of Clyde T. Ellis, General Manager, National Rural Electric Cooperative Association, at Annual Members' Meeting of Mountain View Electric Association, Limon, Colorado. September 9, 1961

The demands of the power companies to build and control the Upper Colorado River Basin transmission lines are the height of the ridiculous. Just remember these salient facts:

1. The federal Colorado River dams belong to the people.
2. The federal power from the dams belongs to the people, for the consumer-owned municipals and the rural electric systems own as much of the power under the law as they need--and they will need every kilowatt of it since their use is doubling about every 7 years.
3. The people who use the power will repay to the government the cost of the dams, plus the cost of the transmission lines, plus interest. The power companies--all of them Eastern-owned--won't repay a cent.
4. The power companies, who won't use any of the power, are demanding the right to step in between the people and their own power. They are demanding to build the lines and thus set up toll gates and make the people pay through the nose for it. They are telling Congressmen from other states that this low-cost power would help Colorado, Wyoming, Utah, Arizona and New Mexico attract industry and irrigate more land. If the power companies are given the right to elbow their way in here and gobble up the benefits of this low-cost power, it will not be free competitive enterprise as they claim, but will be more like legalized robbery.

If the cost-plus power companies get away with this they could just as logically demand the sole right to haul the ranchers' livestock and crops to market on their own terms --or to haul your children to school at their price. Why it would be almost like making you communicate with your own family through a third party.

Seventy rural electric cooperatives in Colorado, Wyoming, Utah, Arizona and New Mexico are dependent on this power for their rapidly growing usage just to serve the areas they already serve, and they have no other reasonable source.

Moreover, the people served by the rural electric program of the Missouri Basin states would benefit indirectly from the power through mutually advantageous transmission interties.

(over)

The power companies all across the nation are in this fight, propagandizing and lobbying the Congressmen. One House leader who has been there well over a quarter century has stated it is the worst within his memory. The power companies' attitude is like what President Kennedy said about the Russian dictators: What is mine is mine, and what is yours is negotiable.

Both former Secretary of Interior Seaton, a Republican, and present Secretary Udall, a Democrat, have stated that these lines must be built by the Federal Government to deliver the federal power wholesale to the federally sponsored rural electric cooperatives and to the municipally-owned electric systems. They were both right.

Now let's get one thing straight: If the power companies win this battle in the House of Representatives next week, every rancher, and every housewife, and every business, and every profession in Colorado and the other states will be hurt. Your power rates will go up.

Any vote against these self-supporting Colorado River Basin transmission lines is a vote against the rural electrification program and against the people of the United States.

Nothing like this preposterous power company demand has ever happened in America before--and we'd better pray it won't happen this time.

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Congress of the United States
House of Representatives
Washington, D. C.

September 9, 1961

SEP 11 1961

LET'S KEEP THE RECORD STRAIGHT

Dear Colleague:

One of the most controversial issues of this session involves the question "Will private enterprise or the Federal government build the transmission lines for the Colorado River Storage Project?" As members of the Subcommittee on Public Works of the Committee on Appropriations, we have examined voluminous testimony on all sides of this subject, and have come to the firm conclusion that private enterprise, which has stood the acid test of time, can do this job better and cheaper for all concerned. In this issue a very basic principle will be put to the acid test on the floor of the House of Representatives. This is most definitely a case of Federal-versus-private power.

Just to keep the record straight we are sending this letter to every member of the House. At the proper time an amendment will be offered to delete the funds for the controversial transmission lines and we urge your support for the amendment.

The present controversy has now been clearly revealed as one of ideology --rather than economics, engineering, or even concern about the burden on the already over-burdened taxpayers of the nation. Insistence on construction of the all-Federal system -- in the face of a greatly superior alternative proposal by the five electric companies presently serving the area -- also indicates an apparent disregard for the fiscal solvency of America. Approval of the companies' offer would save \$135 million in Federal construction funds over the next few years, which could be spent more properly on vital defense programs in this period of national crisis.

Other major benefits would accrue from the companies' offer. To highlight just a few:

1. It would produce at least \$61 million in Federal taxes and \$107 million in state and local taxes over the 50-year payout period. These would increase to a total of \$105 million in Federal taxes and \$184 million in state and local taxes over the Bureau's 86-year study period.
2. It would pay out the project seven years sooner than the all-Federal proposal, thus providing necessary funds earlier for more irrigation assistance.

3. It would deliver power to preference customers at the same price as the all-Federal system, and in many cases the power would be delivered at points far more convenient for preference customers than under the all-Federal grid.
4. The integrated five-state company proposal would have greater capacity, greater stability, and greater efficiency to meet the present and future power demands of all customers in the area.

Just a few days ago on September 1, the Upper Colorado River Commission -- the organization recognized and approved by an act of Congress in 1949 to supervise the regulation, conservation, and utilization of the waters of the Upper Colorado -- passed a resolution endorsing the companies' offer over the all-Federal scheme. This Commission, representing four sovereign states, is in a better position than any other group to know which plan would be best for all concerned.

Officers of the International Brotherhood of Electrical Workers from the Project area representing several thousand taxpaying union members appeared before our subcommittee in opposition to the all-Federal transmission system.

The American Farm Bureau Federation representing 1,600,000 farm families throughout the United States has taken a firm stand against construction of the all-Federal transmission system of the Colorado River Storage Project as being wasteful, uneconomical and unnecessary.

It has been intimated that construction of these lines by private utilities would cause a "toll gate" to be established which would be against the interests of the preference customers. Nothing could be farther from the truth. The Administrators of Bonneville Power Administration, Southeastern Power Administration and Southwestern Power Administration all testified before our subcommittee that the wheeling arrangements and resultant coordination of the Federal and private power systems in their respective areas have worked extremely well and to the benefit of all concerned. Let us have the same type of partnership for this region.

The general arguments made by proponents of the all-Federal transmission grid concerning perpetual rent, yardsticks, utilities' control of the project, and so forth are misleading and are charged with emotion rather than reason. Any fair and well informed person can plainly see these arguments are intended to hide the grand design for an all-engulfing federalized giant power grid completely covering the nation. The threat of a federalized giant power grid is not a figment of imagination; it is here; this is a major leg of it.

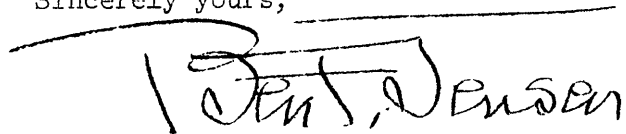
We are sure you will agree that if federalization of the electric utility industry comes, then federalization of farming, retailing and all other businesses in America cannot be far behind.

If it were possible to put this proposition fairly and squarely to the people of the region affected, there is no question in our minds but that the people would overwhelmingly be against the all-Federal transmission system.

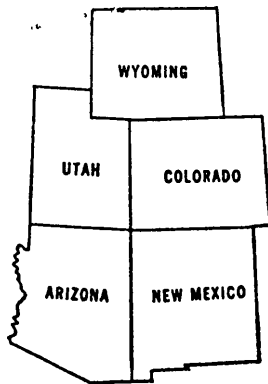
The issue of Federal-versus-private power is crystal clear. The offer of the five taxpaying electric companies is indisputably much more beneficial for all taxpayers, preference customers and irrigators.

Therefore, we sincerely urge you to join us in voting for the amendment to reject the all-Federal transmission grid when the Public Works Appropriation Bill is considered on the floor of the House.

Sincerely yours,

A handwritten signature in cursive script, reading "Tom Jensen". The signature is written in dark ink and is positioned below the "Sincerely yours," text. A horizontal line is drawn above the signature.

A handwritten signature in cursive script, reading "John Riley". The signature is written in dark ink and is positioned below the signature of Tom Jensen. A horizontal line is drawn below the signature.



HARVEY F. McPHAIL
Executive Director

Colorado River Basin Consumers Power, Inc.

ROOM 202, 343 SOUTH STATE ST.

SALT LAKE CITY 11, UTAH

ELgin 9-3144

SEP 7 1961

September 6, 1961

The Honorable Daniel K. Inouye
U. S. House of Representatives
House Office Building
Washington 25, D. C.

Dear Congressman Inouye:

Five power companies are flooding Congress with untrue statements in an all-out effort to defeat the appropriation of funds for Colorado River Storage Project transmission lines.

If this lobbying effort is successful, these five companies will install "toll-gates" in the Project and thereby control the flow of electricity among the consumer-owned power systems of seven western states affecting millions of people. These companies will reap large profits from this billion dollar Reclamation project which otherwise would repay the government loan and develop the natural resources of the Upper Colorado River Basin -- including farm and domestic water supplies, fish and wildlife, flood control, soil conservation, and many others.

Republican Secretary of the Interior Fred Seaton rejected their wheeling proposal. Democratic Secretary Stewart Udall rejected their proposal. The Bureau of Reclamation rejected their proposal. So did two independent consultants (one a retired employee of Idaho Power Company -- the other a consultant for private power companies) employed by former Secretary Seaton to analyze the wheeling proposals. They did so because the companies' proposals would unnecessarily raise project costs by \$254,000,000, would adversely affect consumer power rates, would imperil payout of the project, and would reduce assistance to irrigation.

The Colorado Water Conservation Board, representing the State most heavily involved in the Storage Project, concluded that construction and control of project transmission lines by these companies "would be greatly detrimental to the future water resources development of this state." The Upper Colorado River Commission, whose duties pertain principally to water studies, also insists that the companies' proposals not be adopted if they "adversely affected" project repayment and consumer power rates "when compared with other methods of energy transmission."

Our organization, the Colorado River Basin Consumers Power, Inc., comprises 70 REA's and 85 municipal electric systems, which will purchase all of the project's electricity. Our engineers and consultants have shown that the power companies' proposals would prevent scheduled repayment of the government loan without raising electric rates -- and the Bureau's proposed wholesale price of 6 mills per kilowatthour is one of the highest rates in the country for government generated hydroelectric power!

The sole dissenting studies come from the utilities who would profit -- and without a single independent consultant concurring in their self-serving assertions.

....The companies claim their proposal would make it unnecessary for the government to spend \$136 million. They fail to state that the total cost of the Bureau's transmission system will be repaid, with interest, and that the public will own a valuable revenue yielding asset -- as opposed to having a drawer full of rent receipts and an obligation to perpetually pay a heavy toll to the companies.

....They say that their proposal will save \$184 million in interest for the government. However, they fail to say that the Federal investment would be made at minimal interest cost whereas interest on the utility investment would be much higher. The truth is that the consumer would pay the higher interest under the utilities' proposal.

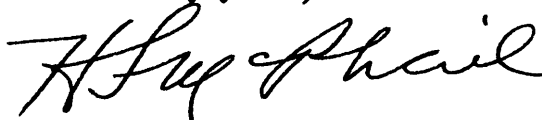
....The companies claim their plan would provide a stronger system with more reserve capacity. Actually, what the companies really want is to integrate their lines with the government's lines in order to gain most of the benefits.

....Their claim that they will pay large Federal, State and local taxes is grossly overstated. They fail to state that all such tax payments will come from the consumer, that the consumers' rates will be inflated by such taxes, and that since the companies are going to build their lines for their own purposes, such taxes will be payable anyway.

....All studies, other than the self-serving material of the utilities, conclusively show that construction of the all-Federal system will insure power at least cost to the consumer while providing maximum irrigation assistance.

We urge that you vote for the appropriations requested by the Bureau of Reclamation to begin construction of the all-Federal transmission system for the Colorado River Storage Project.

Sincerely yours,



H. F. McPhail
Executive Director

WAYNE N. ASPINALL, M.C.
FOURTH DISTRICT
COLORADO

HOME ADDRESS:
PALISADE, COLORADO

SECRETARIES:
HARRIET M. SHERIDAN
NORMA BLEVINS
LEE MCELVAIN

COMMITTEES:
INTERIOR AND INSULAR AFFAIRS
JOINT COMMITTEE ON ATOMIC ENERGY

Congress of the United States
House of Representatives

Washington, D. C.

September 6, 1961

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Dear Dan:

This note is addressed to you as a fellow Democrat who has come to Congress since the passage of the Colorado River Storage Project Act of 1956.

I do not have the courage to try to explain to you this great reclamation project in a single letter which in itself must be very short. The project is primarily an irrigation project with a substantial amount of power, a small amount of flood control, municipal water, and recreational benefits. The Act authorizes the Federal construction of the necessary basic transmission lines.

Presently there is a controversy as to the extent the Federal government will be permitted, through authorized appropriations, to construct the basic transmission lines. There are those on both sides of the controversy who would make this a public power vs. private power fight. This is not the case. Neither is it a fight over local transmission lines, since the House Report accompanying the bill suggested, wherever in the best interests of the project, that agreements be entered into with private utilities for wheeling in market areas. What is involved in this particular matter is the repayment to the Federal government for the costs of construction and the maximum development of the water resources.

I have dedicated my talents and efforts to the successful construction and operation of the Colorado River Project. After extensive study, I am of the opinion that the appropriations requested at this time by the Department of the Interior and approved by the Appropriations Committee, should be retained in the Public Works appropriation bill. I shall appreciate it most sincerely if you are able to support my position.

Sincerely yours,

Wayne
Wayne N. Aspinall

Hon. Daniel K. Inoué

(dictated 9/5/61)
September 6, 1961

Mr. D. W. Reeves, President
Public Service Company of New Mexico
Albuquerque, New Mexico

Dear Mr. Reeves:

I am in receipt of your letter of September 1, 1961, relating to the question of transmission of power from the Colorado River Storage Project. Thank you for sharing your views with me.

Please be assured that I shall study your proposal with earnestness.

Sincerely,

DANIEL K. INOUE
Member of Congress

DKI:sb

Public Service Company of New Mexico



ALBUQUERQUE, NEW MEXICO

September 1, 1961

SEP 2 1961

The Honorable Daniel K. Inouye
U. S. House of Representatives
Washington 25, D. C.

Dear Mr. Inouye:

In the near future Congress will be asked to decide the question of transmission of power from the Colorado River Storage Project. The investor-owned utilities within the power market area of the Colorado River Storage Project believe the combination Federal-private transmission system, as proposed by the utility companies, is the best solution and in the best interests of the project, the region, and the Federal Government.

In 1956, when Congress authorized the Project, the Bureau of Reclamation was directed to cooperate with the investor-owned utilities and to use existing and planned utility transmission lines in the area to develop a transmission system to market "incidental power" from the project. Power from the project is "incidental" to irrigation, and the power revenues are to be used to repay the Federal expenditures and to provide funds for authorized and planned reclamation projects.

As requested by Congress, the investor-owned utility companies submitted wheeling offers to the Bureau of Reclamation to wheel project power to the "preference" customers. Acceptance of the wheeling offers would combine private lines with certain basic Federal lines, which Congress has authorized for construction, and would provide a combination Federal-private transmission system.

The wheeling of power is accepted practice in the utility industry. There is an established history of wheeling between the Bureau and each of the companies offering to wheel Colorado River Storage Project power. Under the wheeling contracts, all rights of the Bureau and the "preference" users would be fully protected by contract and the Bureau's control of its own operations would not be impaired. The utilities could not control the project in any manner.

The power marketing agencies of the Department of Interior have wheeling contracts with many investor-owned utilities, i.e. the Southeast Power Administration has wheeling contracts with Georgia Power Company, Carolina Power & Light Company and other private companies in the South. The Southwest Power Administration has wheeling contracts with Texas Power & Light Company and other companies. In testifying before the House Subcommittee on Appropriations this year, the Administrator of the Southwest Power Administration detailed the many benefits of wheeling contracts.

For many years the utilities have provided adequate and efficient electric service in this five-State area. We can assure Congress that we will provide the same high quality of service in wheeling power for the Bureau of Reclamation. Also, the utilities will pay all local taxes including property taxes and Federal and State income taxes on revenues received from wheeling.

Competent engineering and economic evaluations prove the "preference" customers will receive the same amounts of project power at the same power rates under either proposal. Construction of the combination Federal-private system will make the most funds available to the participating irrigation projects.

The utilities' proposal complies fully with Congressional policy and directives not only for this project, as outlined in House Report 1087, but for all areas of governmental power operations. In contrast, an all-Federal system for this five-State area would represent a departure from Congressional policy. The all-Federal system would, for the most part, duplicate existing or planned transmission facilities of the investor-owned companies which Congress has in the past steadfastly opposed.

As an example, and with specific reference to the State of New Mexico, our company has under construction a 230 kv transmission line from Four Corners to Albuquerque, scheduled for completion in early 1963. The Bureau has requested funds to build a duplicating transmission line between these same two points, contrary to the recommendation of their own consultants who stated to the Bureau on November 12, 1960: "Lines to be constructed by New Mexico Public Service Company between Albuquerque and Four Corners will eliminate the need for the 230 kv line proposed by the Bureau between these points and the capital investment in Federal facilities will accordingly be reduced."

Investor-owned transmission facilities will be in service well in advance of the date that power will be available from the project; i.e., our company will complete construction of the transmission line previously mentioned, in which there will be ample capacity for the "preference" customers, in the second quarter of 1963, and project power will not be available in the Albuquerque area before the second quarter of 1964.

When the appropriations bill comes to your attention, we earnestly request your help in seeing that the Bureau of Reclamation is directed to cooperate with our Company and to use existing and planned utility transmission lines to distribute Colorado River Storage Project power.

Respectfully,



D. W. Reeves
President

DWR/ys

September 5, 1961

Mr. Philip E. Spalding
Chairman of the Board
Hawaiian Electric Company
Honolulu, Hawaii

Dear Mr. Spalding:

I am in receipt of your telegram of August 31, 1961, in re the Colorado River Project. Thank you for sharing your views with me on this matter.

I should, with all candidness, advise you that my very good friend and mentor, Representative Wayne Aspinall of Colorado, is pushing this matter with great vigor.

Aloha,

DANIEL K. INOUE
Member of Congress

DKI:sb

RCA



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CONGRESSMAN DANIEL INOUYE HOUSE OFFICE BUILDING
WASHINGTON DC =

RE BUREAU RECLAMATION REQUEST FUNDS ALL-FEDERAL
TRANSMISSION GRID COLORADO RIVER PROJECT CONSIDER THIS UTTER
EXTRAVAGANCE AND NEEDLESS NON-DEFENSE EXPENDITURE STOP
IN VIEW PROJECTED BUDGET DEFICIT TRUST YOU WILL OPPOSE STOP PERSONALLY
FEEL ALL SUCH NON-PRODUCTIVE EXPENSEITURES SHOULD BE SHELVED
AT THIS TIME

PHILIP E SPALDING CHAIRMAN OF THE BOARD
HAWAIIAN ELECTRIC COMPANY

CFM HA354 DANIEL INOUYE

APR 29 31 PM 5 46
EASTERN STANDARD TIME

COMMUNICATIONS, INC.
SERVICE OF RADIO CORPORATION OF AMERICA
1812 M STREET, N.W. TEL. FE. 8-7500



RCA COMMUNICATIONS
A SERVICE OF RADIO CORPORATION OF AMERICA
1812 M STREET, N.W. TEL. FE. 8-7500



UPPER COLORADO RIVER COMMISSION

355 South Fourth East Street

Salt Lake City 11, Utah

September 2, 1961

SEP 5 1961

COPY

Hon. Clarence Cannon, Chairman
Committee on Appropriations
House of Representatives
Washington, D. C.

Dear Congressman Cannon:

After having received assurances from the five investor-owned electric utilities of the Upper Colorado River Basin area that the utilities will reduce their charges for transmitting electrical energy to preference consumers after the utilities' capital investments in transmission facilities used for wheeling have been amortized, or after the initial fifty-year period of wheeling, whichever is earlier, to actual costs of ad valorem taxes and operation, maintenance and replacement, the Upper Colorado River Commission adopted the enclosed resolution endorsing the combination transmission system proposed by the investor-owned utilities for transmitting electric energy to be generated by the Colorado River Storage Project.

The resolution was adopted by the Commission at a Special Meeting on September 1, 1961.

Sincerely yours,

Ival V. Goslin
Chief Engineer & Secretary

IVG:ag

Enclosure

RESOLUTION

of the

UPPER COLORADO RIVER COMMISSION

WHEREAS, the Congress exercises the policy making power of The United States; and,

WHEREAS, Congress authorized and ratified an interstate compact among the States of Arizona, Colorado, New Mexico, Utah and Wyoming which created a Commission representing Colorado, New Mexico, Utah and Wyoming to supervise the regulation, conservation and utilization of the waters of the Upper Colorado River Basin; and,

WHEREAS, the Legislature of each of said five States ratified said Upper Colorado River Basin Compact; and,

WHEREAS, the chairman of said Commission is appointed by the President of The United States; and,

WHEREAS, the Commissioners are appointed by the Governors of the said four States - each Governor naming one Commissioner to serve at his pleasure; and,

WHEREAS, the utilization of the waters apportioned by said Compact for the generation of hydro-electric energy is subservient to the use and consumption of such waters for agricultural and domestic purposes; and,

WHEREAS, the regulation, conservation and utilization of the waters of the said Basin requires the construction of both storage projects and participating projects; and,

WHEREAS, this development is implemented by the enactment of Public Law 485, 84th Congress, an Act authorizing the Colorado River Storage Project and participating projects; and,

WHEREAS, said projects will generate electric energy which will be marketed; and,

WHEREAS, the revenues from such marketing must repay the construction costs of said storage projects including electric facilities and a portion of the construction costs of said participating projects; and,

WHEREAS, the early development of the participating projects is of great importance to the progress and welfare of the Upper Basin States; and,

WHEREAS, at the Hearings of the House and Senate Interior and Insular Affairs Committees in 1954 and 1955 on the authorization for the construction of said Colorado River Storage Project and participating projects, the investor-owned electric utilities offered to wheel Storage Project power to preference users over their transmission systems; and,

WHEREAS, the Congress in House Report No. 1087, 84th Congress, 1st Session expressed favorable interest in these proposals and stated at page 17:

"The Department of the Interior advised the committee that it was sympathetic to the private companies' proposal and indicated that the suggestions would be given studied consideration if the Project were authorized. Therefore, the committee expects the proposal by the private power companies for cooperation in the development to be carefully considered by the Department of the Interior and the electric power and energy of the Project to be marketed, so far as possible, through the facilities of the electric utilities operating in the area, provided, of course, that the power preference laws are complied with and Project repayment and consumer power rates are not adversely affected.";

and,

WHEREAS, under the provisions of law certain parties are entitled to a preference for the purchase of project electric energy at the price established by the Secretary of the Interior; and,

WHEREAS, in the Upper Colorado River Basin investor-owned and Federal transmission lines serve both preference and private users; and,

WHEREAS, the investor-owned utilities have proposed a combination transmission system with certain lines to be constructed and operated by the Federal Government and the remaining lines to be provided by the investor-owned utilities with wheeling service for Colorado River Storage Project energy over such lines to specified load centers; and,

WHEREAS, according to recent tables submitted by the Bureau of Reclamation changing from the "yardstick" to the "modified" system thereby increasing the number of delivery points from 15 to 24, the irrigation assistance to States has been reduced approximately fifty million dollars; and,

WHEREAS, the controversy over the construction of transmission lines has been exceedingly detrimental to reclamation and must be resolved quickly on merit alone; and,

WHEREAS, the Upper Colorado River Commission believes that the investor-owned utilities after their capital investments in wheeling facilities have been amortized should adjust their wheeling charges to cover only ad valorem taxes on such transmission facilities, plus operation, maintenance and replacement costs actually incurred; and,

WHEREAS, such reduced wheeling charges would substantially increase the revenues available for the Basin Fund as compared with the originally proposed "combination" system; and,

WHEREAS, the Upper Colorado River Commission has the direct responsibility to protect the adequacy and integrity of said Basin Fund above other considerations:

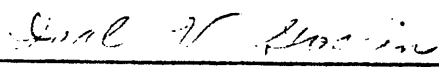
NOW, THEREFORE, BE IT RESOLVED, that the Upper Colorado River Commission, having obtained from the investor-owned utilities firm assurance that they will enter into agreements with the Bureau of Reclamation for bona fide wheeling contracts in which the utilities will limit their wheeling charges after their capital investments in said transmission facilities have been amortized or after the initial fifty-year period, whichever is the earlier, to cover only actual ad valorem taxes and actual operation, maintenance and replacement costs on transmission facilities associated with such wheeling contracts, endorses the combination proposal of the investor-owned utilities, provided that the Congress determines that under such proposal the project repayment and consumer power rates are not adversely affected when compared with other methods of energy transmission; and,

BE IT FURTHER RESOLVED, that the Commission advise the Congress of this endorsement and that the Chief Engineer and Secretary of the Commission is directed to transmit copies of this resolution to members of the Appropriations Committees of both Houses of Congress and to other interested parties.

CERTIFICATE

I, IVAL V. GOSLIN, Chief Engineer and Secretary of the Upper Colorado River Commission, do hereby certify that the above and foregoing Resolution was duly passed and approved by the Upper Colorado River Commission at a regularly called meeting of said Commission held at Denver, Colorado, on the 1st day of September, 1961.

WITNESS my hand this 1st day of September, 1961.

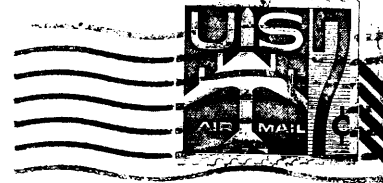


Ival V. Goslin
Chief Engineer & Secretary



UPPER COLORADO RIVER COMMISSION

355 South Fourth East Street / Salt Lake City 11, Utah



Via Air Mail

Hon. Daniel K. Inouye

House of Representatives

Washington, D. C.



PUBLIC SERVICE COMPANY OF COLORADO
DENVER, COLORADO

R. T. PERSON
PRESIDENT

September 1, 1961

The Honorable Daniel K. Inouye
House of Representatives
Washington 25, D. C.

SEP 5 1961

Dear Congressman Inouye:

Shortly you will be considering the Public Works Appropriation Bill for fiscal year 1962. Our Company feels that it is important that you understand our viewpoint concerning the funds requested in this bill for the construction of transmission facilities associated with the Colorado River Storage Project.

Our historical policy in support of multi-purpose water development projects remains steadfast and can be summarized as follows: We recognize that water is one of our vital resources and its proper utilization, conservation and development is inseparably linked to the continuing growth and economic progress of this region. To the extent that electric generation can contribute to the feasibility of water resource improvement, it is quite logical and proper that it become an adjunct to such development.

We further believe that maximum use of existing and proposed transmission facilities of area power suppliers should be used to minimize the cost of multi-purpose projects and maximize opportunities for tax revenues at the local, state and national level.

Tangible evidence of our willingness and ability to carry out these basic beliefs is contained in our long-standing and recently renewed wheeling agreement in connection with the Colorado-Big Thompson Project. In this instance, the use of our transmission system together with government facilities eliminated the construction costs attributable to approximately 500 miles of transmission line. It is an expansion of this principle of cooperation that is contained in the five-company proposal for a combination transmission plan for the Colorado River Storage Project.

Notwithstanding the obvious benefits, we find a strange reluctance in some governmental circles to accept investor-owned utility cooperation in achieving the above objectives. I would like to call your attention to the fact that the companies' proposal for a combination transmission system, containing both private and Federal lines for the Colorado River Storage Project, is completely in line with established congressional policy with regard to the marketing of Federal power. Proposals by the Department of the Interior to construct all-Federal power systems in the past have time and again been rejected by Congress.

In summary, the investor-owned utilities' proposal for a combination transmission system in connection with the Colorado River Storage Project offers the following advantages:

- 2 -

...The companies' proposal would make it unnecessary for the government to spend \$136 million, thus benefiting taxpayers to this extent since lower power investment means quicker payout and less interest.

...The companies' plan would provide a stronger, more reliable, better integrated system with more reserve capacity than the all-Federal system.

...The companies' plan would provide more irrigation assistance than the all-Federal grid.

...Under the companies' proposal power could be delivered to preference customers for the same six mill rate now estimated by the Bureau of Reclamation for the all-Federal system.

...The all-Federal grid would not serve one additional preferred customer that would not be served under the companies' proposal.

In addition to the above advantages, the utilities' proposal would generate over \$100 million in taxes to the Federal Government and \$184 million to state and local governments in the 86-year payout period. An all-Federal transmission line system would not produce this tax benefit and would actually destroy a significant tax potential

I sincerely hope you will support our proposal and in so doing, you will approve appropriations for the non-controversial lines for which money was appropriated last year; and that you will oppose appropriations for the lines that are in controversy.

Cordially,

A handwritten signature in cursive script, appearing to read "D. L. Peterson". The signature is written in dark ink and is positioned below the word "Cordially,".

ARIZONA *Public Service* COMPANY

P. O. BOX 2591 • PHOENIX, ARIZONA

WALTER T. LUCKING
PRESIDENT

August 31, 1961

Hon. Daniel K. Inouye
U. S. House of Representatives
Washington 25, D. C.

SEP 5 1961

Dear Mr. Inouye:

I am sure you are giving more consideration than ever before to how the nation is going to finance our foreign aid commitments and our defense and domestic programs.

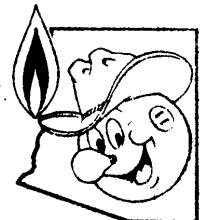
Americans are willing to make sacrifices for national security, but we are relying on Congress to provide the financial responsibility and integrity that will be imperative if we are to keep our "non-defense spending" in proper perspective.

A current example of unnecessary non-defense spending is the matter of Colorado River Storage Project transmission lines, which is now before Congress.

Our company is among the five utilities in the Rocky Mountain area who have offered to deliver power from these dams to customers of the Bureau of Reclamation. The Bureau has rejected our offer, and is now seeking Congressional appropriations to build these transmission lines.

Here are just a few of the many advantages to be gained by the Federal government and the people of the area if the utilities' wheeling offer were to be accepted:

1. It would save the Federal government \$134 million in capital investment.
2. This reduced investment means a saving of \$186 million in Federal interest payments.
3. Preference customers (under Reclamation law) would pay the same rate as indicated by the Bureau.

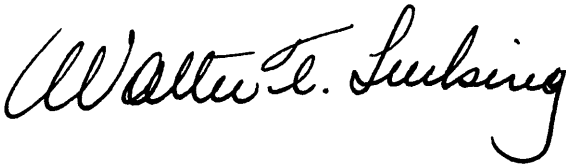


August 31, 1961

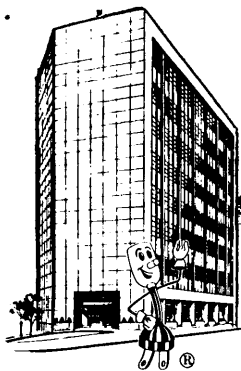
4. Our offer would make \$846 million available for irrigation assistance compared with \$832 million under the Bureau plan.
5. Out of wheeling revenues, the utilities would pay \$105 million Federal income taxes. On our investment, we would pay another \$184 million in state and local taxes.

In these trying times, the nation's taxpayers are looking to Congress to conserve our economic resources for essential governmental programs. Along these lines, I hope you will oppose the appropriation of funds to build an all-Federal transmission system, because the utility wheeling offer will provide the greatest benefits to a reclamation project which has already been authorized.

Sincerely,



WTL:if



NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

2000 FLORIDA AVE., N.W. • WASHINGTON 9, D. C. • COLUMBIA 5-7400

August 21, 1961

Honorable Daniel K. Inouye
House Office Building
Washington 25, D. C.

AUG 22 1961

Dear Mr. Inouye:

In a few days the Congress will be called upon to make an important decision affecting the use of America's natural resources in the Upper Colorado River Basin. Your support is earnestly requested.

The issue is this: Should the Bureau of Reclamation build and operate all of the basic major transmission system (no distribution lines to retail users) that will take the electricity from the big Upper Colorado dams to the load centers; or should power companies build a part of the system thus giving them toll-gate control of the output from the project?

When the Upper Colorado project was conceived, the Congress decided it was a job for the Bureau of Reclamation. The Bureau was authorized to build the dams and the major transmission system needed to make the most efficient use of the project.

President Eisenhower's Interior Secretary recommended that it was in the public interest to have the basic major transmission system publicly built and operated. President Kennedy's Interior Secretary concurred.

The membership of the National Rural Electric Cooperative Association has officially voted resolutions supporting the publicly built and operated basic major transmission system.

Now, funds are needed to enable the Bureau of Reclamation to finish the job it has started. Every dime of this transmission cost will be repaid with interest by the purchasers of the power -- some 70 electric co-ops, many municipally-owned systems and several power companies. We strongly urge you to support this plan with your vote and influence when the Congress takes up the Public Works Appropriation Bill.

Enclosed are maps of the area which indicate why it is in the public interest to support this Bureau of Reclamation major transmission lines -- just as has been done for several other areas of the country.

Sincerely yours,

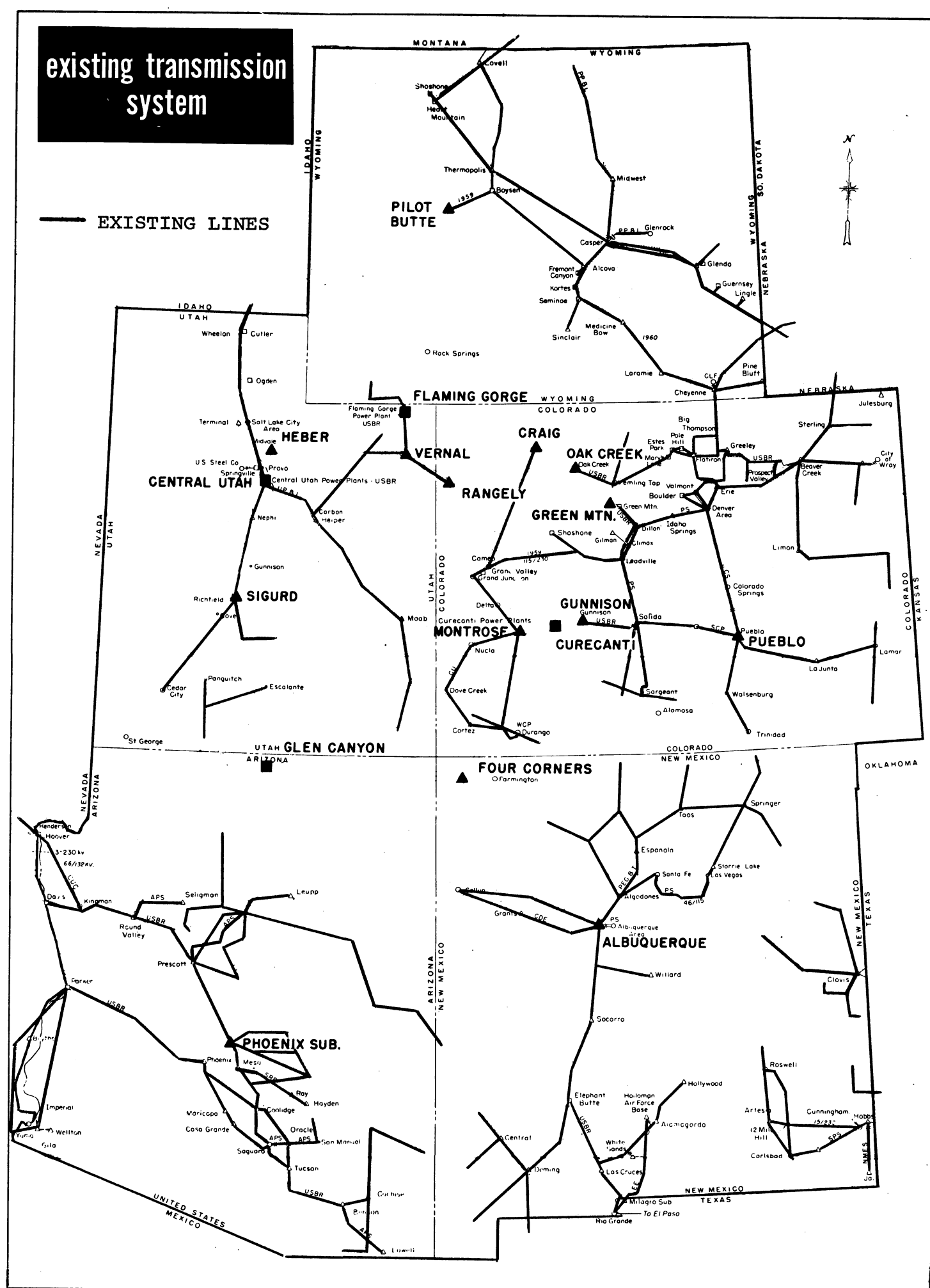
Clyde T. Ellis
Clyde T. Ellis
General Manager

CTE:jeg
Enclosures

LOW COST ELECTRIC POWER FOR RURAL AMERICA

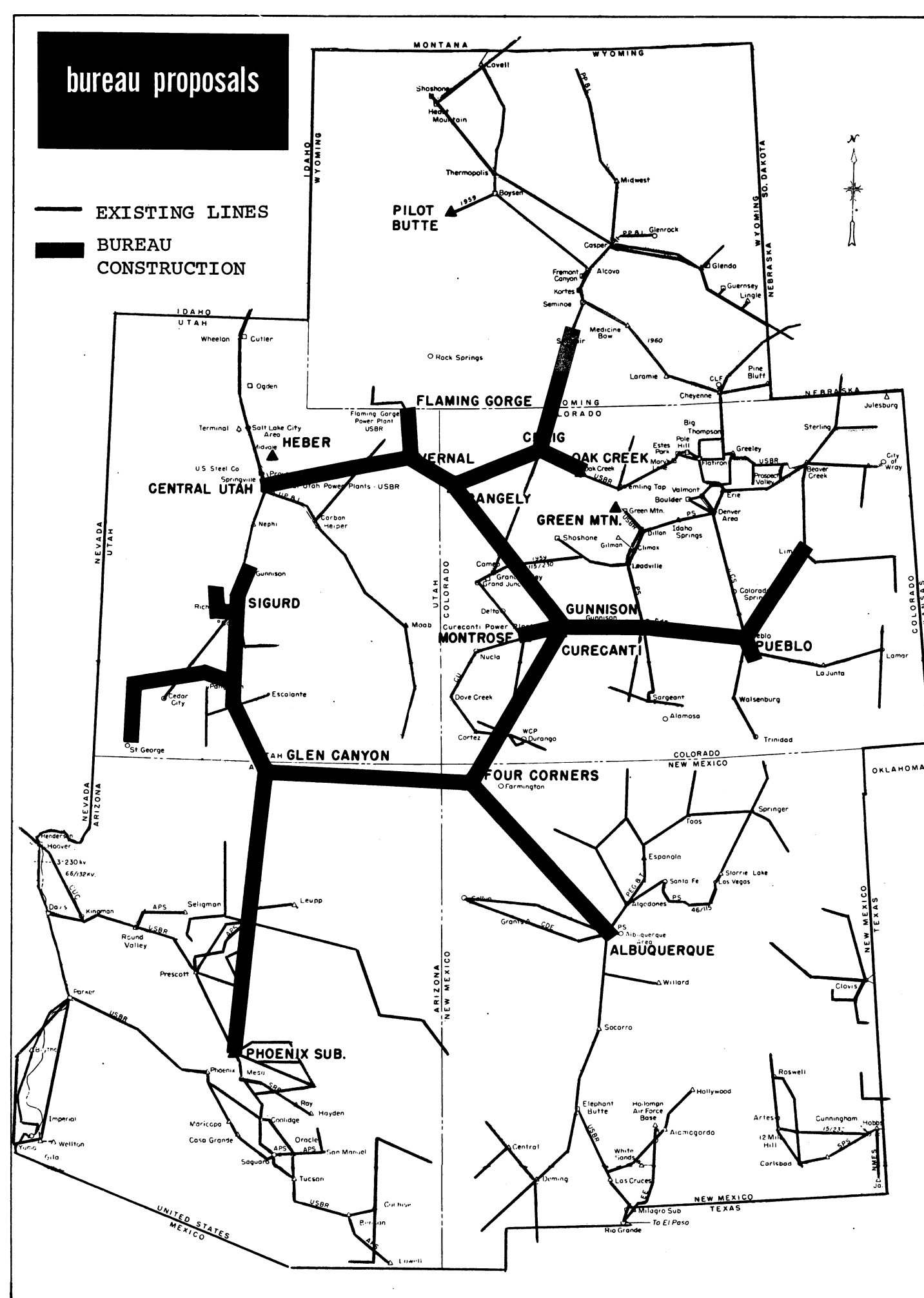
THE COLORADO RIVER ISSUE: PRIVATE OR PUBLIC CONTROL OF U.S. RESOURCES

COLORADO RIVER STORAGE PROJECT



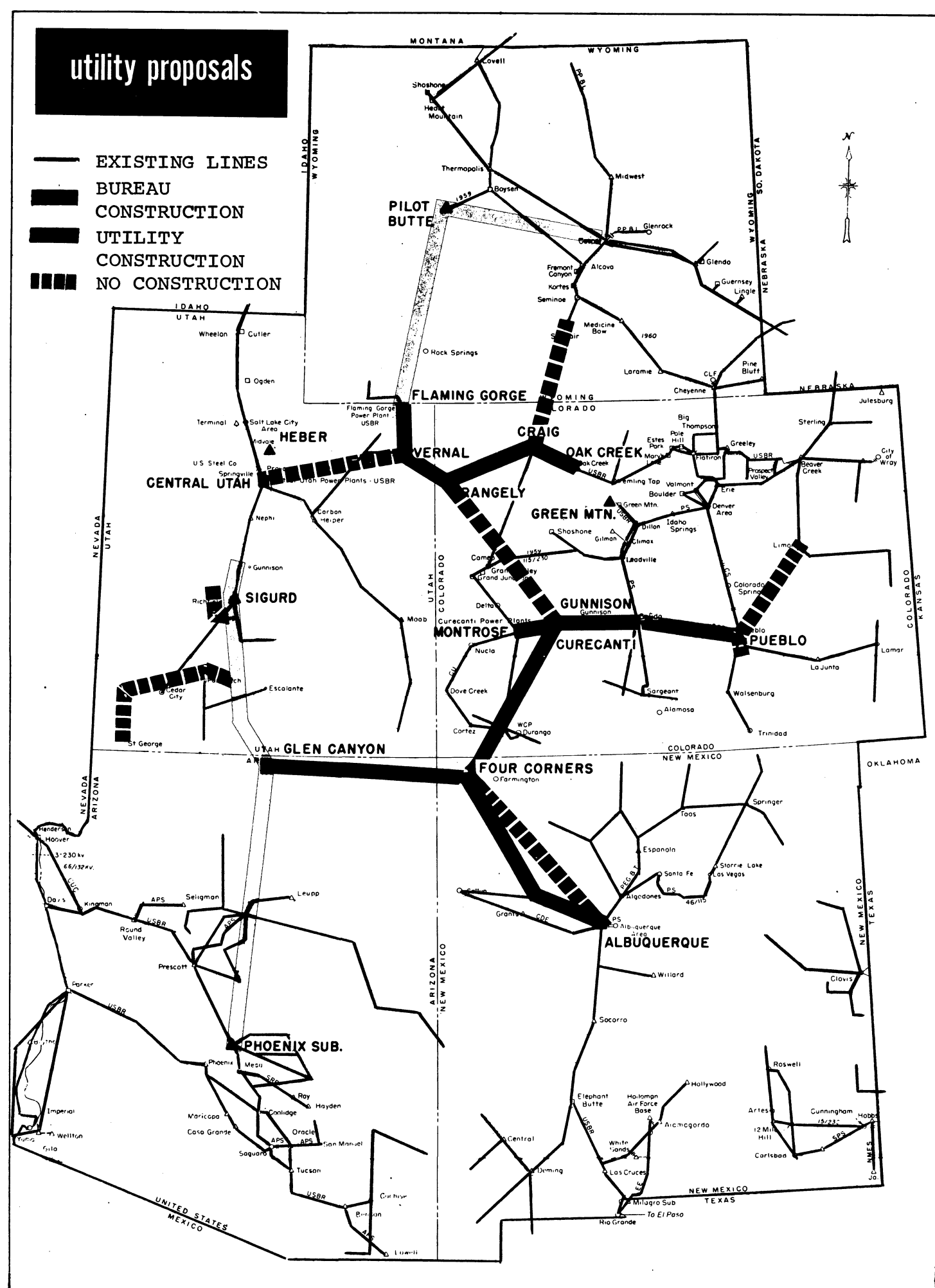
EXISTING SYSTEM IS A HODGE-PODGE

This exhibit displays the existing transmission lines, 69 Kv and above in the CRSP Federal, preference customer and investor owned. It should be noted that no efforts have been made by the private utilities to interconnect their systems.



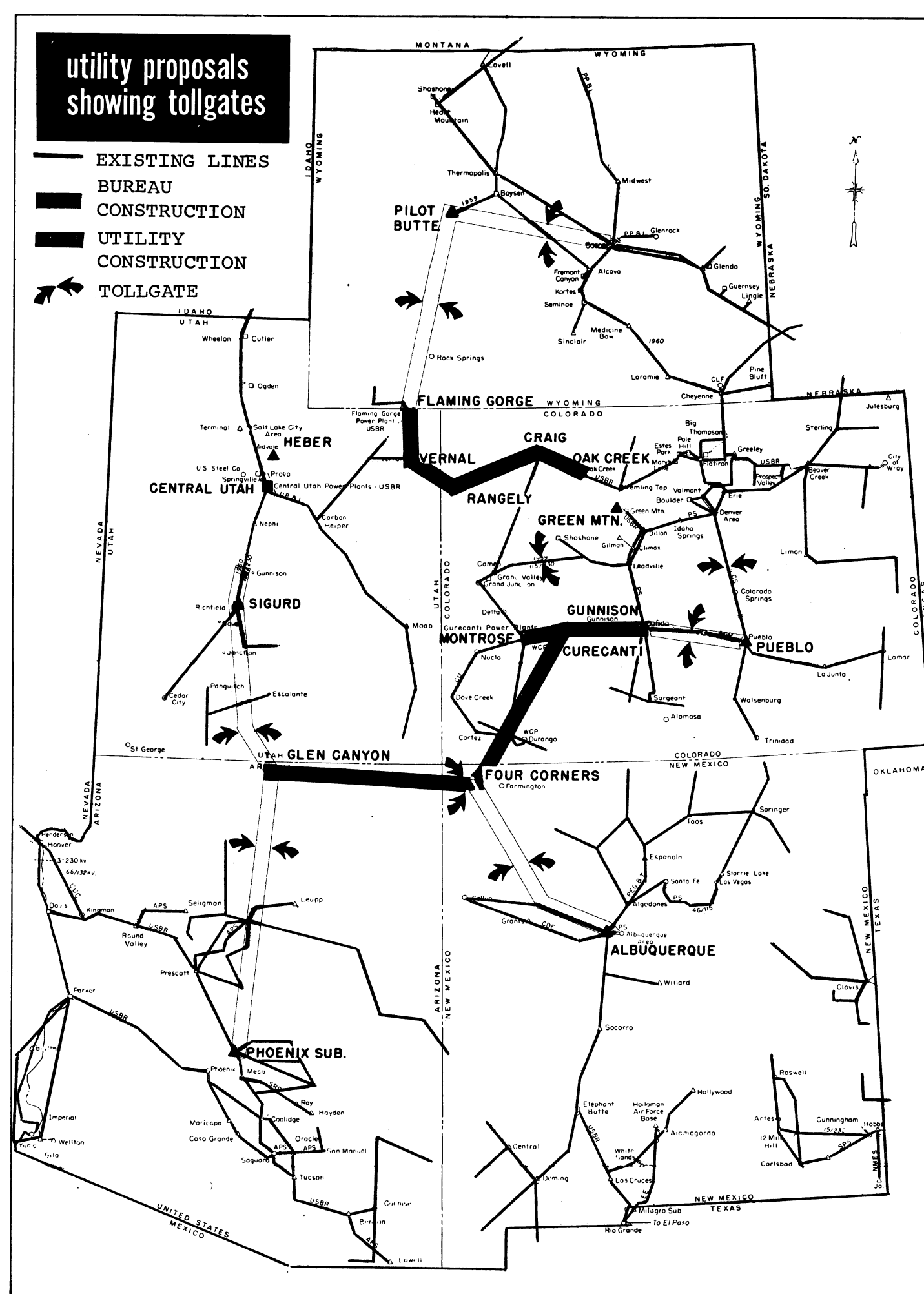
This exhibit displays the comprehensive system proposed by the Bureau of Reclamation for interconnecting the generating sites with the load centers in the CRSP. It should be noted that this proposal will effectively inter-tie the CRSP with the Hoover-Parker-Davis system and with the extensive Bureau system in Wyoming, and that there is absolutely no duplication of facilities in this proposal.

BOTH SEATON AND UDALL SUPPORT FEDERAL SYSTEM ON MERITS



UTILITIES PROPOSE TO BUILD AND CONTROL KEY LINES . . .

This exhibit displays the utilities' proposal for transmission lines in the CRSP. It should be noted that the transmission lines that the utilities wish to build themselves will cut off the generation centers from the load centers.



. . . CREATING POWER TOLLGATES TO UP CONSUMER COSTS.

This exhibit shows the toll gates with which the private utilities will put a strangle hold upon the CRSP. As an illustration of this, as many as four tolls may be collected by the private utilities for transferring power from Glen Canyon to the Bureau system in Wyoming.

UTAH POWER & LIGHT COMPANY

P. O. BOX 899
SALT LAKE CITY 10, UTAH

August 29, 1961

Colorado River Basin
AUG 30 1961

E. M. NAUGHTON
PRESIDENT & GENERAL MANAGER

The Honorable Daniel K. Inouye
United States House of Representatives
House Office Building
Washington 25, D. C.

Dear Mr. Inouye:

Here in the Intermountain area the Bureau of Reclamation, under the Colorado River Storage Project Act, is constructing a water development project that will cost over a billion dollars.

Before the Appropriations Committee of the House of Representatives is the Bureau of Reclamation's request for funds to start construction of electric transmission lines (which the Bureau estimates will ultimately cost \$183 million) for the purpose of delivering electricity from Project plants to preference customers in the states of Wyoming, Utah, Colorado, New Mexico and Arizona. Most of these preference customers are now being served by investor-owned utilities. About two-thirds of these lines, estimated to cost about \$135 million, are not necessary because the investor-owned utilities have offered to transmit power over their existing and planned lines for firm and reasonable "wheeling" rates.

The arrangement proposed by the utilities to transmit Bureau power is quite common and is the same type that has been entered into between private utilities and the Southwest Power Administration and the Southeastern Power Administration as well as in other areas. The proposed plan is consistent with the intent of Congress not to appropriate funds for transmission facilities when suitable wheeling contracts can be entered into with private utilities.

The Colorado River Storage Project is a water development project. The generation of electric power is its secondary purpose and revenues from the sale of energy must first pay for the power facilities and then provide money to bring water to land and for other purposes. Therefore, the sooner the electric facilities are paid for the earlier assistance is available for irrigation, etc.

The Bureau of Reclamation has stated it proposes to sell power at certain delivery points for 6 mills per kilowatt-hour on the average. Our studies clearly show that the Bureau can hire the private utilities to transmit the power from Federal generating plants to these delivery points and avoid the necessity of building duplicating lines and realize one of two advantages: (1) pay off the electric facility investment

earlier, thus making available irrigation assistance that much earlier; or (2) lowering its proposed 6 mill rate to preference customers.

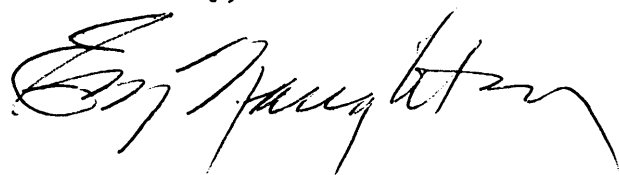
If the Bureau of Reclamation accepts the investor-owned utilities' offer to transmit project power to the Bureau's preference customers, it would result in:

1. A saving to the taxpayers of \$135 million in transmission line construction costs;
2. Making available 57,000 kilowatts more power for sale to preference customers through elimination of heavy transmission line losses on the Bureau's proposed transmission system. Sale of this power at 6 mills would increase project revenues \$1 million per year;
3. Payment of \$1.2 million per year by the private utilities out of revenues for "wheeling" in Federal income taxes and \$2.1 million per year in state and local taxes. The Bureau system would pay none;
4. Repay to the Federal Treasury the heavy cost of the project power facilities at least seven years earlier, thus making money available that much earlier for construction of irrigation or other water projects;
5. Assure the preference customers of better electric service through the use of multi-purpose transmission systems connected to many generating sources all planned to do a total job;
6. Accomplish items 1 through 5 with no needed increase in the Bureau's proposed power rate to preference customers.

In Utah alone the offer of Utah Power & Light Company to the Bureau would save the government \$46 million in transmission construction cost and \$273,000 per year in transmission line loss expense; and at the same time produce \$270,000 per year in income tax payments to the Federal Treasury and \$700,000 per year to state and local treasuries.

We respectfully request that you vote against the appropriation of funds sought by the Bureau of Reclamation to start construction of these transmission lines. We urge that the Bureau of Reclamation be instructed to take advantage of the transmission offers of the investor-owned electric utilities in the area, thus assuring the Project and the people these many benefits.

Sincerely,



EMN:ss

August 1, 1961

Mr. C. Girard Davidson
Western States Democratic Conference
615 Equitable Building
Portland 4, Oregon

Dear Jebby:

Thank you for your letter of July 20, 1961 relative to the construction of Federal transmission lines for the Colorado Basin project and conversion of the Hanford Reactor for dual purpose operation.

Several weeks ago I had the privilege of voting in favor of this, and you may be assured that I shall continue to support this project.

You may count on my help.

Aloha,

DANIEL K. INOUE
Member of Congress

DKI:sb

WESTERN STATES DEMOCRATIC CONFERENCE

615 EQUITABLE BUILDING • PORTLAND 4, OREGON

July 20, 1961

Honorable Daniel K. Inouye
House Office Building
Washington 25, D. C.

Dear Dan:

Construction of Federal transmission lines for the Colorado Basin project and conversion of the Hanford Reactor for dual purpose operation would contribute greatly to the economic health of the United States. The Western States Democratic Conference urges that you support these essential projects and do everything in your power to see that the heavy pressure from special interest groups in opposition to these appropriations does not prevail.

The Platform of the Democratic Party adopted in Los Angeles states that:

"The Republican Administration would turn the clock back to the days before the New Deal, in an effort to divert the benefits of the great natural energy resources from all the people to a favored few. We reject this philosophy and these policies. The people are entitled to use profitably what they already own.

"The Democratic Administration instead will foster the development of efficient regional giant power systems from all sources, including water, tidal, and nuclear power, to supply low-cost electricity to all retail electric systems, public, private, and cooperative."

To keep faith, the Democratic majority in Congress must fulfill this promise and assist President Kennedy in carrying out the natural resources program which he outlined in many campaign speeches and described more specifically in the one at Billings, Montana last September. This thesis was stated anew in the President's Natural Resource message to the Congress last February.

Failure to appropriate funds for the Colorado Transmission Lines at this session of Congress would give private utilities time to construct the profitable sections of the lines. The utilities would then be able to exact a toll in the form of a wheeling charge on Federally generated energy which would, over the years, add hundreds of millions of dollars to the cost of power to consumers. These transmission lines have been recommended not only by the present Secretary of Interior but by his Republican predecessor as well. It is of great importance that this appropriation pass.

Converting the Hanford Reactor in Washington State so that it can generate electricity as well as produce plutonium is likewise essential. Even though this

C. GIRARD DAVIDSON
Chairman
615 Equitable Building
Portland 4, Oregon

MRS. HELEN M. FISCHER
Vice Chairman
304 East 9th Street, Anchorage, Alaska

MRS. S. RAE LOGAN
Secretary
Charlo, Montana

TOM E. BROWN, SR.
Treasurer
P. O. Box 68, Artesia, New Mexico

ROGER KENT
Chairman Executive Committee
212 Sutter Street
San Francisco, California

JUL 21 1961

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304 East 9th Street, Anchorage, Alaska

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Charlo, Montana

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P. O. Box 68, Artesia, New Mexico

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Mrs. Zelma Reeves Morrison, *National Committeewoman*
Herbert Legg, *State Chairman*
Mrs. Francis J. Davis, *State Vice Chairman*

July 20, 1961

Page Two.

item was eliminated from the Appropriations Bill by a non-record vote last week, it has now been restored by the Senate and we hope that the House will sustain this action. Whatever you can do to see that this in fact happens will be gratefully appreciated throughout the West. The failure of the Congress to convert the Reactor would be inexcusable and bring about these results:

- (1) Continued pollution of the Columbia River and damage to its fishing industry through the discharge of this waste heat.
- (2) Forfeit of an increased power supply in excess of that which Bonneville Dam now produces, while many parts of the northwest are depressed areas and this power is necessary to stimulate employment.
- (3) Allowing electric rates to the consumers of the region to rise. The economics of the Reactor's conversion are so favorable that not only would the cost of conversion be rapidly liquidated, but the cost of the electricity produced would be so low that by combining this power with that presently produced, Bonneville could erase the deficit incurred during the past few years and maintain the present Bonneville basic rate.

We therefore respectfully urge that you insist that appropriations for the Colorado Transmission Lines and the conversion of the Hanford Plant for dual purpose use be included in their respective Appropriation Bills at this session of the Congress.

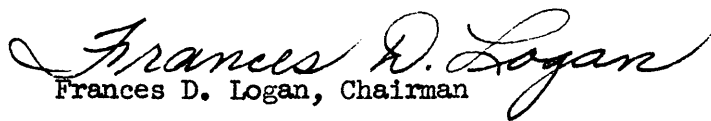
We appreciate your cooperation.

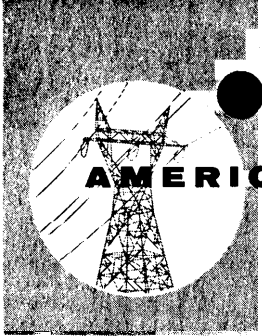
Sincerely,

WESTERN STATES DEMOCRATIC CONFERENCE


C. Girard Davidson, Chairman

NATURAL RESOURCES COMMITTEE


Frances D. Logan, Chairman



AMERICAN PUBLIC POWER ASSOCIATION

919 EIGHTEENTH STREET NW WASHINGTON 6 DC

PHONE: MEtropolitan 8-4215

July 31, 1961

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Wallingford, Connecticut*
- GEN V. YARGER
*Manager, Spencer Municipal Utilities
Spencer, Iowa*

AFFILIATES:

- Arizona Municipal Power Users' Association
- California Municipal Utilities Assn.
- Central Service Assn.
- Colorado River Basin Consumers Power, Inc.
- Colorado Rural Electric Assn.
- Florida Municipal Utilities Assn.
- Illinois Municipal Utilities Assn.
- Indiana Municipal Electric Assn.
- Iowa Assn. of Municipal Utilities
- Kansas Assn. of Municipal Utilities
- Kansas Electric Cooperatives, Inc.
- Massachusetts Municipal Electric Association
- Michigan Municipal Utilities Assn.
- Midwest Electric Consumers Assn.
- Minnesota Municipal Utilities Assn.
- Missouri Assn. of Municipal Utilities
- Municipal Electric Assn. of Massachusetts
- Nebraska Utilities Sec., League of Municipalities
- Northeast Ohio Municipal Electric Assn.
- Northwest Ohio Municipal Electric Assn.
- Northwest Public Power Assn.
- Pennsylvania Municipal Utilities Assn.
- Ruralite Services, Inc.
- Tennessee Valley Public Power Assn.
- Texas Electric Cooperatives, Inc.
- Texas Municipal Utilities League
- Virginia Municipal Electric Power Association
- Washington Public Utility Districts' Assn.
- Wisconsin Municipal Utilities Assn.

AUG 1 1961

Congressman Daniel K. Inouye
House Office Building
Washington 25, D. C.

Dear Congressman Inouye:

The power generating facilities for the Hanford production reactor, included in the Atomic Energy Commission authorizing bill as passed by the Senate (H. R. 7576), represent an economically sound measure to use a valuable, publicly owned energy resource.

Installation of these facilities will make use of 11 million pounds of steam per hour from the reactor which otherwise will go to waste-- enough to create 800,000 kilowatts of low-cost power capacity. The power will be sold by Bonneville Power Administration at its regular rates, and there is a ready market for it in the Northwest.

Revenues from the sale of power will pay back to the U. S. Treasury, with interest, the full \$95 million investment for the power facilities and probably, in addition, a portion of the expenditures already made for the Hanford reactor. The cost to the taxpayers of the generating facilities thus will be zero.

More than half of all Bonneville power goes to private industries and private power companies. Bonneville expects virtually all of the Hanford power to go to these classes of customers for at least ten years.

Our Association fully supports this project because we believe the waste of such a huge energy resource would be unconscionable. In addition, it will enable this country at no net cost to reap the benefits of operating by far the world's largest atomic power plant.

AEC Chairman Glenn Seaborg, a Nobel prize-winner, has strongly recommended the Hanford power project. Former AEC Chairman John McCone, who served under former President Eisenhower, has stated that "the building of the power unit at Hanford is an important thing to do", and that to waste the Hanford reactor heat "would be a vast disservice to the people".

I hope you will support the recommendation of President Kennedy and the Joint Committee on Atomic Energy that the Hanford generating facilities be installed.

Sincerely,

Alex Radin

AR:bt

July 28, 1961

HANFORD REACTOR POWER FACILITIES

FACT SHEET

The New Production Reactor -- to be completed in October, 1962 -- will produce plutonium for weapons and huge amounts of by-product steam. Addition of power facilities at a cost of \$95 million will convert the NPR to a dual-purpose plant producing both plutonium and power, with a power capacity of 700,000 to 800,000 kilowatts equal to about 1½ Bonneville Dams.

Studies by the Federal Power Commission, AEC, General Electric Company and others have established the technical and economical feasibility of a dual-purpose plant. Reasons for authorizing the generating facilities for the NPR include:

1. The tremendous amounts of by-product heat produced by the reactor will be wasted into the Columbia River unless turbine generators are installed. Although invited to do so by former AEC Chairman John McCone, the private power companies have never proposed to make any use of the reactor heat. Adding Federal power facilities is a conservation measure to make use of a major energy resource.
2. The dual-purpose NPR would help offset AEC's enormous power consumption at its installations. Hanford alone will require about 400,000 kw within a few years.
3. The NPR power would be marketed by Bonneville Power Administration. At regular Bonneville rates, the power revenues will be more than enough to cover power operating costs and to pay back the Hanford power investment to the Treasury, with interest. Stating the economic benefits another way, addition of the power generating facilities will reduce the net cost of plutonium to the Government by 30-40%, compared with a single-purpose NPR.
4. The dual-purpose NPR would be by far the largest atomic power plant in the world, 7 to 8 times the size of the largest plant in operation in the Soviet Union.
5. The NPR power is needed in the Pacific Northwest. Unsalable dump hydro can be sold by Bonneville as firm power as soon as the NPR power facilities are assured and result in additional revenues of about \$14 million to the U.S Treasury before the NPR generators even go on the line.
6. Although subject to the preference clause, the NPR power probably will go to private industries and private power companies for at least ten years because Bonneville Power Administration expects to meet preference customer needs with its hydro capacity. In any case, more than half of all BPA power goes to private industries and private power companies. Hence, the benefits of NPR power will be widely shared over the plant lifetime among private industries, and the consumers served by privately, publicly and cooperatively owned electric systems.
7. In the event of an arms control agreement, the \$145 million investment in the reactor would not be wasted, as it would continue to operate to produce about 800,000 kilowatts of power and return revenues to the Treasury.
8. Funds must be authorized and appropriated this year to obtain maximum economic benefits from dual-purpose operation.

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Established in 1931 for Mutual Service and for the promotion of the Proper Use, Enjoyment and Protection of America's Scenic, Wilderness and Outdoor Recreational Resources

1960-1961

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June 28, 1961

The Honorable Daniel K. Inouye
House Office Building
Washington, D.C.

Dear Mr. Inouye:

We feel that honoring a congressional promise made in legislation (the Colorado River Storage Project Act) a few years ago is an important matter--important enough to warrant the attention of busy legislators. We sincerely hope that you agree with us.

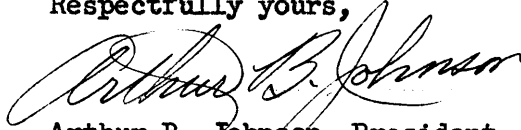
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Although we believe you will find the entire report highly informative, we hope that you will--in any event--take time to study carefully the Conclusion on page 22 and the Cost Estimate that follows. If you can spare a few additional minutes, we are sure that you and your staff will be quite interested in the chapter on construction time, beginning on page 10, and the water problem, beginning on page 12 and continued on page 13.

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Respectfully yours,


Arthur B. Johnson, President

JUL 5 1961

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SOME DAM FACTS ABOUT PROTECTING RAINBOW BRIDGE



Photo by US Bureau Reclamation, Salt Lake City, Utah
Air View, Rainbow Bridge National Monument, Utah

By

ARTHUR B. JOHNSON

Registered Professional Engineer

Fellow, American Society of Civil Engineers



**A Publication of the
Federation of Western Outdoor Clubs, Inc.**



Some Dam Facts About Protecting Rainbow Bridge

By ARTHUR B. JOHNSON

Fellow, American Society of Civil Engineers *

AUTHOR'S NOTE

Research subsequent to the publication of the original article, "Some Dam Facts," in the *Western Outdoor Quarterly*, has produced new and additional data. Space did not permit the inclusion of illustrations in the original. It is felt by both the Federation and the author that this enlarged edition, fully illustrated, is necessary to more fully present pertinent engineering and other features concerning the protection of Rainbow Bridge National Monument against flooding by Glen Canyon Dam. Sufficient engineering data, in language designed for the layman, is given to thoroughly substantiate any opinions stated.

INTRODUCTION

The Colorado River Storage Project Act requires that "— the Secretary of the Interior shall take adequate protective measures to preclude impairment of the Rainbow Bridge National Monument." A heated controversy has developed over the "adequate protective measures."

The time has arrived to view engineering features in the controversy over protective works for Rainbow Bridge National Monument through the impassive eye of an engineer.

Dr. Angus Woodbury's article in the August 26, 1960, issue of "Science Magazine" ignores many engineering facts about a barrier dam at Site C. Also, in a letter to Howard Zahniser he says, "I have no idea of the cost of constructing a 350 foot dam in Aztec Canyon at Site C but I do have some idea of the problems involved. They are so fantastic that I hoped I would not have to analyze them and they are so numerous and so complicated that I hardly know where to begin." That statement demonstrates his inability to judge the engineering features. The problems are not "so

fantastic" nor "so numerous and so complicated." Many are actually "run-of-the-mill" to dam builders.

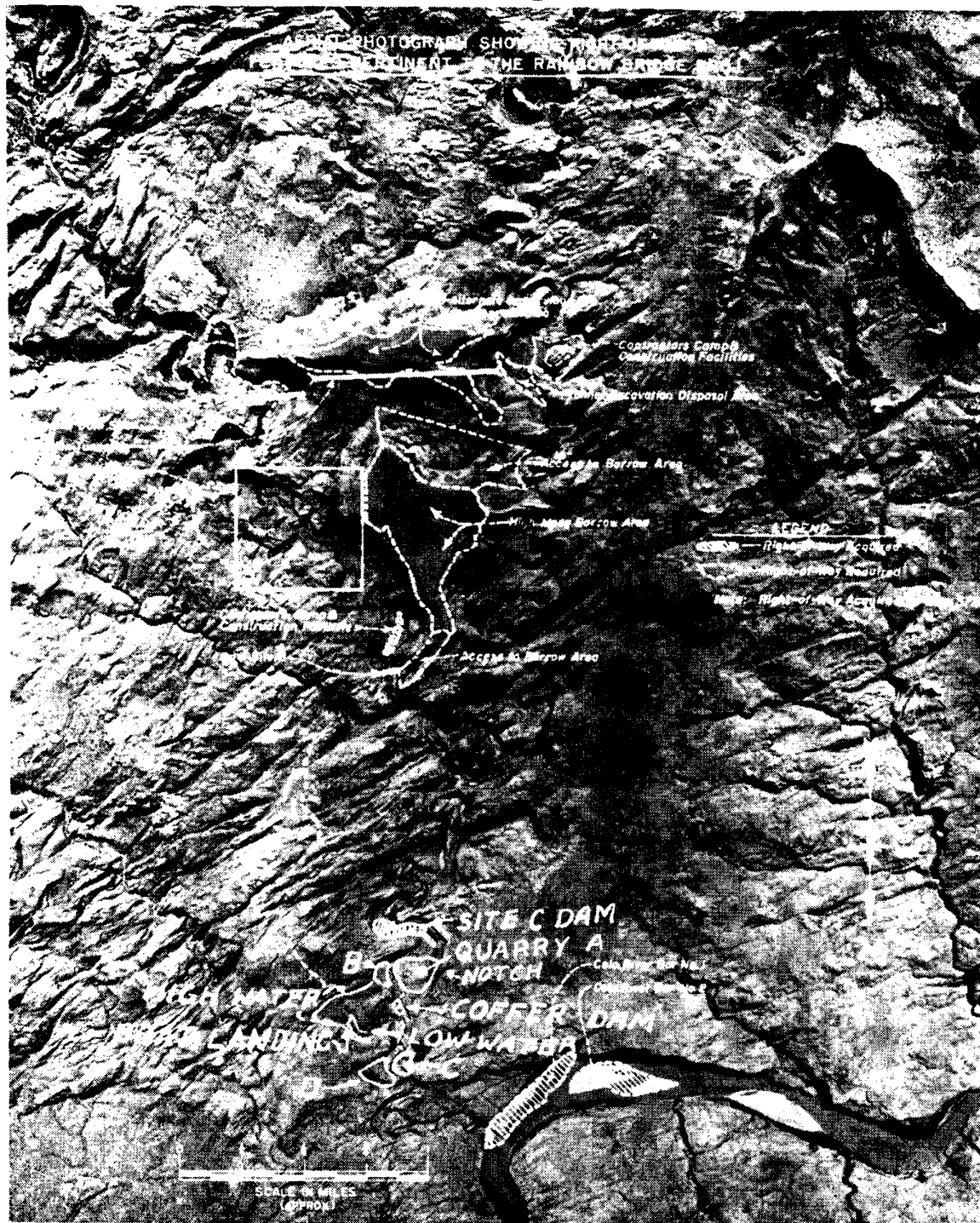
ROCKFILL DAMS

One type of dam is proving very popular and efficient in recent years. As a matter of fact, examples⁹ were constructed by California gold miners as early as 1856. This type is called "rockfill" dams. They are included in the general type referred to as "earth dams." They differ from the type known as "earthfill" dams, which are composed entirely of compacted earth with rock riprap facings. Modern rockfill dams can be classified in three types²⁴:

Type A is an embankment entirely of "quarry-run" rock, which is rock that is placed as hauled from the quarry. They have a concrete, timber or steel facing¹ on the waterside for watertightness. Salt Springs Dam⁶⁻¹⁵⁻²² typifies this type. There is a remote possibility that the water stored upstream, in a major flood through Forbidden Canyon, might be raised above the level of Glen Canyon reservoir, if the reservoir was in a condition of extreme draw-down. If so, a watertight face on the reservoir side could be "floated" off by back pressure, destroying the effectiveness of the dam. The facing materials also deteriorate with time and need periodic repairs. This requires draining the reservoir, which would be impossible at Site C. Thus a Type A rockfill dam should not be used in this location.

The Type B rockfill dam has a nearly vertical central core of compacted "impervious" earth. The Mud Mountain^{15B} and the Cougar^{15A} Dams are this type. Fig. 2 shows the section that was used by the Army Corps of Engineers for the Cougar Dam, one of the highest rockfill dams. A Type B dam would be the best suited for a dam at Site C because it would not be unduly affected by a fluctuating reservoir on both sides.

* Mr. Johnson's article *SOME DAM FACTS* appeared originally in the Winter 1961, Issue of *Western Outdoor Quarterly*.



(U.S.B.R.)

Type C dams have a sloping, compacted "impervious" earth core (Fig. 3), which was the type used by the Aluminum Co. of Canada for their Kenney Dam²². Like Type A, if the upstream lake should rise above the Glen Canyon reservoir level, it might endanger the stability of a sloping "impervious" earth core. Thus a Type C rockfill dam might be ruled out.

Fig. 1—AERIAL PHOTOGRAPH

Shows concentration of construction for a barrier dam and diversion tunnel proposed by the B of R that would irreparably disfigure the landscape immediately adjacent to Rainbow Bridge National Monument. Superimposed are construction features at Site C, as proposed by the writer, designed to create minimum disturbance to the landscape, both upstream and downstream.

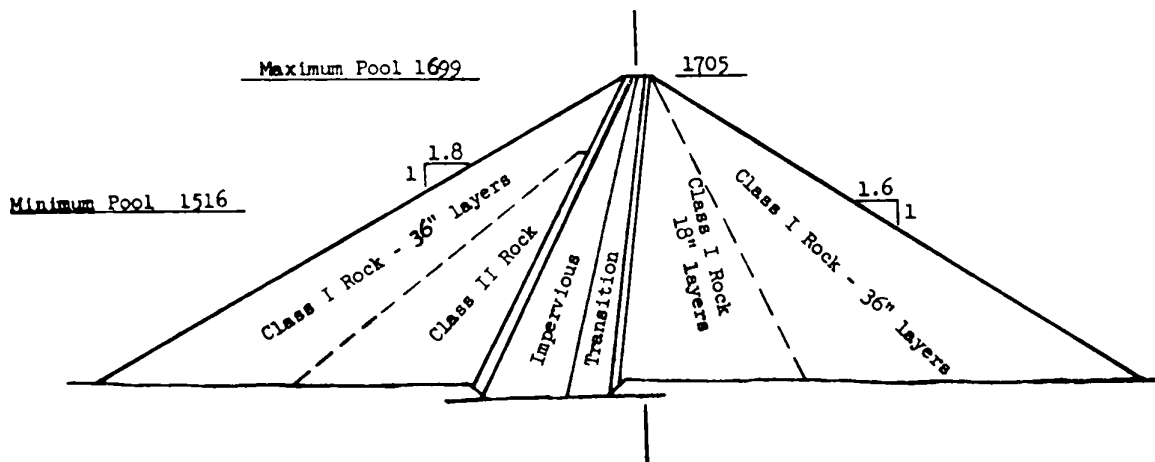


Fig. 2—VERTICAL CORE ROCKFILL DAM

Section shown was that used by U. S. Army Corps of Engineers for the Cougar Dam^{15A} on the South Fork of the McKenzie River in Oregon. The McKenzie feeds into the Willamette River, which flows through Portland, Oregon.

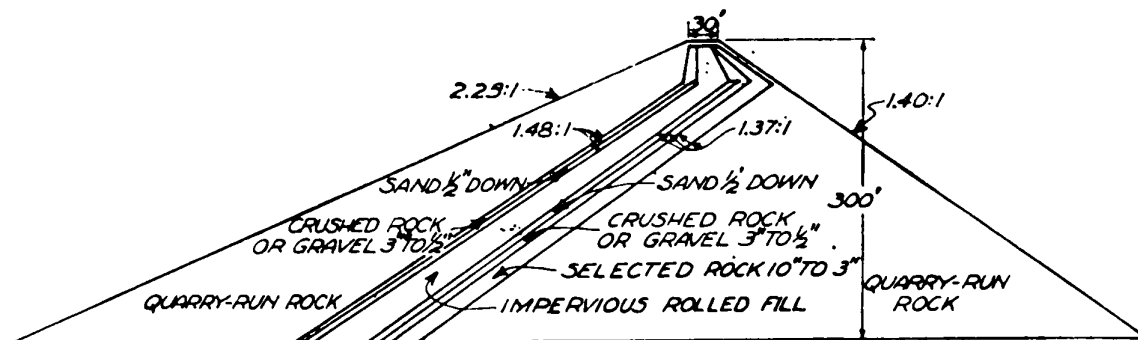


Fig. 3—SLOPING CORE ROCKFILL DAM

Section shown was used in the Aluminum Company of Canada's Kenney Dam¹³ on the Nechako River in British Columbia.

One of the critical considerations in rock-fill dams with impervious cores is the rate of percolation of water through the impervious material. Since the thickness of the core would be greater in a Type B dam, than in a Type C, it would reduce the amount of water that will percolate through. This would be an advantage because any water percolating into the upstream lake, when the Glen Canyon reservoir was at a higher elevation, would have to be pumped back over.

The following table shows a sampling of high rockfill dams and their world-wide popularity. Site C dam is shown as it would fit into the list.

HIGH ROCKFILL DAMS

Name & Location	Height in ft. & Type
Cherry Valley, California ¹⁵⁻²⁰	315 B
Kenney, British Columbia ¹³⁻¹⁵⁻²²	317 C
Watauga, Tennessee ¹⁵	318 B
Salt Springs, California ⁶⁻¹⁵⁻²²	328 A
Messuare, Sweden ²⁹	330 B
SITE C as proposed	355 B
San Gabriel, California ⁷	376 B
Trangset, Sweden ²⁹	400 C
Mud Mountain, Washington ^{13-15B}	425 B
Ambuklao, Philippines ²³	430 B
Miboro, Japan ³²	*432 C
Cougar, Washington ^{15A}	*445 B
Derbendi Khan, Iraq ¹⁵⁻²⁸	450 B
New Melones, California ³⁰	600 ?
(proposed)	

*Under Construction

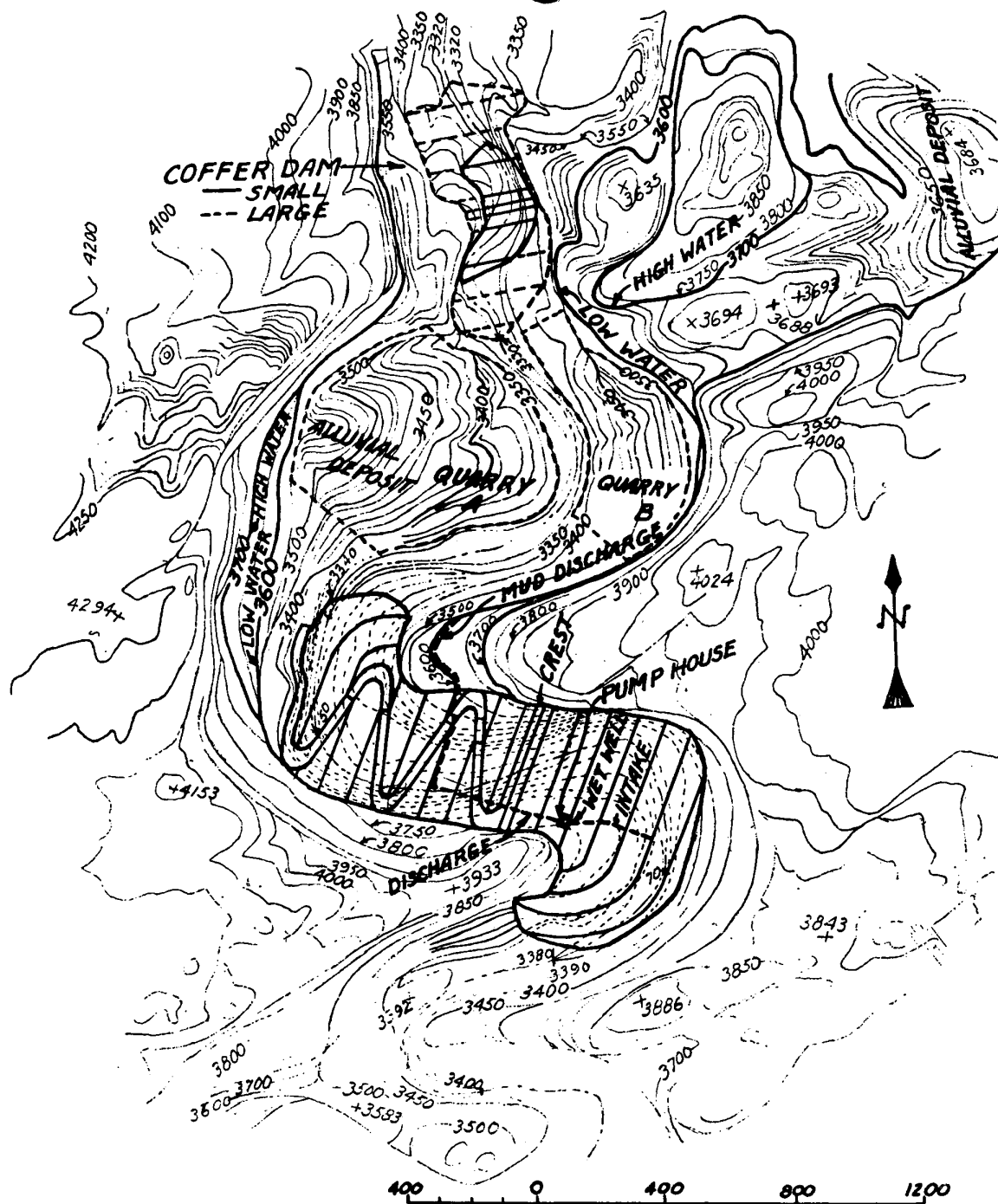


Fig. 4—MAP SHOWING WRITER'S SITE C PROPOSAL

Topography was traced from U.S.B.R. Dwgs. 557-414-250 and 557-414-264.

Thomas A. Middlebrooks¹² is quoted, with italics by writer: "The rock-fill dam has given the most satisfactory performance of all types (*of earth dams*). Records show no major rock-fill dam breaching from any cause other than overtopping." Since Site C Dam will never overtop, a rock-fill dam is more than adequate.

SITE C PROPOSAL

The Bureau of Reclamation 1959 report² lists the following about Site C; streambed elevation 3350 feet, earth dam 350 feet high, 800 feet crest length, volume about 5,000,000 cubic yards, pool above held at elevation 3570. The Bureau's 350-foot height did not include 15 feet of freeboard required to bring the dam to the same height as the Glen Canyon Dam.

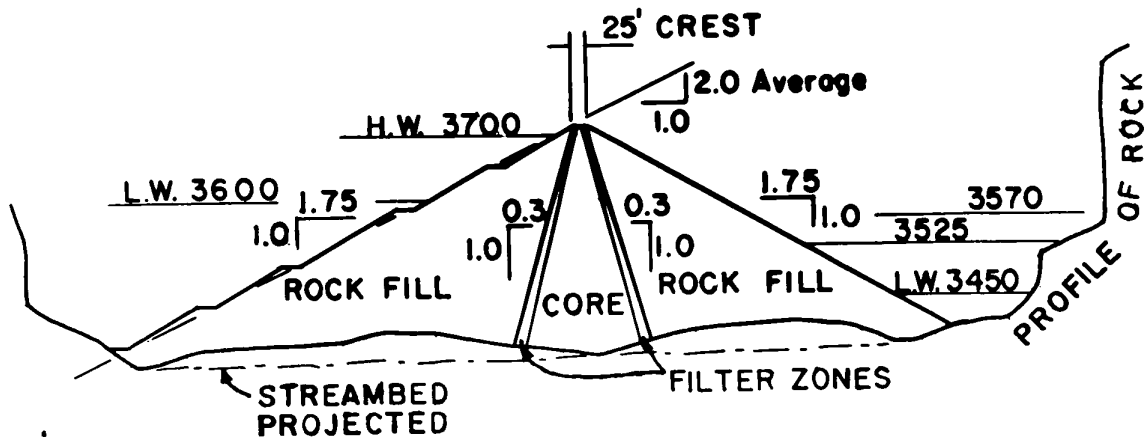


Fig. 5—SECTION THROUGH PROPOSED SITE C DAM

Section is cut perpendicular to the axis. The streambed meanders through the site; thus the maximum embankment will be above the Streambed Projected line.

The Bureau (Fig. 7) indicates the axis of the dam between the jutting abutment on the left and the sheer wall on the right. This seems to indicate that the dam illustrated would be of the concrete arch type. The axis illustrated would not be ideally suited for an earth dam. The embankment, both upstream and downstream, would have to wrap around the jutting left abutment and would likely increase the quantities considerably above 5,000,000 cubic yards. It is possible that the Bureau did not completely

consider the problem of an earth dam at this location.

The writer proposes moving the axis of the dam into the gorge behind the left abutment, located as shown in Fig. 4. Located such, it is quite feasible to construct a rock-fill dam that would prove very economical. Instead of a crest length of 800 feet, this dam would have a crest length of about 420 feet. The streambed elevation at the axis would be about 3360 feet, according to Bureau topography. For a crest elevation of

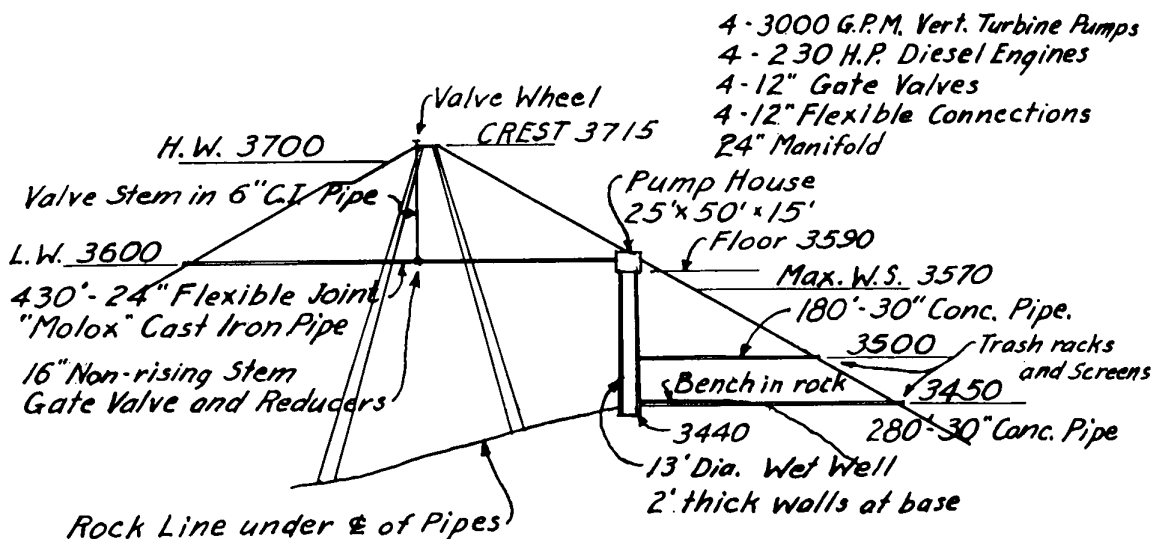


Fig. 6—SECTION ALONG CENTER LINE OF PROPOSED PUMPING FACILITIES

Major features and quantities are shown. If the mud discharge feature were added, the 24" flexible joint pipe would be extended along the face of the dam at the 3600-foot level and on a narrow bench cut into the rock of the north abutment. It would then discharge into the 250-foot deep basin formed by Quarries A and B.

3715 feet, the same as that at Glen Canyon, it would have a height of 355 feet. The details of the writer's proposal are outlined in Figures 1, 4, 5 and 6.

Recent practice in the design of rockfill dams has been to steepen their slopes. The downstream side on some Type C dams have been steepened to a slope of 1.4 (Fig. 3) and even 1.3¹ horizontal to 1.0 vertical. Several Type B dams have been built to a slope of 1.75 horizontal to 1.0 vertical. Fig. 2 shows the slopes used on the Cougar Dam.

The dam at Site C would have water on both sides, but with the water on the reservoir side expected to be always above the lake upstream. It is engineeringly logical to design the dam at Site C for a slope of 1.75 to 1.0 on both faces. Since the material to build the dam would come from downstream, the downstream slope would need to be altered to allow for construction road "benches." If the slope between the benches was maintained at the ratio of 1.75 to 1.0, we would obtain an average slope, on the Glen Canyon side, of slightly flatter than 2.0 to 1.0. The section shown in Fig. 5 should prove both safe and economical.

From the plan and the section through the dam, it is estimated that the approximate quantities of embankment in this dam would be about 2,900,000 cu. yds. of quarry-run rock and 490,000 cu. yds. of rolled impervious earth core and filter zones.

Allowing for a possible 10 percent error in the contour data, and for settlement during construction, the quantities would be 3,200,000 cu. yds. and 540,000 cu. yds. respectively. It is readily seen that moving the dam upstream would considerably reduce the volume from that given in the Bureau's 1959 Report.

The writer feels that Dr. Woodbury⁵ and the Bureau's Report² exaggerate the problem of having water on both sides of a dam. It is true that in rockfill dams the behavior of core materials when saturated has certain critical features. However, the science of soil mechanics¹⁻¹⁴ has advanced to the point where their solution, in many respects, is becoming "commonplace." Walker and Holtz¹⁴ were Bureau engineers when they wrote the paper.

The Bureau is reported to have stated that a model of the dam would have to be built and tested. It is well known that the U. S. Government dam builders like to "play" with models. However, builders of privately-owned dams feel that laboratory testing is sufficient and that the expense of time and cost of model testing is generally not warranted.

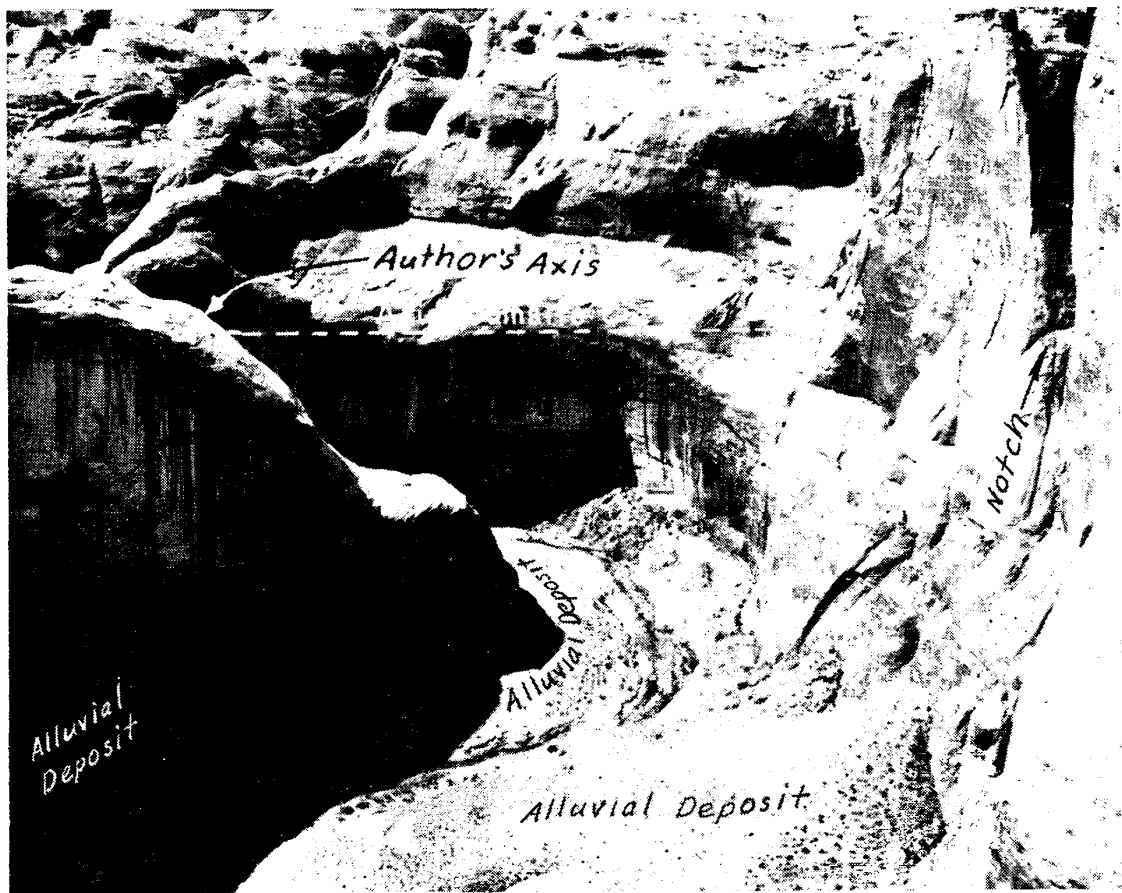
Fig. 5 shows the toes of the writer's dam wedged against the canyon walls at both ends. This wedging action will add materially to its stability. A few thousand additional yards of rock, added on each toe, would add greatly to its safety.

The steepness of the canyon walls should not create any great problem. The lower portion of the Mud Mountain Dam^{15B} was placed in a narrow gorge, "—the right side at the axis rising vertically from elevation 870 to 1090—." Above the gorge the sides sloped back at angles of less than 45 degrees, creating a severe shearing stress in the core material at the break in slope. This condition was overcome without difficulty. Any overhanging portions of the walls at Site C would have to be removed, but only within the limits of the embankment.

MATERIALS AVAILABLE

Figure 7 shows the existence of a sizable alluvial deposit under the "notch" immediately downstream from Site C that might supply a large portion of an impervious earth core. The configuration of the deposit against the canyon wall on the right indicates it was washed through the notch from the flatter lands above. The configuration at the wall and at the outcropping at the center bottom of the picture indicates it to be of considerable thickness. A rough estimate of the quantity of earth in this deposit is between 200,000 and 400,000 or more cu. yds. Also, across the gorge and along the canyon upstream are indications of additional alluvial deposits. If these prove insufficient, the additional material required could be supplied by the alluvial deposit evident at Quarry D (Fig. 1), or even by Colorado River Bars No. 1 and No. 2.

The rockfill will be no problem. Quarry A contains 1,300,000 yds. and Quarry B



(U.S.B.R. photo)

Fig. 7—VIEW OF SITE C

View looking South (upstream). The axis of the Bureau's dam is shown. The writer's dam will span the gorge between the jutting left abutment and the canyon wall beyond. The alluvial deposit, referred to in the text, is clearly shown in the right center foreground.

700,000 yds. of material in place below the 3550 contour. Allowing for "make" or bulking, they will provide over 2,300,000 yds. Quarries C and D, a mile downstream, contain 650,000 and 1,250,000 yds. below 3550 feet. With bulking, all quarries will provide 4,500,00 cu. yds.—more than enough for the main dam and the larger cofferdam.

In view of the fact that the rock could be secured from the canyon walls, within a mile of the Site C Dam and below permanent reservoir level, plus the evident existence of sufficient alluvial deposits close at hand, the writer feels that the Bureau had not fully studied the problem when they said in their 1959 Report that the material would have to come "in from distant and difficult sources."

It is reported that an official of the Bureau recently rejected earth material at Site C as unsuitable for the core material by being a silty sand and too fine a texture. The Fig. 7 alluvial deposits repose at quite steep angles. For the deposits to have resisted the cloudbursts the area is subjected to and retained those slopes indicate the existence of substantial binder material. Numerous animal trails also attest to its strength. As to the fineness of the material, reference is made to the material used in the Cougar Dam core^{15A}. Quoting with italics by the writer: "This material is, predominantly, a mixture of basalt talus and sandy silt, with 25% to 55% passing a No. 4 sieve (3/16" square openings) and 10% to 30% passing a No. 200 sieve." (It takes over 60,000 openings to make 1 square inch of open space

in a No. 200 sieve). The question, therefore, revolves around the amount of clay material the deposits contain. Two weeks of laboratory testing can resolve this question. Pictorial evidence indicates that Mother Nature's answer is that the deposits are of adequate quality.

CONSTRUCTION TIME

The construction of Site C Dam will involve certain problems—all dams do. The first is the bypassing of the natural and flood flows through Forbidden Canyon. The second is timing.

The natural flow is easily taken care of. A culvert type of pipe can be laid along the streambed and the core compacted around the pipe. The Bureau² provides data on the "maximum" expected flood through Forbidden Canyon. Engineers use 1 in 100 and 1 in 500 years for such determinations according to the importance of the structure and the seriousness of damage to downstream areas in case of a collapse. It will be assumed the Bureau used a 1 in 500 year figure. Provision to care for a 1 in 500, or even 1 in 100 year flood, is unwarranted for design of the culvert. By "pushing" the work, the upstream toe can be raised rapidly to form an effective cofferdam that would push an ordinary flood through a reasonable sized pipe. An 8 foot pipe would pass an average expected 6-hour flood in slightly more than 24 hours with the water rising to a depth of about 80 feet. By "pushing" up the core and the rock embankment on both sides, but not to full section, it would be possible to pass an unusual flood over the construction¹⁰ with minor damage.

The capacity curve for the reservoir that will form upstream from Site C indicates that when the dam had been brought to elevation 3530 the culvert bypass could be closed off and the section under the core filled with concrete and pressure grouted to assure complete watertightness. The portion under the rockfill would need to be filled with concrete to prevent collapse from corrosion, but need not be grouted. At this elevation the reservoir could store the Bureau's "maximum" flood flow through Forbidden Canyon. As soon as the dam reached 3600 feet, the pumping plant could be put into

operation and immediately begin lowering the lake upstream.

The Bureau is reported to have stated that it will take 3 years to build Site C Dam. The writer seriously questions their estimate of time. As pointed out above, the necessity to build a model, which is "reported" to require 1 year to build and test, has already been questioned. Also, a model of the Mud Mountain Dam,¹³ which has a core of practically the same shape as the writer proposes for Site C, has been tested by two Assoc. Professors of Civ. Eng. at the Univ. of California. Their conclusions in part (*italics by writer*): "When the accelerations of the test earthquakes were increased to more than 1 g, (*many engineers use 0.1 g for design of engineering structures*) the models suffered only minor changes of shape, indicating that with the strongest conceivable earthquakes the prototype structures would show damage only in the attached rigid structures and appurtenances. . . . (b) the rock-fill dam is a naturally flexible structure and can undergo large distortions without appreciable damage."

In questioning the time to construct Site C Dam the writer cites what has been done elsewhere: 1. The Kenney Dam¹⁹⁻²² where 4,000,000 cu. yds. were placed in one Canadian construction season (Mar. to Nov.). 2. The Garrison Dam¹⁸. 3. The Palisades Dam²⁵ where 2,000,000 yds. were placed in 6 months. 4. Items 17 and 31 in the Bibliography. 5. Guarico Dam²⁶ where 15,000,000 yds. were hauled 21 miles and placed in 6 months.

The writer recognizes that due to the limited working room available, the construction at Site C could not approach some of the above accomplishments. However, he does feel that the successful bidder for the dam would be one of the more accomplished American engineering contractors. With a pre-bid briefing conference, the contractor could be made amply aware of the necessity to expedite construction and adequately apprised of the problems he would face. The contractor, faced by a stiff "liquidated damages" clause containing penalties for not, and a bonus for, completing ahead of schedule, should be able to construct Site C Dam and the small amount of appurtenant structures in one year.

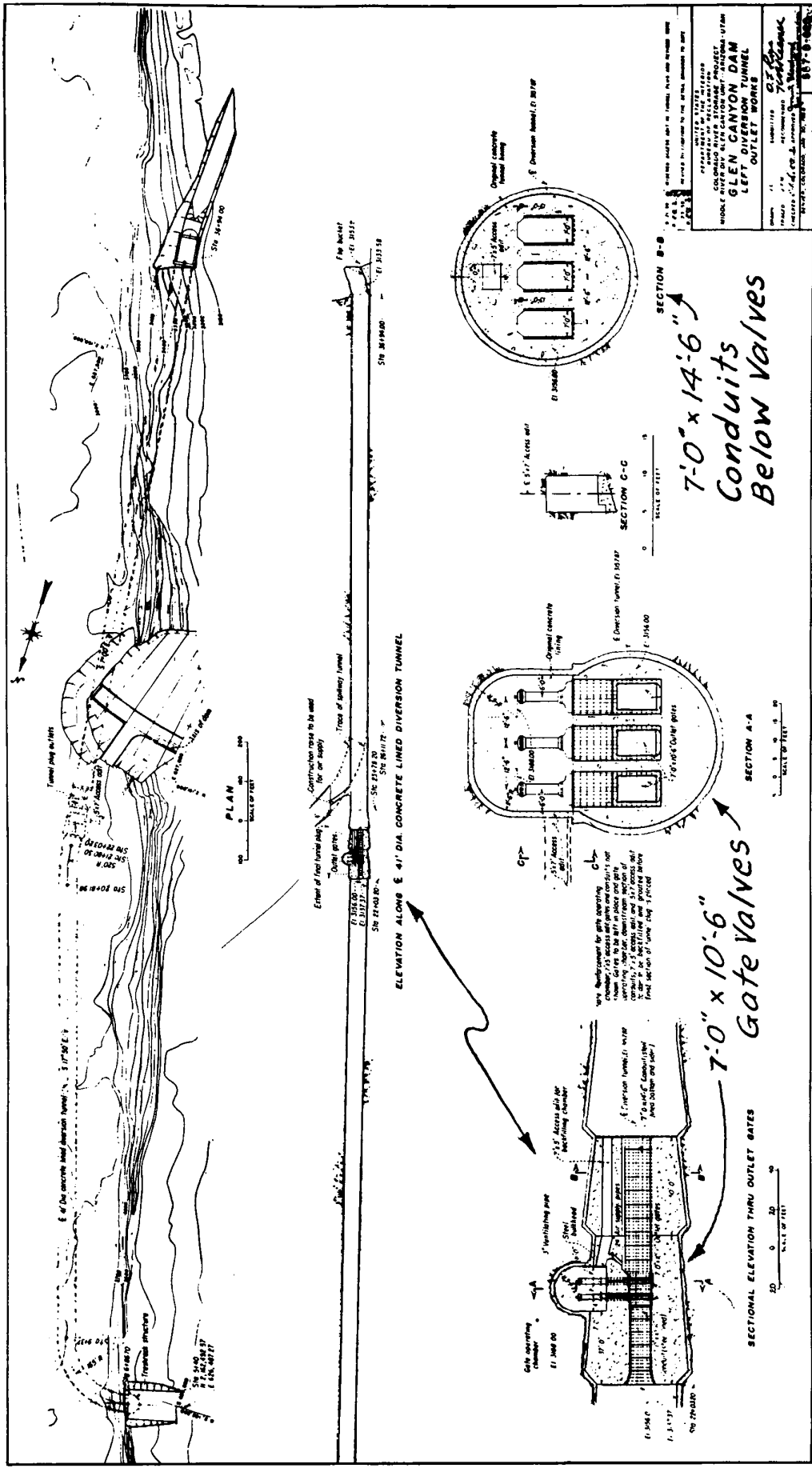


Fig. 8—HIGH-HEAD GATES IN LEFT DIVERSION TUNNEL AT GLEN CANYON DAM (U.S.B.R. Dwg. 557-D-600)

The small high-head gates called for in the original contract were enlarged, at the insistence of the California Colorado River Board, because the original gates would not satisfy the Filling Schedule Criteria's which requires discharge of enough flow to maintain the powerhead at Hoover Dam. If a series of low-flow years occur (as for 6 of the past 10 years) during the filling, the entire river flow would have to be discharged.

ACCESS TO SITE C

A number of proposals have been suggested for construction access to Site C. The writer has made a thorough study. In his opinion, the most direct with little scar to the landscape, the most economical, and the most feasible is to improve the existing road extending 57 miles from Escalante, Utah, to near Fiftymile Point. This existing road could be easily improved to construction road standards. This road can be extended, as shown in Fig. 11, to cross the Colorado River on a bridge near the mouth of Aztec Creek. The route shown is 15½ map miles. Allowing for deviations to keep cost down, it should not exceed 20 miles. Another 1.9 miles will be required from the river to the axis of Site C Dam. The writer, as outlined in Appendix A, estimates that the improvement, extension and the bridge could be done for about \$2,000,000.

Barging has been suggested as a method of access. Barging would be from the road-head on Wahweap Creek where aggregates are being secured for Glen Canyon Dam. During low flows numerous sandbars occur between there and the mouth of Aztec Creek which would either hamper, require extensive dredging, or prohibit movement of barges during the low flows. It has been suggested that the work might start after the left bank diversion tunnel plug and gate valves (Fig. 8) are installed in 1962. Once these valves are installed, the right bank diversion tunnel will be plugged and forever sealed off and the only control of the river will be by the gates in the left diversion tunnel plug. After the closures, even for a low flow year as typified by 1955 (Fig. 10), the reservoir level would rise to 3320 feet before receding. For a flow equal to the average of the last 17 years, the reservoir would rise to 3410 feet. Since the base of the dam and the lower elevation of Quarries A and B would be at 3350, they would be flooded out for about 4½ months, from May to the end of September. For an average flow year, a cofferdam to a height of 100 feet would be sufficient to hold back the reservoir waters, if located as shown in Fig. 4. Such a cofferdam would contain about 125,000 yds. and would be rather easy to construct. However, all equipment, supplies and personnel

would have to be barged in on a fluctuating level lake, a tremendous task.

Barging access would require that all the river flow would have to be bypassed. Thus no water could be stored until Site C Dam is completed. This would delay the beginning of power generation at Glen Canyon, a serious postponement of revenue for a project that was "justified" using a very narrow benefits to cost ratio.

The filling of Glen Canyon Reservoir is presently scheduled to begin in the Fall of 1962. The question of filling³ needs airing.

The original Glen Canyon contract called for installing 3 (4 ft. x 5 ft.) gate valves in the left diversion tunnel plug (Dwg. 557-D.94).

Principle 7 of the reservoir filling criteria requires these valves to pass 1 million acre-feet (1400 c.f.s. avg.) per year but never less than 1000 c.f.s. before the lake reaches elev. 3490. Principle 7 also says, if necessary to maintain a minimum head at Hoover powerplant, the entire river flow may be bypassed. In addition, the lake level may be lowered, if needed, to maintain the minimum head at Hoover.

The contracts for power generated at Hoover Dam require a discharge of 10,000,000 A.F. per year. To evaluate the effect of this requirement on filling of Glen Canyon Reservoir we need to look at the records. Following is a brief summary of the historical flows in the Colorado River, as estimated and measured at Lees Ferry 15 river miles below Glen Canyon Dam:

1897-1921	25 yrs	15,860,000 A.F.
1897-1943	47 "	14,400,000
1912-1943	32 "	13,960,000
1944-1958	15 "	11,760,000
1944-1960	17 "	11,310,000
1951-1960	10 "	10,590,000

The above shows that the average flow has been continually decreasing for several decades. It is just as reasonable to expect the trend to continue for the next 2 or 3 years as it is to expect it to reverse. Tree ring records (National Geographic Magazine Dec. 1929) tells of a great 53-year drouth extending from year 1247 to 1299. The ancient inhabitants of Mesa Verde abandoned their home area due to this drouth. In 8 of the past 15 years, the en-

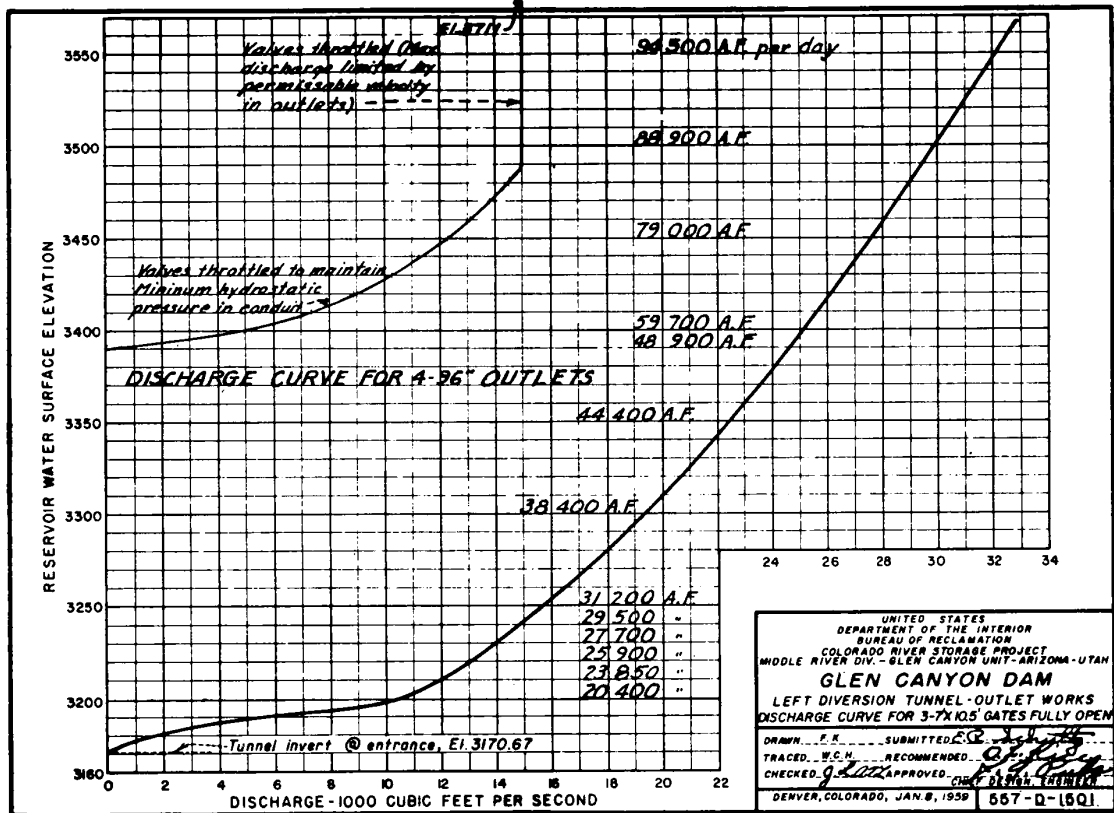


Fig. 9—DISCHARGE CURVE FOR GATES FULLY OPEN

The lower curve shows the discharge curve for the 3-7'0" x 10'6" high-head gates in the left diversion tunnel. The writer has superimposed the discharge curve for the 4-96" river outlet valves (U.S.B.R. Dwg. 557-D-1502). He has, also, added the discharge in acre-feet per day that all the valves are capable of when fully open.

tire flow in the river was below the 10,000,000 A.F. required to satisfy Boulder power contracts. In 3 of those 8 years, the flow was well below 8,500,000 A.F. and 1961 is expected to be about that figure. 4 years running, 1953 to 1956, the average was only 7,730,000 A.F.

Article III (a) of the Colorado River Compact signed Nov. 24, 1922, gives the Lower Basin 7,500,000 A.F. and Art. III (b) an additional 1,000,000 A.F. per year. At present there are only about 4,000,000 A.F. of water in Lake Mead above the amount needed to maintain the rated powerhead. This small reserve storage may require that the entire flow of the Colorado River will need to be discharged from Glen Canyon Reservoir for the next several years.

The writer has been informed that the Lower Basin users will demand and might attempt to legally enforce a discharge from Glen Canyon of not less than the 8,500,000 A.F. per year. Only the future holds the

answer but it is possible that the reservoir filling cannot begin in the Fall of 1962 and satisfy water demands downstream.

Woodbury dismisses Site C because the base of the dam would be 140 feet below dead storage level behind Glen Canyon Dam. He has stated that to prevent the waters of the lake rising high enough to interfere with construction of Site C dam would require a revision of the plans of Glen Canyon Dam and the driving of new tunnels around the dam. He is mistaken.

The small original gates would neither satisfy the filling schedule criteria nor the requirements of the Lower Basin. The California Colorado River Board, therefore, protested. The Bureau has promised (Fig. 8) to provide 3-7'0" x 10'6" gate valves in the left diversion tunnel. There are, also, 4-96-inch hollow-jet valves to pass water when the turbines are not running or running at reduced output. Fig. 9 shows the discharge possible through both sets of valves. Fig. 10

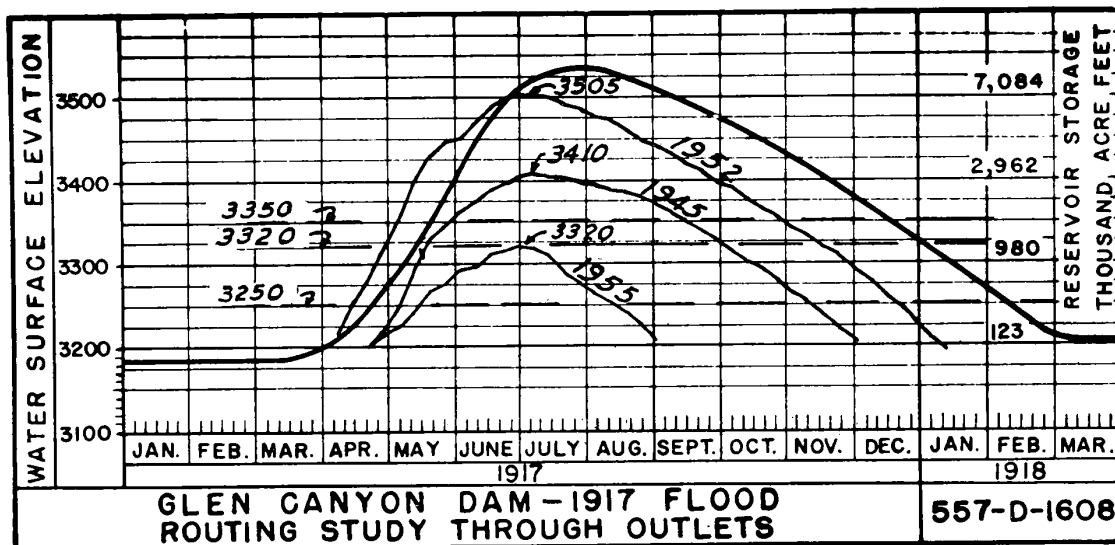


Fig. 10—HYDROGRAPH OF GLEN CANYON RESERVOIR WITH ALL GATES FULLY OPEN

The heavy line is the Bureau of Reclamation's determination for the 1917 flood. The writer has superimposed curves for the water years (Oct. 1 to Sept. 30) 1945, 1952 and 1955. 1955 represents a typical lowest flow year since 1943. 1945 represents the average since 1943. 1952 is the maximum year since 1943.

shows a hydrograph of Glen Canyon Reservoir for various years if the diversion tunnel closures are made on schedule.

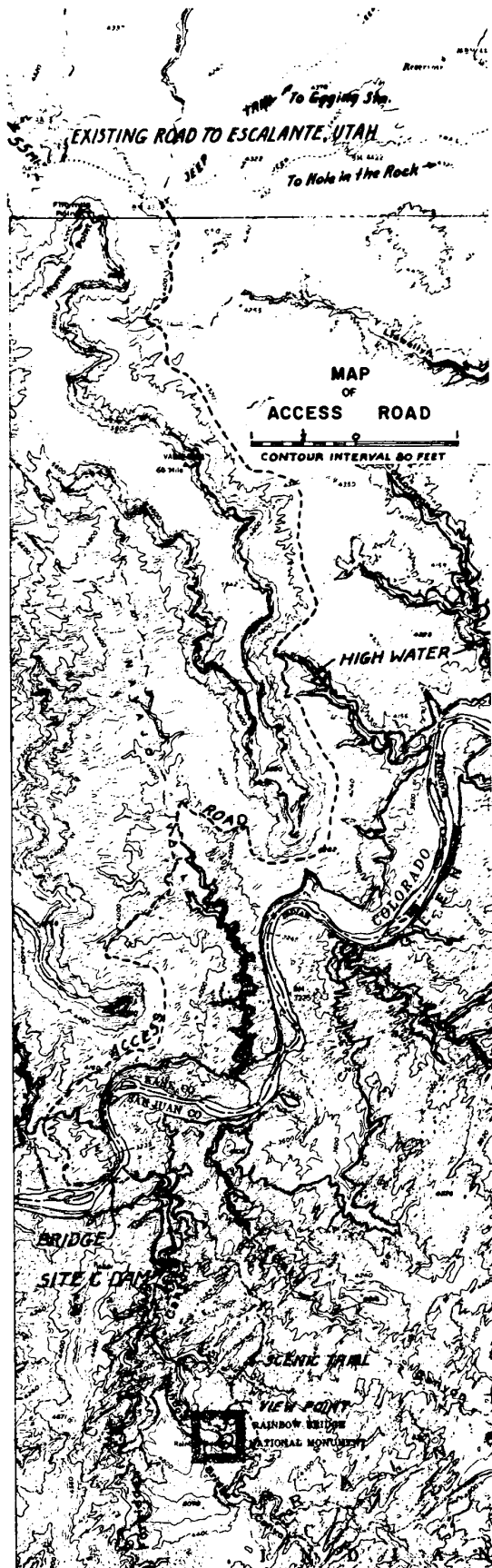
The experience of "pushing" dam construction by American and foreign dam builders has been pointed out. If the Bureau insists on installing the left diversion tunnel plug on schedule, the dam and outlet works proposed by the writer could be constructed before filling begins, or at least before rising waters in the Reservoir would hamper construction. If unforeseen obstacles should delay the completion, the left bank gates could be left fully open, giving the contractor another 6 months to May 1963, to complete and withdraw.

The road access would be unavailable to the contractor for the 4½ summer months of an average flow year if delays prolong construction beyond May 1963. However, with the construction road already built, beaching of boats and barges would not be too difficult along the road and on a cofferdam. At not too great expense, the contractor could construct a staging area at the 3600 foot level in the side canyon (Fig. 4) ½ mile north of Site C Dam where he could maintain a construction camp and service area that would be unaffected, even by a flood of the maximum year since 1943 (Fig. 10). It is possible, with reasonable accuracy,

to predict the expected flow in the Colorado River from the snowpack in the Upper Basin. These can be made in February and, as shown, the rising floods do not begin until mid-April or the first of May. There would be sufficient time to build a cofferdam to elevation 3520 high enough to hold back the maximum flood of record since 1943. Such a cofferdam would require the placement of about 600,000 yds.

As pointed out, even though the tunnel closure was poured in 1962 and the contractor was not able to complete the contract before the Fall of 1962, by keeping the valves in the tunnel plug fully open the access road to Site C could be in operation until about the first of May 1963. Also, as pointed out, it may be necessary to keep the gates fully open to satisfy the Lower Basin requirements. There is time to provide the money, prepare the plans, and construct Site C Dam and appurtenant works in their entirety without a cofferdam. However, there is NO time for feet-dragging nor dallying reluctant cooperation.

By being able to complete the works without a lower cofferdam, any flash flood through Forbidden Canyon can easily be handled without the expense of pumping and the minimum inconvenience and delay to a contractor.



(base U.S.G.S. Quadrangle)

THE PUMPING PROBLEM

Woodbury objects to the large amount of water that would have to be pumped over a dam at Site C. It would only take 3,600 gallons per minute for one year to pump the maximum annual runoff above the dam, according to the Bureau's 1959 report. "Maximum" would indicate at least one in 100 years, perhaps one in 500. The closest records available are for the Paria River, measured at Lees Ferry since 1924. Using 1927, the highest year, as 100%, 2 years had less than 25% and only 4, including 1927, had flows above 75%. The next closest is the San Juan River at Bluff, Utah, measured since 1915. 1941 was highest, with 10 years less than 25% and only 5 more than 75%. The ratio of the historical average flow of the Colorado River at Lees Ferry to the historical maximum is about 62%. This ratio applied to Aztec Creek would produce an expected average pumping rate of 2,250 gallons per minute.

A majority of conservationist groups advocate keeping the lake level above a barrier dam as low as possible to reduce the water scarring to the landscape. Their thinking is based on sound engineering. The capacity curve and Bureau data² for the lake are tabulated below:

Capacity	to elev.	Silt up in
575 A.F.	3450 dead storage	10.2 yrs.
1090	3470 Jct. of Bridge Cr.	19.3 "
3190	3515 Maximum 6-hr. flood ²	"
3775	3525 3450 plus mx. fld. 67	"
5900	3550	105 "
500	3550 Bridge Cr. Arm	52 "
775	3550 Aztec Cr. Arm	17 "
8000	3570 Bureau's lake	142 "
12000	3600 Monumt. bdry.	213 "

According to the Bureau², Bridge Creek will contribute 9.79 A.F. of sediment per year and Aztec Creek above Bridge Creek 45.2 A.F. with 1.4 A.F. below the junction for a total of 56.4 A.F. of sediment per year. This would be enough to fill the can-

Fig. 11—AREA MAP

Shown are the writer's proposal for the location of the access road to Site C and a general route for an extremely scenic trail around the dam from the boatlanding at reservoir level to the Monument.

yon upstream from Site C to the 3550 level in slightly over 100 years. The Aztec Creek arm, however, will fill in about 17 years and close off the mouth of Bridge Creek which would not fill for another 34 to 35 years. Thus it is seen that Aztec Creek will eventually cut off easy access to the Monument.

The table shows that it will be impossible, in the case of a major flood, to prevent water backing into Bridge Creek. During the first few years, a maximum flood would inundate the junction of Aztec and Bridge Creeks to a depth of 55 feet. After the deposition of 20 years of silt, a maximum flood would raise the lake to elevation 3530 and the water at the junction would rise to a depth of 80 feet before it could be drawn down.

The writer, therefore, recommends that the lake be kept as low as possible. This will allow flash floods to flush their own sediment loads as close to the dam as possible. The pumps should be able to pump large quantities of water in relatively short periods. During the first few days they will pump the silts that remain in suspension. During the days at the end, when the lake is being drained, the currents will pick up some of the soft muds along the way and carry them through the pumps. The natural flows will bring more mud to the pumps. The useful life of the upstream reservoir will be prolonged by the amount of silts that can be pumped.

Eventually it may be advisable or even become necessary to install a small dredge with a floating line discharging into the pump intake pipe to remove the mud, sands and gravels. The writer proposes two intakes to the wetwell. The lower at 3450 to keep the lake as low as feasible. The dead storage will provide space for the larger rocks and boulders. The higher at 3500 will assure a useable inlet to the pumps, in case the lower became plugged, to handle a large flood until flow to the lower level can be re-established.

The pumping of the muds and sands will pose a minor problem. Pump manufacturers assured the writer that the standard type of deepwell vertical turbine pump can handle these sediments with gravel particles up to $\frac{3}{4}$ ". One uses a #1113 chrome coating on impellers and bowls costing about \$250. Another uses a 40 mil thick coating of neoprene costing \$50 to \$100. Both expected

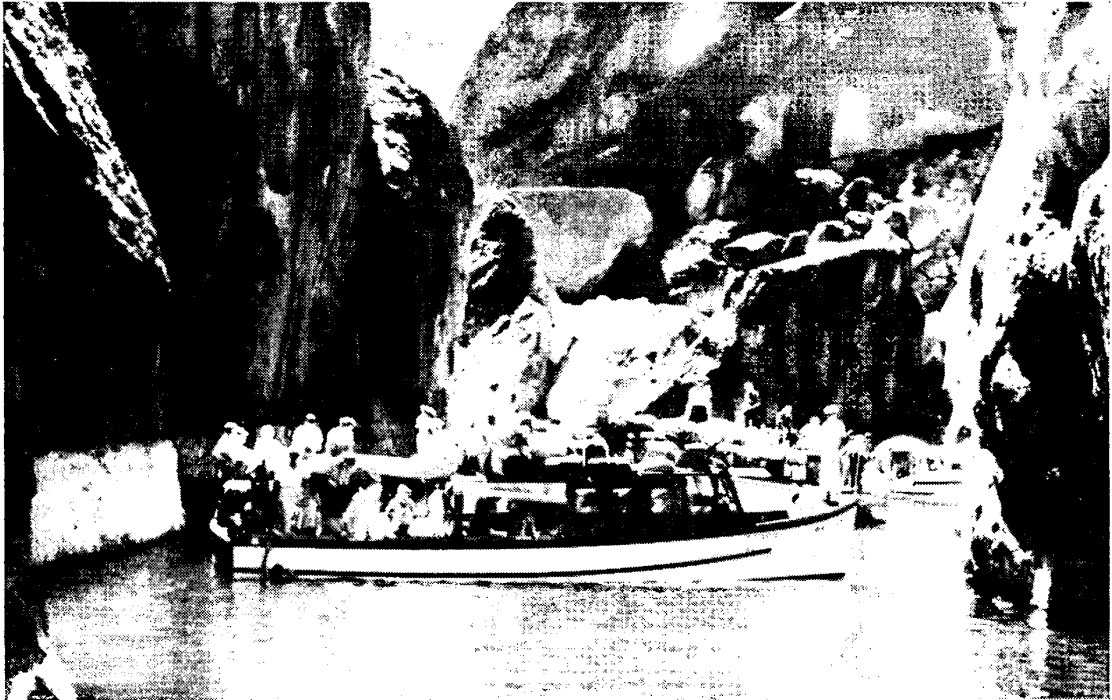
their coatings to last a year or more. A spare set of coated impellers and bowls could be kept at the site and a pump pulled, re-fitted and returned to service in a couple of days.

The writer proposes installing 4-3000 g.p.m. pumps. These pumping 26.7 c.f.s. would pump the average expected flow over the dam in $2\frac{1}{4}$ months, and the maximum in $3\frac{1}{2}$ months. 4 units will allow ample reserve capacity for breakdown, maintenance and repair. The maximum pumping head, including friction losses and hydraulic head, would not exceed 260 feet. The expected average would be about 175 feet. The proposed works are shown in Fig. 6. Diesel fuel should cost about \$15,000, including transport to the dam, for an average year. The total cost including operation, maintenance and repairs may run \$25,000 to \$30,000 per year. An automatic, unattended, radio-monitored pumping plant might be feasible. It could be serviced weekly by Glen Canyon Power Plant personnel.

SCARS TO THE LANDSCAPE

Objections have been raised by some to the scar that would be inflicted on the landscape by the construction of a dam at Site C. As demonstrated, materials to build the dam could be secured without any scar visible above permanent reservoir level.

Neither a rockfill nor an earthfill dam would need cableways atop the cliffs nor roads carved into canyon walls above waterline. Very few, if any, minor scars need to show beyond the limits of the dam or above water. Only a small amount of cement would need to be brought in. No spillway is required, no large outlet works are required. Only a small pumping plant utilizing pipes buried in the dam is needed. Even the pumphouse could be placed within the embankment so that a minimum of structures would show. No power line into the area is needed. Fuel for pumping can be diesel oil barged in from Glen Canyon Dam or the construction roadhead. Properly designed mufflers would reduce engine exhaust noise to the level of that of small power boats on the reservoir. The construction road up the face of the dam would afford ideal beaching facilities for the oil barge and visitors to the area coming by boat. The fluctu-



(Bernard B. "Dick" Freeman photo)
(December, 1939, Desert Magazine)

Fig. 12—WATER STAINS IN WISHING WELL COVE

The top of the stain was caused by a submersion of only about two weeks. The water was above its present level for only about four months. The walls within Rainbow Bridge National Monument would be similarly stained if water is allowed to encroach within the Monument.

ating of the reservoir would not disturb these facilities. They would only move along the road benches.

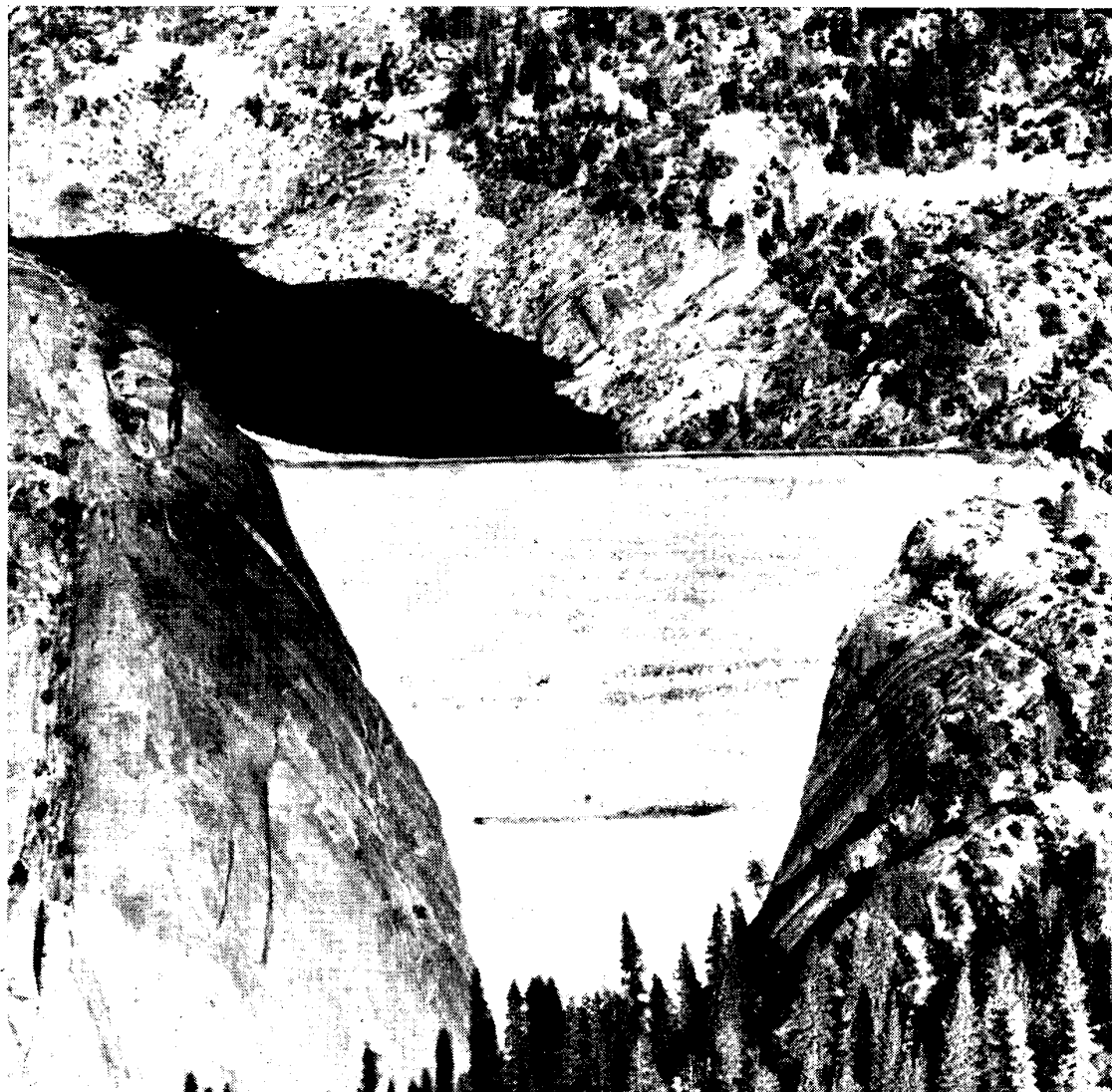
Fig. 13 showing the Mammoth Pool Dam of the Southern California Edison Company built in the mountainous regions of the San Joaquin River in California is proof that a dam of this type can be built with no scars showing outside of the limits of the dam embankment. Fig. 13 does show a road in the background. This road was needed for access to the site. Access to Site C would be through Forbidden Canyon and forever below water. The Southern California Edison Company is commended for constructing a major project in a prime recreation area with a minimum disruption to the natural scene.

Once the reservoir is filled the recreational demands upon its waters will be very great. Especially since the reservoir will provide easy water access to the multitude of canyons with colorful and precipitous walls. In many cases their only feasible access is by water. The construction road will pro-

vide ready access to the main reservoir and several of its narrow arms. Even though a road was not built to construct a barrier dam at Site C, the pressure of recreational users will eventually force the extension of the existing road to reservoir level. Opponents to man-made scars in a wonderful wilderness area must face the inevitable road scars of access to the north side of the reservoir. Besides providing for easy and economical access to construct the barrier dam, the construction road will only hasten, not prevent, these road scars.

Since the Congress upon numerous occasions has ruled that recreational facilities on government reservoirs should be a non-reimbursable expense, this writer believes that the major portion of the cost of the access road should be charged to recreation and not to the cost of Site C Dam.

In the previous chapter the writer pointed out that Aztec Creek would hamper using the lake behind Site C Dam for access into Rainbow Bridge Canyon, if the lake is kept at a level sufficiently low to properly protect



(Southern California Edison Co. photo)

Fig. 13—VIEW OF MAMMOTH POOL DAM

This picture of a gorge on the San Joaquin River in California demonstrates that a rockfill dam can be built with little or no scars showing beyond the limits of the dam.

the Monument from deposition of sediments. Thus the lake that would form behind Site C Dam would not be an ideal access to the Monument, due to the mud flats and quagmires that will form at the upper end of any permanent water.

The reservoir will fill an arm of Aztec Canyon $\frac{1}{2}$ mile north of Site C Dam. An ideal site for a fairly well hidden boat landing and a water serviced resort will be created. The topography (Fig. 11) and aerial photograph (Fig. 1) indicate that it is feasible to construct a trail from this arm of water to the Monument along the ridge between Rainbow Bridge and Oak Creek

Canyons. The trail would drop into Rainbow Bridge Canyon just east of the Monument. It is true that this ridge is badly eroded in places. A trail along this ridge would provide visitors an intimate contact with the erosional features of the area and very scenic views along the way. The trail, of necessity, would be quite circuitous in places and have a number of climbs and descents along the way. A number of National Park trails, to-wit: The Four-Mile and Ledge Trails in Yosemite and Bright Angel Trail in Grand Canyon traverse precipitous and rough areas and provide their travelers with outstanding views and many



(Walter C. Chamberlin photo)

Fig. 14—UNDER RAINBOW BRIDGE

The foreground shows the types of sediments, sands, gravels and boulders carried by the waters through Rainbow Bridge Canyon. The sparsity of vegetation, even with the plentiful water available, demonstrates that the scarring action of the floods through the canyon will not allow any appreciable vegetation on the flood plain that will build up in the gorge if Glen Canyon Reservoir is allowed to invade the Monument area. A "jungle" may occur at the waterline, as happens at downstream reservoirs, if the lake level remains static for long periods of time.

long remembered pleasures. The map distance is slightly under $3\frac{1}{2}$ miles. The constructed distance might be 6 to $6\frac{1}{2}$ miles and might cost as much as \$100,000. Its cost, however, should be charged to recreational benefits and not to the Site C project. Once the visitor has descended into Rainbow Bridge Canyon, he will be able to traverse considerable of its length and enjoy its spectacular narrow and beautiful reaches above the backwater level of Site C Dam.

DAMAGE TO THE MONUMENT

Many opponents to protective works for the Monument feel that the arm of water that would pass entirely through it when the reservoir was full would not be objectionable. They are uninformed. The water would leave an indelible scar on all canyon walls after any drawdown. Fig. 12 was taken in Wishing Well Cove in Boulder Canyon of Lake Mead. The water stain is very visible.

The picture was taken on a Labor Day weekend during the filling of Lake Mead. The Lake Mead hydrograph⁴ shows that the reservoir peaked about the first of June and remained at maximum elevation only a few days—2 weeks or less. The hydrograph also shows that at no time previous to the June build-up was the reservoir as high as the water in the picture.

Once water has invaded the canyons it will create an eyesore that will forever show the invasion of a man-made structure into a wonderful natural wilderness area. The silt content of the muddy waters of any sizable storm will additionally discolor the narrow gorges of Forbidden and Rainbow Bridge Canyons at the ends of the arms of water. This will assure that the water scars will be permanent.

It is true the same water scars would result from a temporary lake behind Site C Dam. The dam at Site C would not prevent them but would keep them outside of the boundary of the existing Monument. The Site C proponents maintain that doing so would assure that the immediate vicinity of the Bridge would remain in its natural state. This will be true for a very long time. Eventually, however, the sediment may fill the canyons forcing the flood level of the lake ever higher. The present Monument may eventually be invaded but that eventuality is several hundred years in the future. The advocates of Site C maintain that this is much more desirable than to immediately invade the wilderness character of the Monument. They maintain this eventuality, like death, is not one to rush out and meet any earlier than necessary.

The proponents of "flooding now" maintain that the debris carried by the waters through Rainbow Bridge Canyon will, in time, build a delta in the inner gorge. Dr. Woodbury⁵ envisions that after 50 to 100 years the debris would fill the inner gorge for a considerable distance and then stabilize to create a vegetated plain traversed by a meandering stream. These advocates overlook facts.

It is a law of hydraulics that the velocity of a stream is a function of the slope and the volume of water. The greater the slope, the greater the velocity; on a given slope

the greater the volume, the greater the velocity. It is also a law of hydraulics that the carrying capacity of water varies as the sixth power of the velocity. It is self-evident, therefore, that when storm waters arrive at any alluvial plain they would slow down and immediately drop the heavier particles.

Fig. 14 shows the size of material that is carried by the flood waters that rush through Rainbow Bridge Canyon. The lack of vegetation along the streambed, despite the abundance of water, is indicative. The scouring action of floods does not permit any appreciable build-up of vegetation. The same holds true for most of the washes referred to below, except for a "jungle" perhaps 50 yards deep at the lake shores of downstream reservoirs.

The Bureau² has determined that the drainage area of Bridge Creek above the Bridge totals about 7 square miles. The headwaters of Bridge Creek is high up on Navajo Mountain, a little over 3000 feet above the Monument and only 5 streambed miles away. The Bureau estimates that the average annual debris load would cover 7 acres to a depth of 1 foot. If we accept the Bureau's figures, then on an average 7 acre feet of debris, such as shown in Fig. 14, would be deposited annually. It should be readily evident, therefore, that the upper end of any debris plain will be subject to a continual build-up.

This conclusion is borne out by facts. Fig. 15 shows the profiles of nine desert washes draining into the Colorado River. Wash A is 156 river miles above Wash J. The rest are concentrated in a stretch of 8 miles between these extremes. All are entrenched into the landscape. All have relatively flat-bottomed cross sections of sand, gravel and rocks. It will also be noted that the profile of the stream course above or below their flat graveled-bottom reaches has little, if any, effect upon the uniformity of the grade of their wide portions.

The branches of Washes A, B and D also bear out the hydraulic principles stated. Wash B drains a very extensive area from which the volume of water in flood is quite large. The area drained is of alluvials that do not produce as large a size of grains of

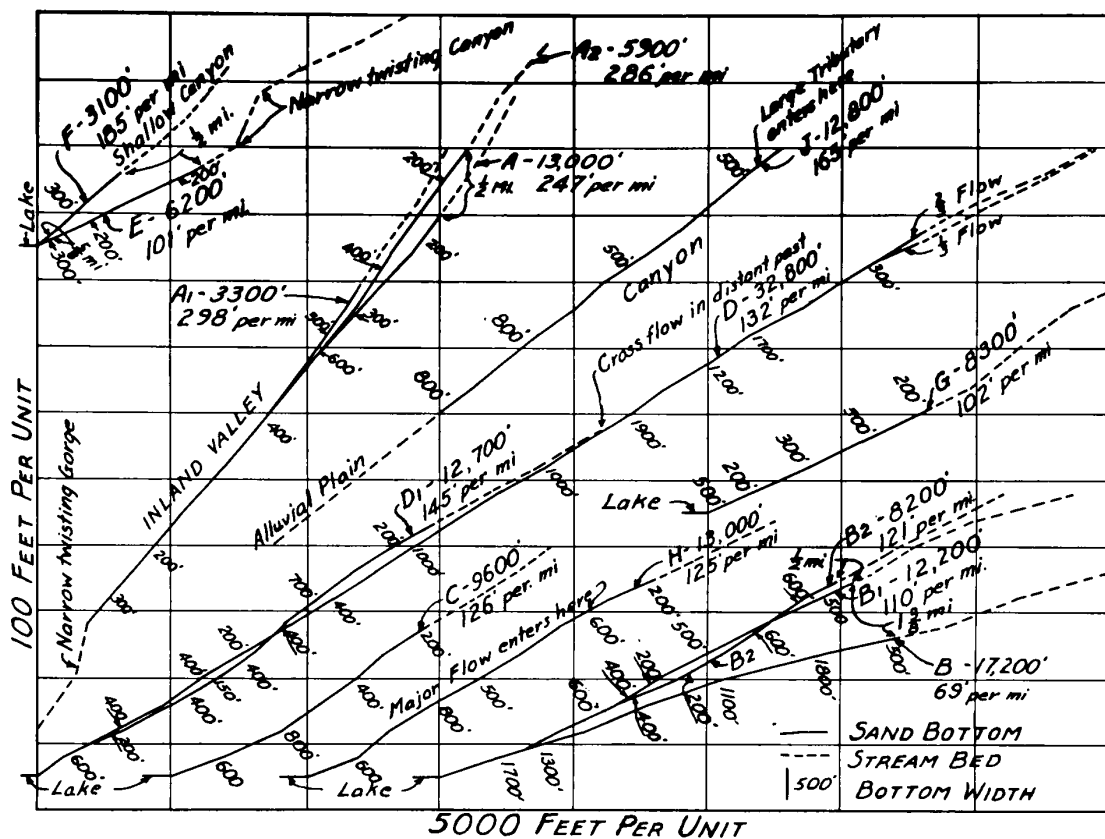


Fig. 15—PROFILE OF NINE DESERT WASHES

All of the washes drain into the Colorado River. All have fairly flat and wide bottoms. Little vegetation occurs, except the "jungle," along the waterline of those draining into the lake. The lake level, however, is fairly constant.

sand and gravels as the rest of the washes. Likewise, Branch B¹ carries considerably less volume and Wash B² still less volume even though they drain areas that would produce grain sizes similar to the main wash. The writer is personally familiar with the area drained by Washes B to J inclusive and has camped several days in Wash E.

It is evident from Fig. 15 that a slope of 125 ft. per mile can be taken as a minimum expected slope for the deposits washed through Rainbow Bridge Canyon. A medial figure would be 200 ft. per mile and a maximum in the vicinity of 300 ft. per mile. These slopes are plotted in Fig. 16 on a profile through the Monument. Their point of origin is at the Monument boundary and elevation 3650 which is the expected reservoir level for 80 percent of the time. It is seen that the 125 ft. per mile slope closely parallels the grade of the lower 2¾ miles of Bridge Creek. This fact may be significant and explain its gradient.

When a flood reaches the reservoir level the velocity will immediately decrease. The heavier particles will drop out. The smaller will be carried on a ways, the smallest the farthest, but not very far. The Bureau² estimates that the maximum expected five-hour flood would amount to 475 Acre Feet. At maximum reservoir level 3700, the water within the Monument would total 750 A.F. for the first few years. The largest flood would displace about two-thirds of the water within the Monument. A few stray currents would carry some of the water on a ways, but most all would remain to deposit its silts within the Monument. The water surface at 3700 covers about 18 acres. The San Juan River, only 8 air miles away, carries large amounts of silts when in flood. The average annual amount is about 1.5 percent by volume. If we accept this figure for a flood produced by Bridge Creek, the area within the Monument would be covered to an average depth of nearly 5 inches in

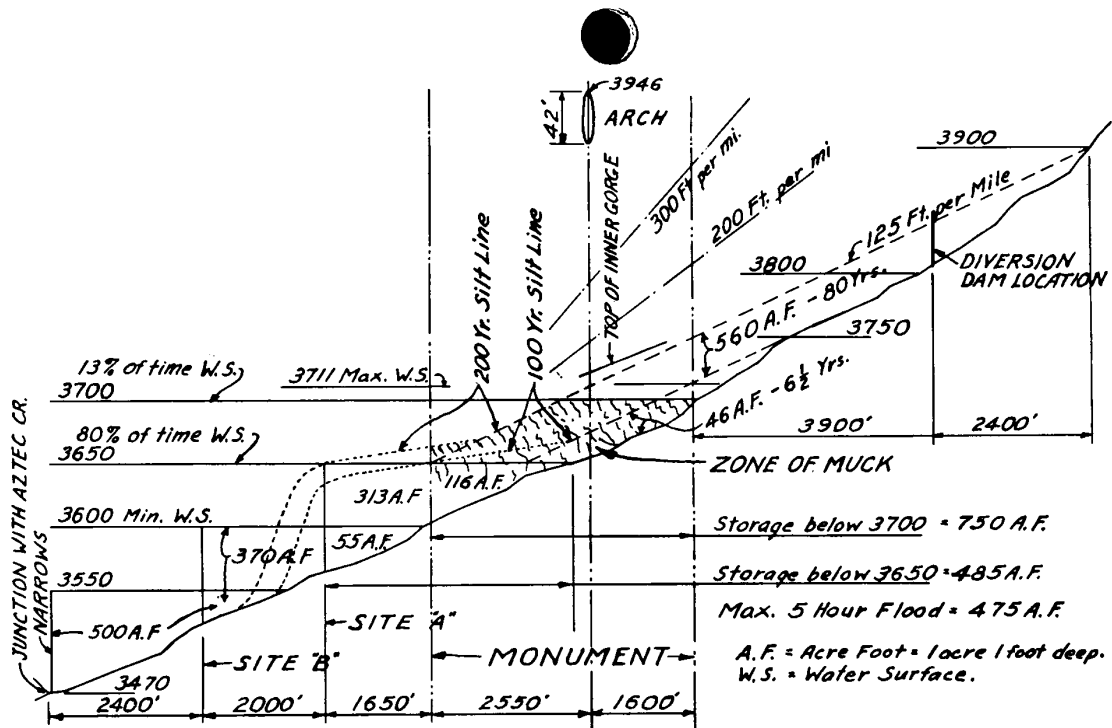


Fig. 16—PROFILE THROUGH RAINBOW BRIDGE CANYON

Mass diagrams of the volumes available for the storage of water and sediments below certain elevations are plotted on the profile. Also plotted are average data from Fig. 15. The condition is shown that can be expected to occur within the Monument for the next 200 years if flooding is allowed. The estimated 100- and 200-year build-up is shown.

rocks, sand, soft mud and some tree limbs, etc. However, due to the shallow depths at the edges, most of the material will be deposited in deeper portions and at the upper end.

With the water at the 80 percent of the time level, the maximum flood would be held in the region from the Bridge to about 1700 to 2000 feet below the Monument. The water surface area would be about the same. Again the mud and debris would average about 5" deep. With the reservoir surface for most of the time fluctuating from just below the Bridge to the upper boundary, the muds and soft sands will be deposited within the Monument most of the time.

The writer has plotted in Fig. 16 what can be reasonably expected to occur within and both upstream and downstream of the Monument within the first 200 years after the Glen Canyon Reservoir fills, if water is not kept out of the Monument. The dotted and dashed lines show the probable stream-bed profile at the end of 100 years and at the end of 200 years. It is readily evident

that for the first 200 years a fluctuating zone of deep soft muck will exist within the Monument and under the Bridge. Besides being an unpardonable eyesore (unpardonable because it can be avoided), the muck will restrict the area available for the use of visitors. It will also make landing of visitors coming by boat disagreeable if not an outright hazard.

CONCLUSIONS

1. The construction of a barrier dam at Site C is the most practical solution of protecting Rainbow Bridge National Monument from impairment by waters stored behind Glen Canyon Dam.
2. A rockfill dam would be feasible, the most suitable, safe and probably the most economical type of dam to construct.
3. A properly executed barrier dam at Site C would produce the least scars and disturbance to the area of any of the various suggested methods for protecting the Monument.

4. With diligent and conscientious prosecution Site C Dam can be financed, designed and constructed in less than two years.
5. No alterations of Glen Canyon Dam, other than those presently planned, are necessary.
6. No alterations of the scheduled filling of Glen Canyon Reservoir may be required. The future unknown and unpredictable stream flow will be the determining factor.
7. A most undesirable condition will prevail within the present Monument and directly under the arch of Rainbow Bridge if no protection for the Monument is provided. Future visitors to the Monument will leave the area convinced that despite American technological know-how we either could not, or would not, preserve a natural museum piece.
8. A barrier dam at Site C would be relatively low in cost and a pittance when compared to the cost of Glen Canyon Dam. The cost would be only a fraction of the contingency allowance for Glen Canyon Dam. (Officials of the Bureau, testifying before Congressional Committees at hearings on the Colorado River Storage Project Act, maintained that ample funds were contained in the contingency allowance to construct protective works for the Monument).

APPENDIX A COST COMPUTATIONS

The two major items of cost involved are the Site C Dam embankment and the construction of an access road. The cost of the pumping plant will be only a minor item. The cost of providing facilities to bypass the natural stream flows and flood flows will be relatively small. The cost of a lower cofferdam, as pointed out, may not be necessary and, therefore, should be included as a contingency item. The cost of providing access to the Monument is also a minor expense.

As pointed out, a large, if not the major, portion of the access road should justifiably be charged to recreation cost. The cost of the trail bypassing the dam and providing access to the Monument should also be con-

sidered a recreation cost. Since the moneys for these would have to be made available by a Congressional appropriation, a good idea of their magnitude is required.

It may be argued by some that, due to the remoteness of the area, the cost of construction of Site C will be high and hard to determine within a reasonable degree of accuracy. However, it is pointed out that Site C is a major dam and many major dams of this type are located in relatively remote areas and that access is somewhat of a problem in most cases. Therefore, it is felt that the experience of costs of similar types of construction at various locations can be used to arrive at a reasonably accurate estimate of the cost of Site C Dam. The Bureau of Reclamation, for the past two decades, has been preparing Irrigation and Hydro-Power Construction Cost Indexes. They use the years 1949-51 as an index of 1.0. The rockfill dam is placed in the general category of earth dams. The Bureau carries a cost index for earth dams and pumping plants as tabulated below for the past four years:

Earth Dams

	Jan.	Apr.	July	Oct.
1957	1.15	1.19	1.22	1.22
1958	1.23	1.17	1.10	1.10
1959	1.12	1.12	1.12	1.12
1960	1.13	1.10	1.07	1.07

Pumping Plants Bldg. & Equip.

	Jan.	Apr.	July	Oct.
1957	1.43	1.45	1.46	1.46
1958	1.46	1.46	1.42	1.46
1959	1.47	1.47	1.48	1.48
1960	1.48	1.44	1.46	1.44

It is noted that since the middle of 1958 the index has been relatively stable. Therefore, it is reasonable to assume that the costs of the various major items of construction at Site C can be taken without adjustment from the bids tabulated below. The writer estimates the project cost of Site C Dam as tabulated below. He has listed two sets of costs. The lower is considered a reasonable estimate of its probable cost. The lower is based on low bid prices taken from eight Western projects bid in the last two years. The higher is the extreme upper limit of cost based on the highest bid price range for those same eight projects.

ESTIMATED COST OF SITE C PROJECT

Item	Quantity	Unit Cost	Probable Cost	Unit Cost	Upper Limit
Dam Embankment					
Stripping Fnd. & Abuts.	100,000 cy	\$0.80	\$ 80,000	\$2.00	\$ 200,000
Impervious Core	540,000 cy				
Excavate and haul		0.50	270,000	1.00	540,000
Compacting		0.30	162,000	0.50	270,000
Rockfill					
	3,200,000 cy				
Excavate and haul		1.50	4,800,000	2.50	8,000,000
Place and roll		0.20	640,000	0.50	1,600,000
Total Embankment			<u>\$ 5,952,000</u>		<u>\$10,610,000</u>
Conduit under dam					
8 ft CMP	2,320 lf	\$100	232,000	\$125	290,000
Conc. backfill	4,500 cy	35	157,000	50	225,000
Press. grouting	100 sacks	10	1,000	20	2,000
Total Conduit Bypass			<u>\$ 390,000</u>		<u>\$ 517,000</u>
Pumping Plant					
3000 g.p.m. Deep Well Pump complete with engine, gear box, etc.	4 @	\$15,000	60,000	\$23,000	92,000
Shipping, installing and testing	4 @	3,000	12,000	4,500	18,000
Excavating rock	1,000 cy	10	10,000	15	15,000
Struct. conc. incl. reinf.	1,000 cy	90	90,000	125	125,000
30" R.C.P.	460 lf	25	11,500	38	17,500
24" Molox C.I. Pipe	430 lf	50	21,500	75	32,500
16" Non-rising stem Gate Valve	1 @		3,000		4,500
12" Gate Valves	4 @	750	3,000	1125	4,500
Manifold pipe etc.			5,000		7,500
Fuel tank and equipment			10,000		15,000
Automatic controls			5,000		7,500
Total Pumping Plant			<u>\$ 231,000</u>		<u>\$ 339,000</u>
Mud Discharge					
24" Molox C.I. Pipe	600 lf @	\$50	30,000	\$75	45,000
Sub-Total (Dam)			<u>\$ 6,603,000</u>		<u>\$11,511,000</u>
Contingency Fund		15%	990,000		1,727,000
Total Dam Complete			<u>\$ 7,593,000</u>		<u>\$13,238,000</u>
Access Road					
Rework 57 miles	@	\$10,000	570,000	10,000	570,000
New 22 miles	@	50,000	1,100,000	100,000	2,200,000
Bridge			225,000		230,000
Total Access Road			<u>1,895,000</u>		<u>3,000,000</u>
Trail 6½ miles	@	15,400	100,000		100,000
Project Grand Total (Without Cofferdams)			<u>\$ 9,588,000</u>		<u>\$16,338,000</u>
Small Cofferdam					
	125,000 cy	\$1.00	125,000	\$1.50	178,500
Project Grand Total (Small Cofferdam)			<u>\$ 9,713,000</u>		<u>\$16,516,500</u>
Large Cofferdam					
	600,000 cy	\$1.00	600,000	\$1.50	900,000
Project Grand Total (Large Cofferdam)			<u>\$10,188,000</u>		<u>\$17,238,000</u>

The unit costs used in estimating the cost of Site C Dam were derived from the following eight Western projects:

- | | |
|--|--------------|
| 1. Tolt River So. Fork Storage Res. for Seattle, Washington | bid 1-14-59 |
| 2. Frenchman Dam, Plumas County, California | bid 8-26-59 |
| 3. Dillon Dam, Summit Co., Colo. for City and Co. of Denver | bid 10-8-59 |
| 4. Newell Dam on Newell Creek for San Jose, California | bid 3-1-60 |
| 5. Black Butte Dam Project, Glen & Tehama Counties, California | bid 5-10-60 |
| 6. Stumpy Meadows Project, El Dorado Co., California | bid 5-19-60 |
| 7. New Hogan Dam, Calaveras Co., California | bid 10-25-60 |
| 8. Lewiston Dam on Trinity River, California | bid 12-2-60 |

Excavation — Stripping Fnd.
and abutments

Ref.	Quantity	Low Bidder	2nd Bidder	No.	Bid Range	
					Low	High
1.	578,000 cy	\$0.792	\$0.76	9		
2.	48,000	.68	1.00	8	\$0.68	\$3.00
3.	85,000	.60	.65	10		
3.	175,000	.55	.65	10		
4.	46,000	1.20	.70	13		
5.	60,000	.50	.26	14	.13	1.00
6.	78,000	.75	1.25	7	.75	1.25
7.	158,000	1.40	.40	9	.40	2.50
(Site C	100,000		.80			2.00)

Impervious Core

Excavate and haul						
1.	764,000 cy	.50	.58	9		
2.	575,000	.45	.60	8	.45	1.10
3.	750,000 Pit 1	.37	.36	10		
3.	1,300,000 Pit 2	.38	.36	10		
*4.	379,000	.52	.50	13		
5.	2,500,000	.35	.25	14	.24	.60
*6.	625,000	.15	.25	7	.13	.27
7.	600,000	.60	.66	9	.50	1.10
*8.	100,000	.24	.22	7		
*Includes compacting						
(Site C	540,000		.50			1.00)

Compacting

1.	304,000 cy	.265	.25	9		
2.	478,000	.28	.20	8	.133	.50
3.	700,000 Zone 1	.06	.14	10		
3.	1,900,000 Zone 2	.04	.10	10		
5.	150,000	.45	.70	15	.31	1.00
7.	487,000	.15	.27	9		
(Site C	540,000		.30			.50)

Rockfill

Excavate and haul						
1.	75,600 cy	2.30	3.27	9		
2.	24,400 Riprap	2.00	4.00	8	2.00	7.00
3.	186,000 Riprap	2.75	2.00	10		
5.	250,000	.50	.05	14	.05	.75
6.	129,000 Quarry	1.66	2.50	7	1.40	2.50
6.	30,900 Riprap	.60	.60	7	.20	.70
7.	1,519,000	1.20	1.28	9	.90	1.90
8.	11,000 Riprap	1.40	2.20	7		
(Site C	3,200,000		1.50			2.50)

Roll rockfill

1.	57,900 cy	.265	.69	9		
7.	188,000	.15	.11	9	.11	.62
7.	1,647,000	.15	.06	9	.06	.55
(Site C	3,200,000		.20			.50)

96" C.M.P. 12 ga.

2.	170 lf	\$50	\$55	8	\$50	\$80
----	--------	------	------	---	------	------

108" Struct. Plate Pipe

New Mexico road 104 lf						
(Site C 96" C.M.P. 2320 lf		60	60	9		\$125)
		\$100				

(Continued on page 26)

The cost of the pumps and driving units are from direct quotations to the writer from leading manufacturers including freight to railhead.

3,000 G.P.M. deep well pump including gear box	(a)	\$ 4,310.00
	(b)	7,000.00
	(c)	3,230.00
Diesel Engine (230 H.P.)	(d)	7,400.00
(300 H.P.)	(e)	10,400.00
3,000 G.P.M. deep well pump 250 H.P. Elect. Motor	(f)	5,360.00
Diesel Elect. Gen. Unit, 1250 H.P. Engine, 1200 H.P. Generator	(g)	34,990.00
Units (b) and (d) were quoted together		14,400.00
Units (c) and (e) were quoted together		13,630.00

The road estimate was based on the following:

1. 6.16 miles of 2 lane asphalt paved road through mountainous forest land in New Mexico at aver. of \$71,848 per mi. Bid 12-30-58 (9 bidders) (ENR 2-12-59).
2. 8.92 miles of 30' wide oiled road on West Gallatin Highway in Montana at aver. of \$48,048 per mile (including bridges). Bid 11-4-58 (13 bidders) (ENR 1-29-59).

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FEDERATION
OF
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(dictated 5/29/61)
June 3, 1961

sent to ed

Mr. Cecil Dopts
1037 South Beretania Street
Honolulu 14, Hawaii

Dear Cecil:

Thank you for your letter of May 24, 1961 setting forth your views on federal aid to education, and the Colorado River Storage Project.

I am happy to note that we agree on federal aid to education. You may be assured of my full and strenuous support.

I must confess that up to this moment I was not concerned about the Colorado River Storage Project. However, now that I know that one of my constituents is interested, you may be assured that I shall indicate my interest to the Chairman.

Aloha,

DANIEL K. INOUE
Member of Congress

DKI:sb

MAY 27 1961

1037 South Beretania St.
Honolulu 14, Hawaii
May 24, 1961

The Honorable Daniel Inouye
House of Representatives
Washington, D. C.

Dear Dan,

With newspaper accounts of the flood of letters you have been getting recently, I will make my comments as brief as possible:

- (1) Federal Aid to Education. I assume you are doing everything possible to push through the Federal Aid to education bill, including the Federal impact provisions. I simply want to urge you to keep on pushing for passage of the bill.

I am in agreement with your May 10th "Report" on Aid to Education. I would suggest this caution, however: Aid to private schools should not tend to undermine support for public schools. Any substantial aid will tend to do this. Even without government aid to private schools here, Hawaii's support tends to be lessened because of the large percentage of pupils attending private schools.

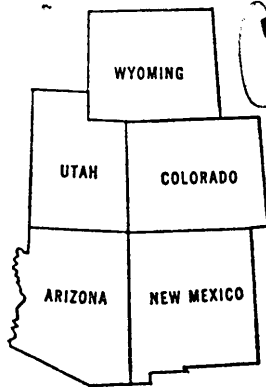
- (2) Colorado River Storage Project. I urge you to support the Combination Plan to transmit power from these dams. You know my firm conviction that private industry should do any job that it can do as well as Government can but that Government should help, or do the job, if private industry cannot do it. My niece from Arizona has convinced me that in this case the Combination Plan is needed, not the Federal government alone.

I wish to express my Aloha for continued success.

Sincerely yours,



CECIL DOTTS



Colorado River Basin

Colorado River Basin Consumers Power, Inc.

ROOM 202, 343 SOUTH STATE ST.

SALT LAKE CITY 11, UTAH

Elgin 9-3144

May 29, 1961

HARVEY F. McPHAIL
Executive Director

Dear Congressman Inouve:

Congress will shortly be asked to decide the question of appropriations for construction of final segments of the Colorado River Storage Project transmission system. In authorizing this great Project, Congress designated that the U. S. Bureau of Reclamation construct the lines as part of the entire Project...to deliver Storage Project power to the preference customers. At the request of the private utilities in the area, Congress suggested the possibility of using private utility systems "provided consumer rates and Project payout were not adversely affected."

Private utility proposals to build segments of the line and "wheel" power were carefully analyzed by the Bureau of Reclamation by two independent consultants and our own organization. The results unanimously showed that the utilities' plan would cost the ratepayers millions of dollars, delay repayment of the Project and/or reduce irrigation benefits. Therefore, Secretary Seaton, of President Eisenhower's administration, rejected the utilities' proposals and approved construction of the all-Federal system. Secretary Udall reviewed and agreed with this decision. Despite this logical sequence, the five private utilities in Arizona, New Mexico, Utah, Colorado and Wyoming are vigorously opposing the Secretaries' decisions and are banded together to control the billion dollar Federal Project with an expenditure of only 10% of this amount.

The implications of the utilities' proposal are much more far-reaching than indicated by the offer on its face. The attached editorial from the Lamar Daily News clearly illustrates the fears of many people in the Rocky Mountain area that Electric Bond and Share and some of its former subsidiaries are attempting to impose on the five-state area a giant private power monopoly. Holding company abuses and monopolistic practices in the electric industry were clearly revealed in the congressional investigations by both the House and Senate in 1955 and 1956. (Monopoly in the Power Industry, U. S. Sen., 83rd Cong., 2nd Sess.; Private Electric Utilities' Organized Efforts to Influence the Secretary of the Interior (Ebasco Services, Inc., and Rocky Mountain Group) 85th Cong., 1st Sess., Union Calendar No. 59, H. Rept. No. 213.)

Our 150 consumer-owned utilities serve 1,500,000 people. They will use the power and repay 90% of the Project's costs. We don't want to be at the mercy of a private utility monopoly.

Respectfully,

Harvey F. McPhail
Harvey F. McPhail
Executive Director

Honorable Daniel K. Inouve
House of Representatives
Washington 25, D. C.

THE LAMAR DAILY NEWS

Published Daily Except Sundays
Entered as second class matter August 15, 1907, at the post office
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FRED M. BETZ SR. and FRED M. BETZ JR., Co-Editors

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The Editor Speaking...

WE DO HAVE A STAKE IN WHO BUILDS THE TRANSMISSION LINES

To many people it may seem that it doesn't make much difference to them as to who owns the transmission lines which will bring power from the Colorado River Storage Project to such areas as the Arkansas Valley, but as a matter of fact we have a great deal at stake.

Here in Lamar, with our municipal light and power plant, which has for over 40 years served a large area, and Las Animas and La Junta, with their municipal plants, and the Southeast Colorado Power Association, consumers of the Arkansas Valley have a vital interest. The question involved is whether the power generated by such federally-constructed installations as that now going in at Glen Canyon dam, shall come to us over federally-built transmission lines, or whether five giant companies shall come between the power generating station and the consuming public.



F. M. Betz Sr.

This brings to mind the situation which was revealed by the Federal Trade Commission back in the 20's and 30's, when the abuses in the public utility holding company field became so bad that it brought about the collapse of the Samuel Insull empire, and exposed various nationwide propaganda programs, financed by a combination of big-time operations.

Although Insull and his corporation were the best known among these modern-day pirates, the largest of the companies was Electric Bond and Share, holding complete control over dozens of utilities from its Wall Street offices.

When the abuses of these giant holding companies were revealed by Congressional investigation, Congress smashed the "racket" by passing the Public Utility Holding Act of 1935. This act was passed to protect the small investors in the subsidiary companies and the utility rate payers from arbitrary and excessive charges by the parent holding company. The holding companies were proved guilty of mulcting not only the rate payers, but even their own subsidiaries. They siphoned off the profits of the local utilities by huge "consulting fees" and exorbitant construction contracts — and then raised the electric rates to get even more.

Not long after the act was passed Electric Bond and Share, Cities Service and others were forced to divest themselves of their far-flung utility empires and permit their subsidiaries to operate as relatively independent companies. In many instances, however, the holding companies such as Electric Bond and Share, continued — and still continue — to receive large annual retainers or "consulting fees" from their former subsidiaries.

Is it merely an interesting coincidence that the five Rocky Mountain Area utilities seeking to build controlling links in the Colorado River Storage Project transmission lines were important parts of the old holding companies? Don't some of the five still pay tribute in the form of large annual retainers or "consulting fees"? Are holding company abuses being returned to the West by these five large private utilities joining together in this effort to impose a "tollgate" on the Colorado River Storage Project transmission system? Will a private utility strangle-hold on the Colorado River Storage Project transmission system accomplish the same objectives for these companies and their Wall Street owners which Congress condemned when it broke up the holding companies?

Is this not an attempt to physically join these five companies into a powerful giant Rocky Mountain system by building small, relatively inexpensive portions of the government's transmission lines? Is this not an attempt to do by indirection what Congress has prohibited the holding companies from doing directly? By physical interconnections are these utilities seeking to accomplish what they used to do by interlocking directorates and interconnected corporations?

The giant holding companies of the thirties were broken up by the United States Congress. Today's private utilities in the Rocky Mountain area, previously holding company subsidiaries, are now asking Congress to invest them with the old holding company power over the economy of the West — through this ruse of building a few miles of vital transmission lines. They are tacitly asking for dominion and control over a great natural resource. They unblushingly demand the right to sit astride a billion dollar public investment and dominate its operation as they see fit.

ST. LOUIS POST-DISPATCH

Editorial

ST. LOUIS POST-DISPATCH

Founded by JOSEPH PULITZER

December 12, 1878

Published by

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THE POST-DISPATCH PLATFORM

I KNOW THAT MY RETIREMENT WILL MAKE NO DIFFERENCE IN ITS CARDINAL PRINCIPLES, THAT IT WILL ALWAYS FIGHT FOR PROGRESS AND REFORM, NEVER TOLERATE INJUSTICE OR CORRUPTION, ALWAYS FIGHT DEMAGOGUES OF ALL PARTIES, NEVER BELONG TO ANY PARTY, ALWAYS OPPOSE PRIVILEGED CLASSES AND PUBLIC PLUNDERERS, NEVER LACK SYMPATHY WITH THE POOR, ALWAYS REMAIN DEVOTED TO THE PUBLIC WELFARE, NEVER BE SATISFIED WITH MERELY PRINTING NEWS, ALWAYS BE DRASTICALLY INDEPENDENT, NEVER BE AFRAID TO ATTACK WRONG, WHETHER BY PREDATORY PLUTOCRACY OR PREDATORY POVERTY.

JOSEPH PULITZER

April 10, 1907

Wednesday, June 7, 1961

The Colorado's Power

A last-ditch fight by Western utility companies to control the transmission lines in the Federal Government's Upper Colorado River Development Project is coming to a head before the House subcommittee on public works appropriations. The immediate issue is a \$14,500,000 appropriation to build a transmission line from the first of four dams. What is ultimately at stake is whether the billion-dollar project shall attain maximum productivity and primarily serve the broad public interest.

The Upper Colorado Project is, to an area embracing western Colorado, eastern Utah, and parts of Wyoming, New Mexico and Arizona, essentially what TVA is to the Tennessee Valley and the Missouri River System dams are to the Missouri Valley. It is the region's development program based on its most important river complex. The major elements of the Upper Colorado project are irrigation, electric power production, and flood control.

Congress, in enacting the Upper Colorado Act five years ago, rejected the objections to a publicly owned and operated transmission system, and directed the Secretary of Interior to build these facilities so that the power plants would be "operated in conjunction with other federal power plants, present and potential, to produce the greatest practicable amount of power." The companies' bid to construct and operate the transmission lines was rejected by Secretary Seaton in the Eisenhower Administration and has again been rejected by Secretary Udall in the Kennedy Administration.

The utilities have now, in the words of the department's operative agency, the Reclamation Bureau, "undertaken a major campaign to reverse" this bipartisan decision. Their campaign, the bureau charges, spreads "half-truths" and "creates a mis-impression of the true facts."

The syndicate refers to its proposal as "a combination Company-Federal system," an attractive slogan because it sounds like private and public enterprise working together for a common purpose. Analysis shows, however, that the effect of the Company participation would be to frustrate Federal purpose and serve Company purpose.

The syndicate declares its plan would save taxpayers \$136,000,000 in original investment, but the Reclamation Bureau figures the cost of transmission would be inflated some \$45,000,000 over the life of the project.

The same rate for power would be paid under both plans by the preference customers for whom the project is being built—irriga-

tion districts, municipal power systems, rural electric co-operatives and other non-profit users and distributors of electricity—according to the syndicate. The Reclamation Bureau says the syndicate plan would inflate the price of electricity 10 per cent and penalize preference customers \$3,000,000 a year.

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It is the contention of the syndicate that "preference customers would get their same allotment of power under either plan." A study made for the preference customers by consulting engineers shows that within a few years after the project was completed, any allotment to the syndicate would be maintained at the expense of preference customers, who by then would need all the output of the publicly owned generators, and more.

The Reclamation Bureau goes on to point out that maximum utilization of the power potential on the Upper Colorado system cannot be attained by tying it in with the generating system of the private syndicate. Far greater productivity would be obtained through tie-ins with the public generating systems all around it: to the south, Hoover and other dams of the Lower Colorado; to the west, the Bonneville system; and to the east, the Missouri River Basin plants. This would also increase the monetary return to the United States Treasury from power sales, on which 90 per cent of the repayment of the investment depends.

The controversy over the Upper Colorado Project is, as we see it, not an ideological one of public vs. private power. The question is how to develop most fully the power resources in which public funds are invested for public purposes. If the Federal Government is able to invest nine tenths of the total cost to build the productive plant, it is certainly able, and has the obligation, to invest the remaining one tenth for transmission lines to make sure that the product best serves the broad national purpose of resource development for which it was created.