NAVAJO IRRIGATION—SAN JUAN-CHAMA DIVERSION

WEDNESDAY, JULY 9, 1958

UNITED STATES SENATE, SUBCOMMITTEE ON
IRRIGATION AND RECLAMATION, OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 10 a. m. in room 224, Senate Office Building, Senator Clinton P. Anderson (presiding).

Present: Senator Anderson.

Senator ANDERSON. The subcommittee will be in order.

The hearing today is on S. 3648, to authorize the Secretary of the Interior to construct, operate, and maintain the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as participating projects of the Colorado River storage project.

We are glad to welcome the distinguished senior Senator from New Mexico, Mr. Chavez, a cosponsor with me of the bill; the able Representative from New Mexico, Mr. Montoya, and the distinguished Governor of New Mexico, Hon. Edwin L. Mechem.

We also greet a representative group of other New Mexico officials, businessmen, and other private citizens, as well as spokesmen for Texas and California who have asked to be heard.

This bill was introduced on April 21, 1958. A companion bill, H. R. 12170, sponsored by our able colleague, Representative Montoya, is pending in the House of Representatives.

The Navajo irrigation development and the San Juan-Chama diversion have been under more or less active investigation for a quarter of a century. Every possible phase of each development has been thoroughly engineered. Hundreds of thousands of dollars have been expended in studying water supply, irrigation potentials, soil conditions, and every other economic phase.

These phases included the plight of the Navajo Indians and their urgent need for rehabilitation, through irrigation and development of agricultural and mineral resources, municipal water supplies for the expanding cities and towns downstream in New Mexico.

The signing into law on April 11, 1956, of legislation authorizing construction of the Colorado River storage project was the culmination of half a century of research, study, and congressional attention. Some of the engineering studies and land withdrawals were made as early as 1904.

From 1904 until the present, we have travelled a long, hard road. The seven Colorado River Basin States spent much time and study over a number of years before ratifying the Colorado River compact in 1922.

The Colorado River compact was intended to make possible development of both upper and lower basins of the Colorado River. It

recognized a dividing point between the upper and lower basins at Lee's Ferry, Ariz. The compact provides that the upper basin may consume 7.5 million acre-feet of water each year.

The final agreement to the terms of the compact was a major step forward in opening the way for legislation to authorize the project. Actually, we could say that this was really the beginning, because 34 years passed before the upper basin got its projects signed into law, although the lower basin had begun its construction 20 years earlier.

The Navajo and San Juan-Chama projects, as part of the upper Colorado River storage project will be constructed and operated under the terms of the Colorado River compact of 1922, and the upper basin compact approved by Congress April 6, 1949.

Without these agreements, the upper Colorado River project would never have been recommended by the Federal Government, nor would the Congress have approved it.

Much has been said in the Congress, in the press, and at gatherings around the Nation relative to the value of the upper Colorado River project and the various participating projects. Many persons have questioned the wisdom of this and other such projects. But they are in the minority.

The Upper Colorado River Basin is one of the Nation's most important storehouses of natural resources. This vast treasure chest may forever lie unopened unless the waters of the Colorado River and its tributaries are put to use.

The purpose of the Navajo irrigation project and the San Juan-Chama project is to provide water for municipal use, water for agriculture and water for the development of oil and gas, coal, uranium, and the many other minerals and resources that are found in the northwest part of New Mexico and that are of strategic importance to the safety and welfare of the entire country. Only time will tell how great a contribution these projects will make to the economy of the Southwest and the Nation as a whole, but it certainly will be large.

We are all gratified to know that a contract has been awarded for the construction of the Navajo Dam which will begin storing water for the irrigation of more than 100,000 acres of Navajo Indian land under the irrigation project.

The bill under discussion today makes provision for the authorization of the irrigation part of the Navajo project. This will include transporting water from the Navajo Dam to Indian lands to bring not only new hope but new opportunities to the more than 80,000 Navajo Indians in New Mexico and Arizona.

Once the Navajo irrigation project is in operation, we will have fulfilled some of the promises made to the Navajos in the treaty of 1868. We will have provided water for domestic use for the growing of much desired specialty crops, such as fruit and vegetables, and for feed for livestock, all of which are badly needed to improve the health and welfare of the Navajo Indians.

Some of the world's most valuable and vitally needed minerals are in the northwest part of New Mexico. Among them are oil, natural gas, and uranium. Development of these raw materials requires water and power as well as people, who in turn must have water for cities and towns. The Navajo irrigation project, along with the storage facilities of the Navajo Dam, will fill this need.

San Juan-Chama project: The San Juan-Chama project, authorized in this bill, would permit utilization of unappropriated waters of the San Juan River allocated to the State of New Mexico under the terms of the upper Colorado River compact.

Since studies of the feasibility of this project began, the population growth in the cities and communities along the Rio Grande River in New Mexico has been phenomenal. Large defense installations have been established at Albuquerque, Los Alamos, White Sands, and Alamogordo.

Meanwhile, due to protracted drought, water supplies have dwindled. Adding to the problem has been a steady rise in water requirements for irrigation, municipal, and industrial purposes.

The Indian communities along the Rio Grande, to cope with their health and sanitation problems, must have an increasing supply of domestic water. Small farming communities on tributary streams in northern New Mexico must have supplemental irrigation water to which they are entitled.

Presently the Rio Grande waters are fully appropriated, which makes it increasingly necessary that we make use of the surplus San Juan water by transporting it across the mountains to the Rio Grande. There it will supplement the present supply and guarantee the security of the defense establishments, and stabilize the general economy of central New Mexico.

The San Juan-Chama transmountain diversion project will initially transport about 110,000 acre-feet of water annually into the Rio Grande River. The San Juan River is our last large source of water in New Mexico. This water will relieve our present situation and permit the use of water than would otherwise go on down the Colorado. We cannot afford to delay this project indefinitely. It is important to the Nation as well as our State.

In summary, by the Colorado River compacts, New Mexico has been awarded 800,000 acre-feet of water annually from the San Juan River. Without the Navajo irrigation project and the San Juan-Chama project, we will never be able to put this water to beneficial use.

S. 3648, together with the report of the Department of Interior, dated July 8, 1958, signed by Fred G. Aandahl, Assistant Secretary of Interior on S. 3648, and a copy of the proposed coordinated report on the San Juan-Chama project, Colorado-New Mexico; and the Navajo project, New Mexico, dated September 6, 1957; will be inserted in the record at this point.

The proposed coordinated report was circulated to the States of the Colorado River Basin and other affected States following its approval by Secretary Fred A. Seaton on October 16, 1957.

There are also attached to the proposed report, correspondence between the Governor of New Mexico and the State engineer of New Mexico.

(Information referred to follows:)

[S. 3648, 85th Cong., 2d sess.]

A BILL To authorize the Secretary of the Interior to construct, operate, and maintain the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as participating projects of the Colorado River storage project, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Congress hereby approves as partic-

ipating projects of the Colorado River storage project the Navajo Indian irrigation project as described in the Bureau of Indian Affairs report entitled "Navajo Project, New Mexico Feasibility Report, January 1955", and as modified by the Bureau of Indian Affairs Supplemental Report entitled "Navajo Project, New Mexico Supplemental Report, 1957, to Feasibility Report, January 1955", and the San Juan-Chama project as described in the Bureau of Reclamation report entitled "San Juan-Chama Project, Colorado-New Mexico, November, 1955", such project plans and reports having been prepared and submitted as required under the provisions of the Act of April 11, 1956 (70 Stat. 105).

SEC. 2. Pursuant to the provisions of the Act of April 11, 1956 (70 Stat. 105), the Secretary of the Interior is authorized to construct the Navajo Indian irrigation project to include a net area of one hundred and ten thousand six hundred and thirty acres of land with an average annual diversion requirement of five hundred and eight thousand acre-feet of water, the repayment of the costs of construction thereof to be in accordance with the provisions of said Act of April 11, 1956 (70 Stat. 105), including, but not limited to, section 4 (d) thereof.

SEC. 3. (a) In order to provide for the most economical development of the Navajo Indian irrigation project, the Secretary of the Interior is hereby authorized and directed to declare by publication in the Federal Register that the United States of America holds in trust for the Navajo Tribe of Indians any legal subdivisions or unsurveyed tracts of federally owned land outside the present boundary of the Navajo Indian Reservation in New Mexico in townships 28 and 29 north, ranges 10 and 11 west, and townships 27 and 28 north, ranges 12 and 13 west, New Mexico principal meridian, susceptible to irrigation as part of the Navajo Indian irrigation project or necessary for location of any of the works or canals of such project: *Provided, however*, That no such legal subdivision or unsurveyed tract shall be so declared to be held in trust by the United States for the Navajo Tribe until the Navajo Tribe shall have paid the United States the full appraised value thereof: *And provided further*, That in making appraisals of such lands the Secretary of the Interior shall consider their values as of the date of approval of this Act, excluding therefrom the value of minerals subject to leasing under the Act of February 25, 1920, as amended (30 U. S. C. 181–286), and such leasable minerals shall not be held in trust for the Navajo Tribe and shall continue to be subject to leasing under the Act of February 25, 1920, as amended, after the lands containing them have been declared to be held in trust by the United States for the Navajo Tribe.

(b) The Navajo Tribe is hereby authorized to convey to the United States, and the Secretary of the Interior is hereby directed to accept on behalf of the United States, title to any land or interest in land within the above-described townships acquired in fee simple by the Navajo Tribe, and after such conveyance said land or interest in land shall be held in trust by the United States for the Navajo Tribe as a part of the Navajo Indian irrigation project.

(c) The Secretary of the Interior is hereby authorized and directed to acquire by purchase, exchange, or condemnation any other land or interest in land within the townships above described susceptible to irrigation as part of the Navajo Indian irrigation project or necessary for location of any of the works or canals of such project. After such acquisition, said lands or interest in lands shall be held by the United States in trust for the Navajo Tribe of Indians and the price of such lands or interest in lands or of the land given in exchange therefor by the United States shall be charged to funds of the Navajo Tribe of Indians on deposit in the Treasury of the United States.

SEC. 4. In developing the Navajo Indian irrigation project, the Secretary is authorized to provide capacity for municipal and industrial water supplies or miscellaneous purposes over and above the diversion requirements for irrigation stated in section 2 of this act. But such additional capacity shall not be constructed and no appropriation of funds for such construction shall be made unless, prior thereto, contracts have been executed which, in the judgment of the Secretary, provide satisfactory assurance of repayment of all costs properly allocated to the purposes aforesaid with interest as provided by law.

SEC. 5. The Navajo Indian irrigation project shall be constructed, operated, and maintained subject to the provisions of section 4 of the Act of April 11, 1956 (43 U. S. C. 620c), to the same extent as if such project were authorized by section 1 of said Act (43 U. S. C. 620). Payment of operation and maintenance charges of the irrigation features of the Navajo Indian irrigation project shall be in accordance with the provisions of the Act of August 7, 1946 (60 Stat. 867): *Provided*, That the Secretary of the Interior in his discretion may transfer to [illegible] operation and maintenance of all or any

part of the Navajo Indian irrigation project works, subject to such rules and regulations as he may prescribe, and, in such event, the Secretary may transfer to the Navajo Tribe title to movable property necessary to the operation and maintenance of project works.

SEC. 6. Pursuant to the provisions of the act of April 11, 1956 (70 Stat. 105), the Secretary of the Interior is authorized to construct, operate, and maintain an initial stage of the San Juan-Chama project, in accordance with the Bureau of Reclamation report entitled "Supplemental Report, San Juan-Chama Project, Colorado-New Mexico, May 1957", said initial stage to have an average annual diversion of one hundred and ten thousand acre-feet of water.

SEC. 7. (a) No person shall have or be entitled to have the use for any purpose, including uses under the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project authorized by sections 2 and 6 of this Act of water stored in Navajo Reservoir or of any other waters of the San Juan River and its tributaries originating above Navajo Dam to the use of which the United States is entitled, except under contract satisfactory to the Secretary of the Interior and conforming to the provisions of this Act. Any such contract shall make provision for a sharing of the run-off available from the San Juan River and its tributaries above Navajo Dam in any year in which the Secretary anticipates a shortage taking into account both the prospective run-off and the water in storage, such sharing to be in the same proportion as the normal diversion requirement under said contract bears to the sum of the normal diversion requirements at said time of shortage under all contracts that have been made hereunder. The Secretary shall not enter into contracts beyond a total amount of water that, in his judgment, in the event of shortage will result in a reasonable amount being available for the diversion requirements for the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as specified in sections 2 and 6 of this Act.

(b) In the event contracts are entered into for delivery from storage in Navajo Reservoir of water not covered by subsection (a) of this section, such contracts shall be subject to the same provision for sharing water supply in the event of shortage as in the case of contracts required to be made pursuant to subparagraph (a) of this section.

SEC. 8. Section 12 of the Act of April 11, 1956 (70 Stat. 105) shall not apply to the works authorized by this Act. There are hereby authorized to be appropriated out of any moneys in the Treasury not otherwise appropriated, such funds as may be required to carry out the purposes of this Act, but not to exceed $208,000,000.

INTERIOR DEPARTMENT REPORT ON S. 3648

DEPARTMENT OF THE INTERIOR,
Washington, D. C., July 8, 1958.

HON. JAMES E. MURRAY,
Chairman, Committee on Interior and Insular Affairs,
United States Senate, Washington, D. C.

DEAR SENATOR MURRAY: This responds to your request for the views of this Department on S. 3648, a bill to authorize the Secretary of the Interior to construct, operate, and maintain the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as participating projects of the Colorado River storage project, and for other purposes.

A proposed coordinated planning report on the Navajo Indian irrigation project and the San Juan-Chama project has been prepared jointly by the Commissioner of Indian Affairs and the Commissioner of Reclamation, and has been approved and adopted by this Department. Copies have been sent to the affected States for review under the Flood Control Act of 1944 and the act of August 14, 1946, and to the interested Federal agencies for review under existing law and interagency agreements. Since the processing of the report has not yet been completed, we are not in a position to make any recommendation with respect to the enactment or provisions of the bill. It is suggested that the committee may wish to defer action on authorizing legislation until the planning report has been submitted to the Congress.

The proposed plan of development for the Navajo Indian irrigation project contemplates the construction of facilities to provide a water supply for the irrigation of lands to be developed solely for Indian use. The preservation and propagation of fish and wildlife would be a purpose of the project. The plan would not provide specific works for recreation or flood-control benefits.

Prior to construction of the project, studies of incremental canal capacity would be made to determine the feasibility of conveying domestic and industrial water supplies for potential requirements as recommended in the proposed planning report. Officials of the State of New Mexico anticipate that a relatively large industrial water demand will develop in the San Juan River Basin. This would be accompanied by associated water requirements for municipal, domestic, and miscellaneous purposes in the adjacent areas. Prospective municipal and industrial water users have already expressed interest in receiving water from the proposed Navajo Canal and have approached the Department in that regard. Section 4 of S. 3648 would authorize the provision of additional capacity for such purposes over and above the diversion requirements for irrigation on the Navajo Indian irrigation project.

Water for irrigation of the lands proposed to be included in the Navajo Indian irrigation project would be diverted from Navajo Reservoir which is now under construction as a storage unit of the Colorado River storage project. A main gravity canal would extend from Navajo Dam to Kutz Canyon. There the water would be dropped through a powerplant to develop electrical energy for pumping water to lands in the Newcomb and Bennett Peak areas of the project. The main canal would extend an additional 77 miles beyond the powerplant to serve project lands.

A net area of 110,630 acres of irrigable land has been proposed for development. The area would include off-reservation lands to be acquired in the South San Juan division and Navajo Indian Reservation lands in the Shiprock division. Section 3 of S. 3648 would provide authority for the acquisition and addition of the off-reservation lands to the proposed project. The project's productive area, which would exclude farmsteads and other nonproductive areas within farm units, would comprise (*a*) 8,918 acres served by gravity below the main canal in the South San Juan division and 70,359 acres in the Shiprock division, and (*b*) 25,882 acres served from the pump canals in the Shiprock division, or a total of about 105,100 acres. An average annual diversion of about 508,000 acre-feet of water from San Juan River would be required for that purpose. This would result in an average annual stream depletion of about 252,000 acre-feet, exclusive of reservoir losses.

The estimated construction cost of the proposed Navajo Indian irrigation project is about $135 million at January 1958 prices. Operation, maintenance, and replacement costs are estimated to average about $481,000 annually at January 1958 prices for both 50-year and 100-year periods of analysis. The benefit-cost ratio for the project would be 0.64 to 1 on the basis of direct irrigation benefits only, and 1.44 to 1 on the basis of total irrigation benefits. The appraisal of annual economic costs includes the $2 per acre-foot depletion charge of the storage project assigned to all participating projects for all benefit-cost ratio purposes.

As provided by sections 4 (d) and 6 of Public Law 485, 84th Congress (70 Stat. 105), authorizing the Colorado River storage project and participating projects, in the event that the Navajo participating project is authorized, payment of costs allocated to irrigation of Indian-owned, tribal or restricted lands within, under, or served by such project within the capability of the land to repay is subject to the act of July 1, 1932 (47 Stat. 564); the costs beyond the capability of such lands to repay are to be determined and, in recognition of the fact that assistance to the Navajo Indians is the responsibility of the entire Nation, shall be nonreimbursable.

The proposed plan of development for the San Juan-Chama project is designed to improve and stabilize the economy of the water deficient Rio Grande and Canadian River Basins of New Mexico by providing supplemental water to meet rapidly increasing needs. This would be accomplished by diverting water from the upper tributaries of the San Juan River. The water would be used for supplemental irrigation, for replacement of watershed depletions in the Rio Grande Basin, and for an additional supply for municipal, domestic, and industrial purposes. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the project. On the basis of January 1958 prices, the estimated construction cost for the project facilities studied in the plan of development is about $149 million. The evaluated total annual benefits for such a development would exceed the estimated annual costs in a ratio of about 1.7 to 1.

The proposed plan for initial stage development of the San Juan-Chama project, as recommended by the State of New Mexico, contemplates an average annual diversion of about 110,000 acre-feet from the San Juan River for utilization in the Rio Grande in New Mexico. The imported waters would be used for an additional municipal and industrial water supply (57,300 acre-feet) for the city of Albuquerque; a supplemental irrigation water supply (30,100 acre-feet) to about 39,300 acres of land in the Cerro, Taos, Llano, and Pojoaque tributary irrigation units in the Rio Grande Basin in New Mexico; and supplemental water (22,600 acre-feet) for irrigation of about 81,600 acres of irrigable land in the existing Middle Rio Grande Conservancy District. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the initial stage of development.

The proposed plan of development for the initial stage would involve three major elements, namely, diversion facilities (diversion dams and conduits), regulation facilities (Heron No. 4 Dam and Reservoir, and enlargement of outlet works of the existing El Vado Dam), and water use facilities (principally for the tributary irrigation units). Minimum basic recreation facilities would also be provided at the five project reservoirs.

The estimated construction cost of the project features of the proposed initial stage, on the basis of January 1958 prices, is about $86 million, which includes $400,000 for minimum basic recreation facilities. Project operation, maintenance, and replacement costs are estimated at about $346,000 annually for a 50-year period and about $378,000 annually for a 100-year period. Of the estimated project construction costs, reimbursable allocations of about $29,200,000 have been made tentatively to municipal and industrial water supply, $53,400,000 to irrigation, and $3 million to future uses. The recreation costs would be nonreimbursable. The proposed initial stage development would have engineering feasibility and would be economically justified in that the evaluated total benefits would exceed the estimated annual costs in a ratio of 1.26 to 1 for a 100-year period of analysis. If direct benefits only are considered in a 50-year period of analysis, that ratio would be about 0.81 to 1.

Cost allocated to municipal and industrial water supply, including interest during construction, would be repaid over a 50-year period with interest on the unamortized balance. The total to be paid by the municipal and industrial water users would be about $58,600,000. The cost of raw municipal and industrial water would be about 7.7 cents per 1,000 gallons, or about $25 per acre-foot.

This estimated municipal and industrial water rate would apply to water developed by initial stage construction. Repayment contract terms and water rates under subsequent development would be subject to reexamination as plans develop and additional quantities of municipal and industrial water would be contracted. Where necessary, in the adequate financing of any subsequent development, water rates and repayment provisions could be designed to reflect any significant change in municipal and industrial use, operation, and maintenance costs associated therewith and other relevant considerations.

Irrigation water users probably would repay about $8 million of the allocation to irrigation. Repayment contracts would be negotiated and entered into with organizations of the type provided in section 4 of the Colorado River Storage Project Act of April 11, 1956 (70 Stat. 105), for contracting on the participating projects authorized by section 1 of that act. The costs allocated to irrigation in excess of the irrigators' ability to repay would be paid from New Mexico's apportionment of the Upper Colorado River Basin fund revenues as provided in the act. Costs allocated to future uses, which would involve the provision of excess capacity in the initial stage to permit later project expansion, would also be an obligation against New Mexico's share of the basin fund revenues, to be paid from that apportionment if not otherwise collected as a result of subsequent allocations to the water users.

S. 3648, if enacted, would approve the above-described proposed projects as participating projects of the authorized Colorado River storage project and authorize the construction of the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project. Authorization of an irrigation development such as the proposed Navajo Indian irrigation project would implement the recognition given in the act of April 11, 1956, of the Nation's responsibility to help alleviate the severe economic distress among the Navajo people by providing them an opportunity to earn a respectable standard of living. It would enable an estimated 1,400 families to establish homes on irrigated farms. The proposed project has the support of the Navajo Indian Tribe and it is our understanding that an on-the-farm training program, financed with tribal funds, has been undertaken already to prepare members of the tribe for irrigation farming.

A development such as that which is embraced in the initial stage of the proposed San Juan-Chama project might help materially to meet the pressing need

for additional supplies of water in the Rio Grande Basin where the uses of water have been developed to the point where they far exceed available supplies. This need of the Rio Grande Basin vitally affects the welfare of more than half of the population of New Mexico and, if it is not satisfied in the near future, threatens to check the economic development of the State. Besides the requirements for irrigation, more water is needed to meet the domestic requirements of a growing urban population and of industry, particularly in the Albuquerque area.

While we are unable to make any recommendations with respect to the enactment or provisions of the bill in the absence of final processing of the project planning report and its submission to the Congress, our examination of S. 3648 prompts us to bring to the committee's attention certain of its provisions, in the interest of clarification and elimination of possible technical difficulties, as well as information which we have regarding the water supply that would be affected by the construction of the proposed project.

Section 7 would provide a procedure for the sharing of water during periods of water shortage applicable in the case of water stored in Navajo Reservoir and any other waters of the San Juan River and its tributaries originating above Navajo Dam to which the United States is entitled. This sharing principle, we understand, is the desire of the State of New Mexico and the Navajo Tribe.

Officials of the State of New Mexico, we are advised, made several river and reservoir operation studies which culminated in operation study No. 8 as the basis for the language of section 7 (a). Our review and analysis of operation study No. 8 indicates that the State officials assumed certain methods of applying the water-sharing formula which are not clearly indicated in the language of section 7 (a). If the procedures used in performing operation study No. 8 are to be taken as the proper manner for determining each contractor's share of water during times of shortage, and we understand that they are, section 7 (a) might be amended to state more clearly what these procedures are to be. In order to do this, section 7 (a) could be revised to read substantially as follows:

"SEC. 7 (a) No person shall have or be entitled to have the use for any purpose, including uses under the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project authorized by sections 2 and 6 of this Act, of water stored in Navajo Reservoir or of any other waters of the San Juan River and its tributaries originating above Navajo Reservoir to the use of which the United States is entitled, except under contract satisfactory to the Secretary of the Interior and conforming to the provisions of this Act. Such contracts, which, in the case of water for Indian uses, shall be executed with the Navajo Tribe, shall make provision, in any year in which the Secretary anticipates a shortage taking into account both the prospective runoff originating above Navajo Reservoir and the available water in storage in Navajo Reservoir, for a sharing of the available water in the following manner: The prospective runoff shall be apportioned between the contractors diverting above and those diverting at or below Navajo Reservoir in the proportion that the total normal diversion requirement of each group bears to the total of all normal diversion requirements. In the case of contractors diverting above Navajo Reservoir, each such contract shall provide for a sharing of the runoff apportioned to said group in the same proportion as the normal diversion requirement under said contract bears to the total normal diversion requirements of all such contracts that have been made hereunder: *Provided*, That for any year in which the foregoing sharing procedure either would apportion to any contractor diverting above Navajo Reservoir an amount in excess of the runoff anticipated to be physically available at the point of his diversion, or would result in no water being available to one or more such contractors, the runoff apportioned to said group shall be reapportioned as near as may be among the contractors diverting above Navajo Reservoir in the proportion that the normal diversion requirements of each bears to the total normal diversion requirements of the group. In the case of contractors diverting from or below Navajo Reservoir, each such contract shall provide for a sharing of the remaining runoff together with the available storage in the same proportion as the normal diversion requirement under said contract bears to the total normal diversion requirements under all such contracts that have been made hereunder. The Secretary shall not enter into contracts beyond a total amount of water that, in his judgment, in the event of shortage will result in a reasonable amount being available for the diversion requirements for the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as specified in sections 2 and 6 of this Act."

It is our understanding that it is not intended that the water-sharing principle be applicable in the case of the existing Fruitland, Hogback, Cudai, and Cambridge Indian irrigation projects, nor to extensions of their irrigated acreage totaling approximately 11,000 acres. The total acreage involved, including that now irrigated, is approximately 26,000 acres. This intent could be reflected by the addition to section 7 of a new subsection (c) reading substantially as follows:

"(c) This section shall not be applicable to the water requirements of the existing Fruitland, Hogback, Cudai, and Cambridge Indian irrigation projects, nor to the water required in connection with the extension of the irrigated acreages of the Fruitland and Hogback Indian irrigation projects in a total amount of approximately 11,000 acres."

Section 3 of the bill relates to the inclusion within the Navajo Indian irrigation project of lands which are not now Indian lands, which lands would be held by the United States in trust for the Indians. It has been the general policy of the Department to require Indian tribes acquiring lands, particularly lands outside the reservation boundaries, to take those lands in fee. The principal reasons for this policy are to prevent disrupting the tax base in local communities and to give the Indian groups an opportunity to manage limited acreages of land free of any control or limitations by the Federal Government. In this case, however, it appears that officials of the State of New Mexico and of the tribe have reached an understanding that the nonreservation lands which would be included within the project, including privately owned lands which would have to be acquired, should have a trust status, and be nontaxable.

Section 5 would authorize the Secretary to transfer to the Navajo Tribe the care, operation and maintenance of the proposed Navajo Indian irrigation project, together with title to movable property necessary for the operation and maintenance of such works. There is now pending before the Congress H. R. 11896 which, if enacted, would authorize the transfer to the Navajo Tribe title to all irrigation project works constructed by the United States within the reservation. In the event of the enactment of any legislation such as H. R. 11896, it might thereupon be necessary at some future time to consider an appropriate amendment of section 5 of S. 3648, depending, of course, upon the form of any general legislation on this point.

When your committee shall act upon S. 3648, it may wish to consider modifying certain of its provisions for clarification, elimination of technical difficulties, and general workability of its provisions substantially along the following lines:

1. Amend section 1 by deleting all that language appearing in lines 3 through 8 on page 1 and lines 1 through 7 on page 2, and substituting therefor the following:

"That, for the purposes of furnishing water for irrigation of irrigable and arable lands, municipal, domestic, and industrial uses, and replacement of basin depletions in the Rio Grande, providing recreation and fish and wildlife benefits, controlling silt, and for other beneficial purposes, the Congress hereby approves as participating projects of the Colorado River storage project the Navajo Indian irrigation project, New Mexico, and the San Juan-Chama project, Colorado-New Mexico. Principal engineering works of the Navajo Indian irrigation project shall be a main gravity canal, tunnels, siphons, pumps, and powerplants for project purposes, laterals, drains, distribution systems and related works. The San Juan-Chama project facilities shall be comprised principally of regulating and storage reservoirs, collection, diversion and conveyance systems, and associated works."

2. Amend section 2 by (1) adding a comma after the word "construct" in line 10 on page 2, and inserting after it the words "operate and maintain"; (2) deleting the words "to include a net area of" appearing in line 11 on page 2 and substituting therefor the words "for the principal purpose of furnishing irrigation water to approximately"; (3) deleting the word "with" in line 12 on page 2 and substituting therefor the words ", said project to have"; and (4) deleting the word "requirement" appearing in line 13 on page 2.

3. Amend section 3 (b) by adding, after the word "townships" appearing in line 24 on page 3, the following: ", susceptible to irrigation as part of the Navajo Indian irrigation project or necessary for location of any of the works or canals of such project,". This possible amendment would specify that the authority contained in subsection (b) should apply to lands which would be used for the same purposes as are specified with respect to the lands to which the authorities contained in subsections (a) and (c) would apply.

4. Change the word "construed" appearing in line 20 on page 4 to read "constructed".

5. In section 5, on page 5, (1) delete the first sentence appearing in lines 1 through 4 to be consistent with paragraph numbered 2 above; (2) insert in line 8 after the words "provisions of" the words "the Act of August 1, 1914 (38 Stat. 582, 583), as amended by"; and (3) change the word "direction" in line 10 to "discretion".

6. In section 6, delete the words "in accordance with the Bureau of Reclamation report entitled 'Supplemental Report, San Juan-Chama Project, Colorado-New Mexico, May 1957'" appearing in lines 20 through 23 on page 5 and substitute the following: "Colorado-New Mexico, for the principal purposes of furnishing supplemental water supplies to approximately 39,300 acres of land in Cerro, Taos, Llano, and Pojoaque tributary irrigation units in the Rio Grande Basin, about 81,600 acres of land in the existing Middle Rio Grande Conservancy District, and municipal, domestic, and industrial uses, and providing recreation and fish and wildlife benefits."

7. At the end of section 6 add the following:

"Principal engineering works of the initial stage development involving three major elements, shall include diversion dams and conduits, storage and regulation facilities at the Heron No. 4 Reservoir site and enlargement of outlet works of the existing El Vado Dam, and water use facilities consisting of reservoirs, dams, canals, lateral and drainage systems, and associated works and appurtenances. The construction of recreation facilities at the Nambe Reservoir shall be contingent upon the Secretary's making appropriate arrangements with the governing body of the Nambe pueblo for the operation and maintenance of such facilities, and the construction of recreation facilities at the Heron No. 4, Valdez, and Indian Camp Reservoirs shall be contingent upon the Secretary's making appropriate arrangements with a State or local agency or organization for the operation and maintenance of those facilities."

8. The figure of $208 million in section 8 is based on estimates of costs which reflect January 1957 prices. At January 1958 prices the estimated cost of constructing the proposed Navajo Indian irrigation project and initial stage of the San Juan-Chama project is $221 million. In order to bring the bill up to date in this respect, and, in conformance with the present practice, to include a price escalation clause, delete the figure "$208 million" appearing in line 11 on page 7 and substitute therefor "$221 million (January 1958 prices) plus such amounts, if any, as may be required by reason of changes in construction costs as indicated by engineering cost indices applicable to the types of construction involved therein and, in addition thereto, such sums as may be required to operate and maintain the projects."

The Bureau of the Budget has advised that, while there would be no objection to the submission of such report as we deem appropriate, it would recommend against the enactment of S. 3648 at this time since it would have no basis, until the review of the planning report has been completed, to assess the merits of the projects or the need for additional amendments of the bill.

Sincerely yours,

FRED G. AANDAHL,
Assistant Secretary of the Interior.

COORDINATED REPORT ADOPTED AND APPROVED BY THE SECRETARY OF THE INTERIOR

DEPARTMENT OF THE INTERIOR,
BUREAU OF RECLAMATION,
Washington, D. C., September 6, 1957.

The SECRETARY OF THE INTERIOR.

SIR: This is our proposed coordinated report on the San Juan-Chama project, Colorado-New Mexico and the Navajo project, New Mexico, both of which are proposed as participating projects of the authorized Colorado River storage project. It is based on and includes the following accompanying reports as modified herein:

(1) Report of the regional director, Bureau of Reclamation, on the San Juan-Chama project, Colorado-New Mexico, dated November 25, 1955.

(2) Supplemental report of the regional director, Bureau of Reclamation, on the San Juan-Chama project, dated May 15, 1957.

(3) Feasibility report of Navajo Agency, Bureau of Indian Affairs on the Navajo project, New Mexico, dated January 1955.

(4) Supplemental report of Navajo Agency, Bureau of Indian Affairs, on the Navajo project, New Mexico, dated March 1957.

The initial project investigation and preparation of the regional director's report of November 1955 and the Navajo Agency report of January 1955 on the two potential projects in New Mexico were based upon the criteria established by the State in Governor Mechem's letter of March 4, 1953, to the Department as set forth in the reports. A coordinated submission of the two planning reports to the State of New Mexico for consideration and resolution of its water allocation problems in the San Juan River Basin was made by the Department's letter of August 2, 1956, copy of which is appended to and made a part of this proposed report.

The above-cited regional director's supplemental report of May 15, 1957, and the Navajo Agency supplemental report of March 1957, were prepared on the basis of New Mexico's desires as expressed in Governor Simms' letter of December 12, 1956, to the Department, copy attached, and subsequent actions as set forth in the supplemental reports.

SAN JUAN-CHAMA PARTICIPATING PROJECT

The ultimate plan of development for the San Juan-Chama project, as presented in the regional director's report of November 25, 1955, is designed to improve and stabilize the economy of the water deficient Rio Grande and Canadian River Basins of New Mexico by providing supplemental water to meet rapidly increasing needs. The ultimate plan is based upon an average annual diversion of 235,000 acre-feet of water from the upper tributaries of the San Juan River into the Rio Grande Basin. By exchange, a small portion would be diverted to the Canadian River Basin, where it would be utilized in New Mexico for irrigation, municipal, and industrial water supply, and related purposes.

The ultimate plan for the San Juan-Chama project as modified by the supplemental report of May 15, 1957, would provide supplemental water supplies to about 224,000 acres of arable land in the project area; provide water for replacement of watershed and pumping depletions caused by miscellaneous uses throughout the Rio Grande Basin; provide additional municipal and industrial water to the Albuquerque metropolitan area; and provide additional recreation facilities in the Rio Grande Basin.

On the basis of January 1957 prices, the estimated construction expenditure for the ultimate project facilities, comprised principally of regulating and storage reservoirs, collection, diversion and conveyance systems and associated works, is about $149 million, exclusive of any costs of Navajo Dam and Reservoir, a storage unit of the Colorado River Storage project now under construction. The regional director's reports find that the ultimate plan for the San Juan-Chama project and the stage development thereof, has engineering feasibility and is economically justified. The evaluated total annual benefits exceed the estimated annual costs in a ratio of about 1.7 to 1. If direct benefits only are considered in a 50-year analysis the ratio is 0.99 to 1, or practically unity.

The plan for an initial stage development of the San Juan-Chama project, as presented in the regional director's supplemental report of May 15, 1957, contemplates an average annual diversion of about 110,000 acre-feet from the San Juan River for utilization in the Rio Grande Basin in New Mexico. The imported waters would be used for an additional municipal and industrial water supply (57,300 acre-feet) for the city of Albuquerque; to provide a supplemental irrigation water supply (30,100 acre-feet) to 39,300 acres of lands in the Cerro, Taos, Llano, and Pojoaque tributary irrigation units in the Rio Grande Basin in New Mexico; and to provide supplemental water (22,600 acre-feet) for irrigation of 81,600 acres of irrigable land in the existing Middle Rio Grande Conservancy District.

The initial stage development would not provide for an allocation of water to fish and wildlife purposes. However, as set forth in the report, the water supply studies on which the plan is based include reservoir releases or bypasses of stream flows, essentially as recommended by the United States Fish and Wildlife Service in its report of September 1955, to protect fishery values. Additional detailed studies of the fish and wildlife resources affected by the initial stage of development are recommended to be conducted, as necessary, after project authorization in accordance with section 2 of the act of August 14, 1946 (60 Stat. 1030). Such reasonable modification in the authorized project facilities and

operations, including the acquisition of lands, would be made by the Secretary as he may find appropriate to preserve nad propagate those resources. The preservation and propagation of fish and wildlife would be a purpose of the project.

The plan of development for the initial stage involves three major elements comprising the diversion facilities (diversion dams and conduits), regulation facilities (Heron No. 4 dam and reservoir, and enlargement of outlet works of the existing El Vado Dam), and water use facilities (principally for the tributary irrigation units). Minimum basic recreation facilities would also be provided at the five project reservoirs as recommended by the National Park Service in its report of November 1954. The cost of those facilities was estimated at that time to be $360,000. The National Park Service advises that the facilities would cost about $400,000 at January 1957 prices. The appended reports are hereby modified to reflect this recent estimate of cost.

The estimated construction cost of the project features of the initial stage, on the basis of January 1957 prices, is about $81,110,000, which includes the more recent estimate of $400,000 for minimum basic recreation facilities but is exclusive of any costs of constructing Navajo Dam and Reservoir. Project operation, maintenance, and replacement costs are estimated at about $326,000 annually for a 50-year period and about $357,000 annually for a 100-year period. Of the project construction costs, reimbursable allocations of about $27,600,000 are made tentatively to municipal and industrial water supply, $50,310,000 to irrigation, and $2,800,000 to future uses. The recreation costs would be nonreimbursable.

Costs allocated to municipal and industrial water supply, including interest during construction, would be repaid over a 50-year period with interest on the unamortized balance. An interest rate of 2⅞ percent, as certified by the Secretary of the Treasury in accordance with section 5 (f) of Public Law 485, 84th Congress, is presently applicable in payout studies rather than the 2½ percent used in the supplemental report which is hereby revised. Accordingly, the interest during construction and the amortization periods would be $1,590,000 and $26.190.000 respectively, and the total to be repaid by the municipal water users would be $55,374,000 instead of the amounts shown in the summary and on pages 25, 26, and 27 of the supplemental report. The cost of raw municipal water would therefore increase to 7.2 cents per 1,000 gallons, or $23.46 per acre-foot.

The municipal and industrial water rate would govern only in the case of initial stage construction. Repayment contract terms and water rates under future negotiations will be subject to reexamination as ultimate plans develop and additional quantities of municipal and industrial water are contracted. Where necessary, in the adequate financing of the ultimate plan, water rates and repayment provisions will be designed to reflect any significant change in municipal and industrial use, operation, and maintenance costs associated therewith or other relevant considerations.

Irrigation water users probably would repay about $8 million of the allocation to irrigation. Repayment contracts would be made with "organizations" of the type provided in section 4 of the Colorado River Storage Act of April 11, 1956 (70 Stat. 107), for contracting on the participating projects authorized by section 1 of that act. The costs allocated to irrigation in excess of the irrigators' ability to repay would be paid from New Mexico's apportionment of the Upper Colorado River Basin fund revenues as provided in Public Law 485. Costs allocated to future uses, which involve the provision of excess capacity in the initial stage to permit later project expansion, would also be an obligation against New Mexico's share of the basin fund revenues, to be paid from that apportionment if not otherwise collected as a result of subsequent allocations to the water users.

The initial stage development has engineering feasibility and is found to be economically justified in that the evaluated total benefits exceed the estimated annual costs in a ratio of 1.15 to 1 for a 100-year period of analysis. If direct benefits only are considered in a 50-year period of analysis that ratio would be about 0.8 to 1.

The Commissioner of Reclamation hereby concurs in and adopts the recommendations of the regional director as set forth on page 32 of his May 15, 1957, Supplemental Report on the San Juan-Chama project, and concurs in the recommendations of the National Park Service and the Fish and Wildlife Service as discussed above.

NAVAJO PARTICIPATING PROJECT

The January 1955 report of the Navajo Agency, Bureau of Indian Affai the potential Navajo project presented a plan for the irrigation of 137,250 of irrigable land, of which 109,000 acres are within the Navajo Indian Res tion, designated as the Shiprock division of the project, and 28,250 acre nonreservation lands designated as the South San Juan division. All o lands within the reservation and 1,660 acres outside the reservation are In owned. Remaining lands outside the reservation are public lands and owned by non-Indians. The 1955 plan also provided for recreation, fish wildlife, and flood control benefits from the Navajo Dam and Reservoir. dam and reservoir are now under construction by the Bureau of Reclamatio storage unit of the Colorado River storage project.

As proposed in that report, the project plan for irrigation contemplates d ing San Juan river water from Navajo Dam and Reservoir and convey about 29 miles through a main highline canal to a direct-connected turbine p ing plant at Kutz Canyon, serving 1,690 acres enroute. There a part of t verted water would be pumped to two higher canals for irrigation of 44,210 of which about 17,700 acres are within the Indian reservation. The rema of the water would be delivered to the Shiprock Main Canal for irrigati 91,350 acres, of which 90,240 acres are reservation lands. The plan also inc a lateral distribution system and a system of drains to prevent seepa project lands.

A revision of the January 1955 project plan is presented in the March supplemental report of the Navajo Agency. The revised plan is based o December 12, 1956, letter from Governor Simms and the January 9, 1957, lution of the advisory committee of the Navajo Tribal Council, approvin proposal of the Governor, copies of which are appended to the supplement port. The changes recommended by the State were, briefly, that "the developed should be solely for Indian use, should include the most suitable in the Shiprock and South San Juan divisions, and should not exceed 1 acres, with a diversion requirement of not to exceed 508,000 acre-feet per an

Under the revised single-purpose plan, all project water for irrigation be diverted from Navajo Reservoir by a main gravity canal to Kutz Ca where the originally proposed pumping plant would be replaced by a s to serve a part of the lands in the South San Juan and Shiprock divisio gravity instead of pumping, as proposed in the 1955 report. Beyond Kutz yon, the proposed canal, approximately 170 feet higher in elevation tha originally planned Shiprock main gravity canal to serve Navajo Indian Re tion lands, would continue about 46 miles to a siphon at Chaco, Wash. the water would be dropped through a powerplant to develop electrical e for pumping water to lands in the Newcomb and Bennett Peak areas. The canal would extend an additional 77 miles beyond the powerplant.

The irrigable acreage to be developed under the revised plan would includ 8,918 acres served by gravity below the main canal in the South San Juan sion, and 70,359 acres in the Shiprock division, and (*b*) 25,822 acres s from the pump canals in the Shiprock division.

A diversion of 508,130 acre-feet of water would be required for that pu which would result in an average annual stream depletion of about 2 acre-feet. The reduction in acreage as a result of the proposed developme an all-Indian project and exchange of lands in the South San Juan divisio lands in the Shiprock division would make it possible to exclude (*a*) all lan the South San Juan division originally proposed for service from pump c (*b*) essentially all land under gravity service under the main canal b Pajarito Wash, and (*c*) various isolated tracts of land in the Cinnebeto Pena Blanca Wash areas.

The revised plan of development would not provide recreation opportu or flood-control benefits. Although a report on fish and wildlife has not completed, it is believed that opportunities may be provided for some imp ment of these resources. Detailed studies of the fish and wildlife reso affected by the project are recommended to be conducted, as necessary, project authorization in accordance with section 2 of the act of Augu 1946 (60 Stat. 1080). Such reasonable modification in the authorized p facilities and operations, including the acquisition of lands, would be ma the Secretary as he may find appropriate to preserve and propagate resources, and which in no way would adversely affect the allocation of for the Navajo project lands. The preservation and propagation of fis wildlife would be a purpose of the project.

The estimated construction cost of the revised plan of development for the Navajo participating project is $126,865,300 at March 1957 prices, exclusive of costs of constructing Navajo Dam and Reservoir. Operation, maintenance, and replacement costs would average about $304,200 annually at January 1957 prices. The benefit-cost ratio for the project has been determined to be 1.2 to 1 on the basis of total irrigation benefits.

As provided by sections 4 (d) and 6 of Public Law 485 (70 Stat. 107) authorizing the Colorado River storage project and participating projects, in the event that the Navajo participating project is authorized, payment of costs allocated to irrigation of Indian-owned tribal or restricted lands within, under, or served by such project within the capability of the land to repay is subject to the act of July 1, 1932 (47 Stat. 564); and the costs beyond the capability of such lands to repay are to be determined, and in recognition of the fact that assistance to the Navajo Indians is the responsibility of the entire Nation, shall be nonreimbursable.

The Commissioner, Bureau of Indian Affairs, concurs in and adopts the revised plan of development for the Navajo project, as described in the Navajo Agency's March 1957 Supplemental Report, and recommends that:

1. Authority be sought for the Secretary of the Interior acting pursuant to the act of April 11, 1956 (70 Stat. 105, 106), to construct the Navajo project as a participating project, but with such modification of, omissions from, or additions to the works as the Secretary of the Interior may find proper, and to operate and maintain the works required for the project as described in the agency's reports.
2. The Navajo project lands be developed solely as a Navajo Indian irrigation project.
3. Authorization for this project provide authority for the acquisition and addition to the Navajo Indian Reservation of Federal, State, and private lands necessary for revision of the project in accordance with the letter of the Governor of New Mexico, dated December 12, 1956.
4. Authorization be sought in conformity with the criteria contained in the March 1957 supplemental report to provide for:
   (*a*) Purchase by the Navajo Indian Tribe, or exchange, of Navajo Reservation lands for State-owed lands within the project boundary in conformity with resolution of the advisory committee of the Navajo Tribal Council No. ACJ–1–57 passed January 9, 1957.
   (*b*) Purchase by the Navajo Indian Tribe, or exchange, of Navajo Reservation lands for Federal-owned lands within the project boundary, in conformity with the resolution of the advisory committee of the Navajo Tribal Council ACJ–1–57 passed January 9, 1957.
5. Additional studies of incremental canal capacity be made prior to construction of the project to determine the feasibility of conveying domestic and industrial water supplies as recommended by the Public Health Service in its report of December 1, 1954, and that an equitable portion of project costs be allocated to that purpose for repayment by the beneficiaries.

COORDINATED TRANSMITTAL

Pursuant to the expressed desires of the State of New Mexico for coordination and processing of these two proposed project reports, and subject, of course, to consideration of comments received, we recommend that you approve and adopt this coordinated report as your proposed coordinated report on plans for development of the San Juna-Chama and Navajo participating projects of the Colorado River storage project, and that you authorize us to transmit copies to the affected States and the Secretary of the Army for review as required by the Flood Control Act of 1944 (58 Stat. 877), to the States of New Mexico and Colorado for the views and recommendations of the head of the agency exercising administration over the wildlife resources in each of those States pursuant to the provisions of the act of August 14, 1946 (60 Stat. 1080), to the other interested Federal agencies for their comments as provided by interagency agreement, and to the Upper Colorado River Commission.

Respectfully,

E. G. NIELSEN,
Acting Commissioner of Reclamation.
GLENN L. EMMONS,
Commissioner of Indian Affairs.

Approved and adopted: October 16, 1957.

FRED A. SEATON, *Secretary of the Interior.*

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., August 2, 1956.

Hon. JOHN F. SIMMS, Jr.,
Governor of New Mexico,
Santa Fe, N. Mex.

MY DEAR GOVERNOR SIMMS: Please refer to Secretary McKay's letter of May 20, 1953, to Governor Mechem in response to his letters of March 4 and April 17, 1953, concerning investigations of water resource projects in the San Juan River in New Mexico.

As directed, the Bureau of Reclamation and Bureau of Indian Affairs have completed, respectively, their planning reports on the potential San Juan-Chama and Navajo projects. The project investigations and preparation of the reports by these agencies on the two potential projects in New Mexico have been based upon the criteria established by the State as set forth in the Governor's letter of March 4, 1953.

The plan of development for the potential San Juan-Chama project, as presented in the regional director's report of November 25, 1955, is designed to improve and stabilize the economy of the water-deficient Rio Grande and Canadian River Basins of New Mexico by providing supplemental water to meet rapidly increasing needs. The San Juan-Chama project is based upon an annual average diversion of 235,000 acre-feet of water from the upper tributaries of the San Juan River and transported into the Rio Grande Basin. By exchange, a small portion would be directed to the Canadian River Basin, where it would be utilized for irrigation, municipal, and industrial water supply, and related purposes.

The plan for the San Juan-Chama project would provide supplemental water supplies to about 225,000 acres of arable land in the project area; increase the irrigation water supplies of the Rio Grande Basin by replacing the water depletions caused by miscellaneous uses throughout the Rio Grande Basin; provide additional municipal and industrial water to the Albuquerque metropolitan area; and provide additional recreational facilities in the Rio Grande Basin. The estimated construction expenditure for the proposed project facilities, comprised principally of regulating and storage reservoirs, collection, diversion, and conveyance systems and associated works, is about $135,200,000 which includes $800,000 of the proposed Navajo Dam costs. The regional director's report finds that the overall plan of development has engineering feasibility and is economically justified.

It is concluded in the report that the diversion of an average of 235,000 acre-feet annually from the San Juan River to the Rio Grande Basin for the San Juan-Chama project would leave sufficient flows in the San Juan to satisfy prior water rights, maintain a live stream below the diversions, and furnish to the potential Navajo project and other in-basin uses an average annual water supply of 630,000 acre-feet in accordance with the criteria established by New Mexico for project formuation.

The January 1955 report of the Navajo Agency, Bureau of Indian Affairs, on the potential Navajo project presents a plan for the irrigation of 137,250 acres of irrigable land of which 109,000 acres are within the Navajo Indian Reservation, designated as the Shiprock division of the project and 28,250 acres are nonreservation lands designated as the South San Juan division. All of the lands within the reservation and 1,660 acres outside the reservation are Indian-owned. Remaining lands outside the reservation are public lands and lands owned by non-Indians.

The proposed Navajo Dam and Reservoir would regulate and store waters of the San Juan River for the irrigation of these lands and provide supplemental water to presently irrigated lands below the dam. The project plan also contemplates a main highline canal diverting water to a point 29 miles downstream from Navajo Dam where the water would be dropped through a direct-connected turbine pumping plant to a lower canal which would extend westerly about 120 miles to serve the major portion of the project lands by gravity. The pumping plant would lift water to a higher canal to serve approximately 44,000 acres of which about 17,700 acres are within the Indian reservation. The plan also includes a lateral distribution system and a system of drains to prevent seepage of project lands. The cost of constructing the project is estimated to be about $211,240,000 exclusive of $800,000 allocated to the San Juan-Chama project. The report finds the plan of development to have engineering feasibility and to be economically justified.

The distressing poverty which prevails among the Navajo people today is primarily a result of the lack of balance between the rapidly increasing population and the resources upon which they depend for support. The project area would provide a total of about 1,400 farms, of which 1,110 would be within the Shiprock division on the Navajo reservation and 290 would be within the South San Juan division. It is estimated that the project area would support about 20,000 people by farming and allied industries. About 18,000 Indian and 2,000 non-Indian people would be benefited.

The Commissioners of Reclamation and Indian Affairs inform me that there have been full coordination and cooperation between their offices in the investigation and preparation of their agency reports.

As you know, in 1950 the Department established the San Juan River (N. Mex.) Technical Committee in the interests of coordinating the agency plans. Representatives of the State of New Mexico have been acting as advisers to the committee. Certain studies prepared by the technical committee have been incorporated in the report on the Navaho project. Subsequent studies disclosed that the information tabulated on page 52 of the report required some adjustment. As suggested by the committee a copy of a table, Use of Surplus Flows at Navaho Dam Site, in which the adjustments have been made, is also enclosed as evidence of the technical coordination of the two reports.

The reports disclose also that proper officials of the State of New Mexico have been given every opportunity to participate in the investigations and preparation and revision of the reports. The interests and views of other interested Federal agencies have been solicited and considered in the formulation of the plans for the projects and copies of their reports are appended to our agencies' reports.

The Fish and Wildlife Service, in cooperation with the New Mexico and Colorado Game and Fish Departments, prepared an extensive report on the San Juan-Chama project in accordance with the act of August 14, 1946 (60 Stat. 1080). The Service's report is appended to the Bureau of Reclamation planning report. The Service has also made general recommendations with respect to the feasibility report on the Navaho project prepared by the Bureau of Indian Affairs. The recommendations of the Fish and Wildlife Service have been generally discussed, but not incorporated in the project planning at this stage. It is contemplated that full coordination of the reports of the Fish and Wildlife Service in further planning for the projects will be accomplished following receipt of the views of the State of New Mexico. In this respect it would be helpful if we could also have the views of the New Mexico Department of Fish and Game as reports and recommendations from that agency will be required ultimately in accordance with the provisions of the act of August 14, 1946 (60 Stat. 1080).

One copy each of the two planning reports is enclosed for joint consideration. Four additional copies of each are being forwarded to you under separate cover. This coordinated submission of the reports is for the purpose of providing the State of New Mexico with the information to aid in correlating and resolving its water allocation problems, including determination of the amount of water appropriate for allocation to fish and wildlife purposes and selection of the projects it desires for development in the San Juan River Basin within New Mexico prior to transmittal of our proposed reports on these projects to the affected States and interested agencies pursuant to the provisions of the Flood Control Act of 1944, the act of August 14, 1946 (60 Stat. 1080) and in accordance with interagency agreement. Such submission would be responsive to the referenced letters from New Mexico and in accordance with recent arrangements between field representatives of the interior agencies and officials of the State.

The calculations of New Mexico's use of water under the Colorado River compacts were based on assumptions that the upper basin depletion would average 7,500,000 acre-feet annually and that New Mexico's share would average

about 838,000 acre-feet annually. On that basis, the use of New Mexico's share was analyzed as follows:

	1,000 acre-feet
New Mexico share of upper basin water (11.25 percent of 7,450,000 acre-feet)	838.0
Uses of New Mexico share:	
Present (1951) developments	80.0
Reserve for New Mexico's share of main-stem reservoir losses	92.0
Reserve for Hammond project	8.4
Reserve for La Plata unit of Animas-La Plata project	3.5
Reserve for authorized extensions of Indian projects	28.1
Subtotal (reserve for committee uses)	212.0
Balance available for future uses	626.0
Depletions by Navajo project (includes Navajo Reservoir losses)	341.4
Depletions by San Juan-Chama project	225.6
Subtotal	567.0
Available for other uses	59.0

Any changes in the above assumptions would, of course, affect the results of the calculations. If the upper basin States ultimately are unable for various reasons to deplete to the full extent of 7,500,000 acre-feet annually it would appear that New Mexico's average annual share would be less than the estimated 838,000 acre-feet. This would in turn affect by priority dates or other means the amount of water available for use. Also should the State desire to have more water remain in the San Juan River Basin for industrial and other potential uses than assumed for our studies different answers would be obtained. I am sure these are matters which you will wish to consider in resolving your water-use problems in the San Juan River Basin.

The enclosed reports of the regional director and the Navajo Agency recommend that authority be sought for construction of the works as proposed in their reports. Until the water-use problems are resolved, further coordination is accomplished, and New Mexico has submitted its views and recommendations thereon, we are not in a position to know whether the Commissioners of Reclamation and Indian Affairs will concur with, and the Department will approve, the recommendations in the planning reports.

Subsequently, the Congress has enacted and the President approved Public Law 485, 84th Congress, authorizing the construction of the Colorado River storage project and participating projects. Among the storage units authorized by that act is the aforementioned Navajo Dam and Reservoir. The act also provides that priority be given to completion of planning reports on the San Juan-Chama and Navajo participating projects, among others. In the event the Navajo participating project is authorized, the costs allocated to irrigation of Indian-owned tribal or restricted lands of the project and beyond the capability of such lands to repay would be nonreimbursable in accordance with the act.

As you know, the authorizing act also provides for an apportionment among the upper division States of the revenues in the Upper Colorado River Basin fund in excess of the amounts needed to meet reimbursement requirements set forth in the act. Such apportioned revenues are to be used only for repayment of construction costs of participating projects or parts thereof in the State to which such revenues are apportioned.

In respect to the Navajo storage unit, the Congress has appropriated funds for initiation of construction during the current fiscal year. In order that construction activities might proceed on schedule and the related agency programs be fully coordinated within the Department for final determination of the reservoir capacity, it is essential that the State of New Mexico take early action on its water use problems.

It is noted these investigations were prepared prior to the report by the Presidential Advisory Committee on Water Resources Policy and consequently as drafted they depart in some respects from the principles and procedures set forth in the report that has been endorsed by the President.

It is hoped that New Mexico's water allocation problems and selection of projects in the San Juan River Basin might be resolved expeditiously and that the views and recommendations of the State on the enclosed reports and their proposals, together with this transmittal letter, be furnished us as soon as practicable to permit processing of our reports in an orderly manner. Our offices shall be glad to assist you or your staff in considering these problems.

Sincerely yours,

FRED A. SEATON,
Secretary of the Interior.

Use of storable flows at Navajo Dam site

[1,000 acre-feet]

Year ending Oct. 31—	Surplus future flow at Navajo dam site [1]	Impounded or diverted by San Juan-Chama project [2]	Impounded or diverted by Navajo project [3]	Spill at Navajo site
1928	721.0	165.0	556.0	0
1929	1,296.0	371.0	925.0	0
1930	753.0	187.0	566.0	0
1931	505.0	103.0	402.0	0
1932	1,626.0	424.0	1,202.0	0
1933	623.0	142.0	481.0	0
1934	311.0	47.0	264.0	0
1935	1,312.0	391.0	921.0	0
1936	871.0	244.0	627.0	0
1937	1,272.0	361.0	848.0	63.0
1938	1,273.0	358.0	769.0	146.0
1939	654.0	142.0	445.0	67.0
1940	473.0	108.0	365.0	0
1941	2,360.0	474.0	1,358.0	528.0
1942	1,364.0	228.0	413.0	723.0
1943	655.0	168.0	487.0	0
1944	1,060.0	241.0	819.0	0
1945	819.0	221.0	583.0	15.0
1946	353.0	82.0	271.0	0
1947	618.0	159.0	459.0	0
1948	1,056.0	280.0	776.0	0
1949	1,266.0	312.0	954.0	0
1950	475.0	127.0	348.0	0
1951	303.0	79.0	224.0	0
Average	917.4	225.6	627.6	64.2

[1] Represents physical surplus water at dam site. Computed as historic flow at dam site after deducting allowances for future upstream use on the Pine River project and Wemimuche diversion (San Luis Valley project) and bypasses to meet present uses above Farmington and proposed Hammond project. With Navajo project, requirements below Farmington assumed to be supplied from return flows and inflows from Animas River.

[2] Includes evaporation losses from Labo, Tesoro, and Blanco Reservoir sites which average about 2,300 acre-feet.

[3] Includes evaporation losses from Navajo Reservoir which average about 28,800 acre-feet annually. Figures based on assumption that reservoir would be at dead storage level at end of 1927.

STATE OF NEW MEXICO,
STATE ENGINEER OFFICE,
Santa Fe, December 12, 1956.

HON. FRED E. SEATON,
Secretary of the Interior,
Washington, D. C.

MY DEAR MR. SECRETARY: Please refer to your letter of August 2, 1956, with which you submitted reports on the San Juan-Chama and Navajo projects for consideration by the State of New Mexico. As you have recognized, coordination of these two projects and allocation of use of San Juan River water poses many very difficult problems for the State of New Mexico. The Interstate Stream Commission, with invaluable assistance from your offices, has carefully considered the problems and, at their meeting of November 26, approved the enclosed resolution. This resolution, in which I concur, expresses the position

of the State of New Mexico in regard to use of water by both San Juan-Chama and Navajo projects.

The essence of the Interstate Stream Commission resolution is a substantial reiteration of the State's position evidenced by the letter from the Governor to the Secretary of the Interior dated March 4, 1953, which established for study purposes a 630,000-acre-foot diversion capacity for the Navajo project and a 235,000-acre-foot diversion capacity for the San Juan-Chama project.

In view of current water shortages in the Rio Grande Basin, and in view of potential large demands in that basin, it is essential that construction of the San Juan-Chama project be initiated at the earliest possible date, and that provision be made in this construction for an ultimate diversion of 235,000 acre-feet per annum. However, because of uncertainty about ultimate requirements in both the Rio Grande and San Juan Basins, and because it is anticipated that a number of years must pass before financing is available for the construction of a full 235,000-acre-foot diversion project, it is not desirable at this time to make final decisions fully allocating the San Juan waters between the 2 basins. Accordingly, to initiate the development of the San Juan-Chama project, New Mexico desires congressional approval of the San Juan-Chama project involving an average annual diversion of 235,000 acre-feet on the basis of the Bureau of Reclamation report entitled, "San Juan-Chama Project, Colorado-New Mexico, November 1955," with authorization for immediate construction of an initial stage having an average annual diversion of not to exceed 110,000 acre-feet. New Mexico intends that the water diverted in this initial stage will be used in conformity with the following priority of uses:

(*a*) Municipal and industrial supplies;

(*b*) Development of water supplies for tributary irrigation units in depressed areas in northern New Mexico; and

(*c*) Supplemental irrigation.

The municipal and industrial water is intended primarily to supply the city of Albuquerque; however, there is a possibility that the water requirements of other municipalities in the Rio Grande Basin may be met with water supplied by the San Juan-Chama project. The tributary irrigation units include all those which are proposed in your November 1955 report. Water remaining after the satisfaction of priorities 1 and 2 is intended for supplemental irrigation on lands of the Middle Rio Grande Conservancy District.

The distressing poverty of the Navajo people in New Mexico is a matter well known to you. That the Congress and the President are aware of this problem is evidenced by the enactment of Public Law 485 which authorized the Navajo storage unit and provided that, in the event the Navajo participating project is authorized, the cost allocated to irrigation of Indian-owned tribal or restricted lands of the project and beyond the capability of such lands to repay, would be nonreimbursable. The State of New Mexico is also sharply aware of the plight of the Navajo people and anxious to cooperate in a solution of their problems. Conferences among Mr. Paul Jones, chairman of the Navajo Tribal Council, and other members of the council, engineering representatives of the Bureau of Indian Affairs, and State officials have led to the decision, mutually agreed upon, that authorization of the Navajo project should be sought on the basis of the Bureau of Indian Affairs report entitled, "Navajo Project, New Mexico, Feasibility Report, January 1955." However, the conferees have agreed and it is the desire of the State of New Mexico that the final planning of the Navajo project effect the following changes in that report: The lands developed should be solely for Indian use, should include the most suitable lands in the Shiprock and south San Juan divisions and should not exceed 115,000 acres with a diversion requirement of not to exceed 508,000 acre-feet per annum. It is believed that these criteria for the Navajo project will substantially reduce construction costs and result in a better use of the water than would have occurred under the January 1955 plan.

The changes to be accomplished in final planning as set forth above will require the exchange of Federal and State lands in the south San Juan division for lands on the Navajo Reservation. The State engineer of New Mexico was advised by a letter from Mr. G. Warren Spaulding, General Superintendent of the Navajo Agency at Window Rock, Ariz., and concurred in by Mr. Paul Jones, that about 568.4 acres of State land would be involved in such an exchange. Exchange of these lands under conditions set forth in Mr. Spaulding's letter as saisfactory to the tribal council can be effected by relatively simple State administrative procedures. I presume that no difficulty would be encountered in similar exchanges of Federal land for lands on the Navajo Reservation.

Your letter also requests the views of the New Mexico Department of Game and Fish relative to the San Juan-Chama and Navajo projects. The New Mexico Department of Game and Fish cooperated in the preparation of the Fish and Wildlife Service "Report on Fish and Wildlife Resources in Relation to the San Juan-Chama Project and Related Developments," dated September 1955, and Mr. Homer Pickens, director of the Nex Mexico Game and Fish Department, has advised me that that report adequately represents the views of his department. The views of the department on the Navajo project will be forwarded at a later date. The Governor's letter to Secretary of the Interior dated March 4, 1953, sets forth the State's policy that "transmountain water shall be used primarily for domestic, municipal, and industrial supplies and for supplemental use on existing projects with deficient supplies." Consistent with that policy the State of New Mexico does not wish at this time to allocate any of the waters of the San Juan River for the betterment of fish and wildlife habitat. The State recognizes the possibilities for developing a number of desirable fish and wildlife benefits in connection with these two projects without materially increasing the cost or decreasing the amount of water available to water users under the projects. New Mexico desires to develop these benefits to the fullest extent possible consistent with the above conditions and will wholeheartedly cooperate with the Bureau of Reclamation and the Fish and Wildlife Service toward this end. With this in mind it should be pointed out that the statement that New Mexico does not wish to allocate water to fish and wildlife purposes at this time does not preclude the Fish and Wildlife Service or the New Mexico Department of Game and Fish from acquiring under New Mexico statutes, rights to the use of water.

The State of New Mexico desires that your Department proceed with all practical speed toward completion of the San Juan-Chama and Navajo projects in a form suitable for the authorizations requested above, and I trust that the advice given herein makes that possible. I wish to express the gratitude of the State of New Mexico for these excellent reports and for the cooperation and assistance that you and your Bureaus have afforded in the planning of these projects and in the resolution of our very difficult water-allocation problems.

Sincerly yours,

JOHN F. SIMMS, *Governor.*
By S. E. REYNOLDS, *State Engineer.*

RESOLUTION ON NAVAJO IRRIGATION AND SAN JUAN-CHAMA PROJECTS

Whereas the initial phase of the Colorado River storage project and participating projects was authorized by Public Law 485, 84th Congress, approved April 11, 1956; and

Whereas this law authorized the construction of the Navajo storage reservoir and provided for priority completion of studies of the Navajo irrigated project and San Juan-Chama project; and

Whereas the State of New Mexico by action taken by the Governor in a letter to the Secretary of the Interior dated March 4, 1953, stated the principle of concurrent planning and authorization of the Navajo and San Juan-Chama projects and established a 630,000-acre-foot diversion capacity for the Navajo project and 235,000-acre-foot diversion capacity for the San Juan-Chama project for the purpose of studying the feasibility of each; and

Whereas preliminary reports on both of these projects have been submitted to the Secretary of the Interior who, after careful study, has returned the reports to the State of New Mexico with the request that certain matters of policy be determined by the State before the project reports are completed and sent to the interested State and Federal agencies for comments under the terms of the 1944 Flood Control Act prior to submission to the Congress for authorization; and

Whereas the tentative size of the Shiprock division of the Navajo irrigation project comprises not to exceed 115,000 acres of irrigated land; and

Whereas it is apparent that an initial phase of the San Juan-Chama project capable of diverting an average of 110,000 acre-feet of water per annum is feasible; and

Where at least that quantity of water is urgently needed in the Rio Grande Basin above San Marcial and in the Canadian River Basin for the following uses with the priorities indicated:

(1) Municipal and industrial supplies;

(2) Development of water supplies for tributary irrigation units in depressed areas in northern New Mexico;

(3) Supplemental irrigation; and

Whereas the provisions of Public Law 485 state that the Shiprock division of the Navajo irrigation project shall be nonreimbursable insofar as the Indian users under the project are unable to repay the costs of such project, and therefore construction of the Shiprock division can be undertaken as soon as the project may be authorized by Congress and appropriations made available for construction; and

Whereas the provisions for power revenue credits under Public Law 485 make it possible to undertake construction of a 110,000-acre-foot-per-annum initial-phase project of the transmountain project as soon as it may be authorized by Congress and appropriations made available for construction; and

Whereas available power revenue credits anticipated under the provisions of Public Law 485 are such that additional phases of the project cannot be constructed for a period of about 20 years from the date the first power revenues become available under the storage project; and

Whereas, before additional phases of the project can be financed, much additional data and information will become available permitting a wiser decision on whether the public interest will be better served by a diversion of 235,000 acre-feet per annum or by diversion of a lesser quantity of water; and

Whereas the additional costs which may be incurred by constructing the main diversion tunnel of the initial phase of the project to such a capacity that the project may be later expanded to divert a total of 235,000 acre-feet per annum rather than limiting its capacity to a lesser amount are commensurate with the advantages gained: Now, therefore, be it

Resolved, That the Interstate Stream Commission hereby requests the Secretary of the Interior to complete the studies of the Navajo irrigation and San Juan-Chama projects using the study size determined in 1953 with the understanding that the Shiprock division of the Navajo irrigation project to be authorized will not exceed 115,000 acres in size and that the initial phase of the San Juan-Chama project to be authorized will not exceed 110,000 acre-feet average diversion per annum, and with the further understanding that the authorizing legislation will provide that in the event of water shortage the diversion to the two projects shall be in proporion to their diversion requirements as provided therein.

Adopted November 26, 1956, New Mexico Interstate Stream Commission, Santa Fe, N. Mex.

Senator ANDERSON. Our first witness this morning has three other committee assignments at 10 and therefore I will call on him without delay.

I am pleased to call the senior Senator from New Mexico, Hon. Dennis Chavez.

STATEMENT OF HON. DENNIS CHAVEZ, A UNITED STATES SENATOR FROM THE STATE OF NEW MEXICO

Senator CHAVEZ. Thank you, Mr. Chairman. I want to thank the committee for giving me the opportunity to make my statement, which is rather short, at this time because as stated by the chairman I do have other committee work.

The interest of the bill is indicated by the appearance of the press and so many fine citizens from my State.

I am appearing today in behalf of Senate bill 3648, which was introduced by Senator Anderson and myself. This bill would authorize the construction of the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project.

These two projects were assigned priorities insofar as planning work is concerned in Public Law 485, 84th Congress, 2d session, which authorized the initial units of the Colorado River storage project.

The investigation on these two projects has been underway for many, many years and I am very pleased to have the reports on the Navajo Indian irrigation project and the San Juan-Chama project before us today.

The projects, I am sure, have been very carefully planned and present a program for the best utilization of New Mexico's portion of the upper Colorado River water. This water comes from the San Juan River and its tributaries and is the last remaining undeveloped water resource available to the State of New Mexico.

Every other stream and river in the State has been completely developed and in many cases uses have reached the point where there is insufficient water to supply the demands. We have several water salvage, and also, a salinity alleviation, projects in the State in order to make available additional usable water for my State.

The Navajo Indian irrigation project will include a net area of 110,630 acres. As I mentioned before, the proposal to develop a large irrigable acreage in the area has been considered for many years and such a plan was actually initiated in the early 1900's.

Ever since that time, the people of northwestern New Mexico have been looking to the day when this project would become a reality. We have finally succeeded in having work started on the Navajo Dam which will be used to serve this project.

The Navajo irrigation project is one of the measures of a program to help the Navajo people in solving their very difficult problem. The Navajo population is now in excess of 80,000 and their agricultural resources on which they depend is very limited. The poverty among these people is a disgrace to our Nation. We have foreign aid programs to help underdeveloped countries, yet we have great difficulty in helping our own people.

We took an initial step in helping the Navajo people when we enacted the Navajo-Hopi Rehabilitation Act of 1950. At that time, we recognized that the construction of this and other irrigation projects is essential in attempting to solve Navajo Indian problems.

It has been estimated that the Navajo irrigation project would place about 1,100 Navajo families on the irrigated farms which would be provided. It is estimated that another 2,000 families will find employment in service and other activities. This project means that about fifteen to eighteen thousand Navajo men, women, and children would be direct beneficiaries of the project.

To understand the problem of the Navajo people, one must go across the Navajo Reservation and observe the difficult situation under which these people live. The only opportunity to obtain any large amount of water is along the San Juan River. In the Valley of the San Juan River, the Government has developed two very successful irrigation projects for the Navajos. They are the Fruitland and Hogback projects which are contributing substantially to the agricultural development of the valley. In spite of the handicaps of small holdings on these two projects, the Navajo families are at least deriving a subsistence from them. With the Navajo irrigation project it will be possible to have larger farms and allow the Navajo to have sufficient land on which to earn a living and raise his family.

The estimated cost of the Navajo irrigation project is $126,865,300 and the benefit to cost ratio of the project has been determined to be 1.2 to 1 on the basis of total benefits.

I do not believe that this expenditure is at all out of line in developing a project which is as essential in the rehabilitation and improvement of the lot of this important segment of the population of our country.

There is much more involved than cost—we cannot assign a dollar value to something which is needed to supply the human need of our own people.

The San Juan-Chama project, which would divert water from the headwaters of the San Juan River into the Chama and the Rio Grande, has been under study since the early 1930's and after many years of study and negotiations by the people of the San Juan, Chama, and Rio Grande Basins agreement has been reached between these people which enabled us to come forth with the plan for this project.

Senate bill 3468 would authorize a San Juan-Chama project designed to divert an average annual amount of 110,000 acre-feet of water from the San Juan Basin into the Chama and the Rio Grande Basin. The water diverted into the Rio Grande Basin would be used to replace water used for the irrigation of additional lands on the Chama River and in the vicinity of Questa, Cerro, Taos, Espanola, Nambe Creek, and lands in the Middle Rio Grande Conservancy District. The water would also be used to provide municipal and industrial water supplies to Albuquerque and other communities.

The project plan for the San Juan-Chama calls for the utilization of 57,300 acre-feet of water for municipal and industrial uses which would be used largely by Albuquerque, Espanola, Bernalillo, Belen, and Socorro.

The plan calls for the use of 30,100 acre-feet for supplemental irrigation on 39,330 acres of land along the tributaries of the Rio Grande and lands along the Rio Grande above Espanola.

The plan also provides for a supplemental supply of water for about 81,610 acres of land in the Middle Rio Grande Conservancy District in the amount of 22,600 acre-feet.

The tributary units in the San Juan-Chama plan are as follows:

Cerro unit.—Involving a storage reservoir on Red River, a diversion canal from Red River to lands located at Questa and in the vicinity of Cerro; also, several diversion dams and canals to improve diversion of water from Cabresto, Rio Medio, Rio Primero, and Latir Creeks to lands in Questa-Cerro area. The total irrigable lands amount to 11,820 acres.

Taos unit.—Provides for the construction of a dam and reservoir on the Rio Hondo and a dam and reservoir on the Rio Grande del Rancho, the construction of 9 new diversion dams and 30 miles of connecting canals. The plan provides works for serving an irrigable area of 20,550 acres between Ranchos de Taos and Arroyo Hondo. Some 4,050 acres of this land is owned by the Taos Pueblo Indians.

Llano unit.—The Llano unit would be located along a narrow beach paralleling the main stem of the Rio Grande in the vicinity of Espanola. Lands in the upper end of the unit would be adjacent to the lands of Alcalde Village and the San Juan Pueblo. Lands in the lower end of the unit would comprise lands of the Santa Cruz Irrigation District. The project works would consist of a diversion dam on the Rio Grande near Velarde and about 19 miles of main

canal plus a distribution and drainage system. The area to be served includes 1,900 acres of Indian lands and 2,620 acres of the Santa Cruz Irrigation District lands.

Pojoaque unit.—The plan for this unit provides for supplementing the water supply for about 2,440 acres of land along Pojoaque and Nambe Creeks through the construction of a dam immediately above Nambe Falls, 2 diversion dams and a canal system. Both Indian and non-Indian lands would be served by the project.

It is my understanding also that S. 3648 authorizes the Secretary of the Interior to contract with communities such as Farmington, Gallup, and other municipalities for municipal and industrial water supplies.

The Rio Grande Valley is the oldest continually occupied area in the United States and the site of the first Spanish settlement, and is also one of the oldest agricultural areas in the United States, because irrigation was carried on by the Indians prior to the coming of the Spaniards.

The pressing need for water in the basin vitally affects the welfare of more than half the population of the State and the water supply condition, already critical, has been aggravated by continued drought and increased uses. Shortage of water supplies has resulted in the inability to satisfy the irrigation and other demands and has resulted in many a complex problem.

The economic plight of the small communities on the tributary streams in the northern part of the basin in New Mexico has long been recognized as a major problem. The residents of these areas depend largely on irrigated agriculture with water supplies being obtained by diversion of the unregulated flows of the streams.

The only other opportunity for a livelihood has been to seek wage work outside of the area.

The most critical need in most areas is to expand the present resources by developing an adequate water supply and to permit optimum utilization of the lands now served by irrigation water and to extend facilities to serve additional lands.

The need for storage reservoirs is not only to regulate stream flows for irrigation, but to protect diversion works from floods which frequently occur. I believe that such improvements are very essential to the economy of the upper Rio Grande area of New Mexico and since New Mexico is entitled to this water, we should utilize it to improve the economic condition of those people who have been unable to help themselves.

In connection with the development of these projects, I want to be certain that every drop of water to which New Mexico is entitled is put to beneficial use. I want to be certain that all of the rights which people now have to the use of present supplies is protected under the project plan. I want to be sure that no one is deprived of a single acre of land, and of more importance, that not a single drop of water is lost to those individuals who own water and are depending on water to grow crops on the lands.

We have a large number of Indian Pueblos located in the Rio Grande Basin and they have small irrigated tracts, and could have more, which should be provided with a supplemental water supply.

I am pleased to observe that the Bureau of Reclamation, in their criteria for water-supply studies, has given a high priority to the irrigation needs of the Rio Grande tributary areas because of the large number of Indian and non-Indian rural people who depend on irrigated land for subsistence.

The plan provides for additional water for the Middle Rio Grande Conservancy District, which also contains a large number of Indians and non-Indian families, who certainly can use a supplemental water supply.

I have observed that the report of the Bureau of Reclamation recognizes the need for municipal and industrial water supplies for Albuquerque, the largest city in the State, which has had a phenomenal growth during the past few years. The city is presently obtaining its water supplies from wells which are located to a large extent in the valley floor adjacent to the Rio Grande.

It has been stated by authorities that the pumping of these wells has affected the flow of the river and it would therefore follow that as the city grows and additional water supplies are obtained from wells there would be a continued effect on the flow of the river.

The city of Albuquerque must do everything possible to maintain the stability of the agricultural development in the area, since it is one of the principal trade centers in the State. If this city is to grow and supply the water needs of the city and the military installations at Sandia Base and Kirtland Field, additional water will be required.

It is noted that the total estimated construction cost of the initial stage of development would amount to $81,069,000 and that of this amount $24,594,000 is allocated to municipal and industrial water which will be fully reimbursable with interest.

Other reimbursements would be made by the irrigators to the extent of their repayment ability and other costs would be taken care of out of New Mexico's share of the income from the power projects in the upper Colorado River storage system.

In conclusion, I would like to urge very strongly that the projects be authorized in accordance with Senate bill 3648 so that we in New Mexico can make use of the water to which we are entitled under the upper Colorado River compact and allow the people along the streams to obtain improvements for which they have waited so long and which are so vital in improving their economic condition.

We in New Mexico are so short of water and in such need of water that we cannot afford to waste or lose a drop.

Thanks.

I also have with me the present and potential uses of New Mexico water, which I would like to have inserted in the record. This covers the present and potential uses.

I will not read it.

I want to thank the chairman very much.

Senator ANDERSON. That was a fine statement.

(The exhibit presented by Senator Chavez is as follows:)

Present and potential uses of New Mexico water

	Average annual stream depletion (1,000 acre-feet)	
Present uses:		
Development prior to 1951	80.0	
Development since 1951	18.7	
		98.7
Authorized projects:		
Hammond	8.4	
New Mexico share of reservoir losses from authorized units Colorado River storage project (excepting Navajo)	69.0	
Extension of Indian projects	28.1	
Navajo Reservoir losses (1,700,000 acre-feet capacity)	34.0	
		139.5
Coordinated report projects:		
Navajo irrigation project	254.0	
San Juan-Chama project	110.0	
		364.0
Total		602.2
New Mexico's share under Upper Colorado River Basin compact (11¼ percent of 7,450.0)		838.0
Balance available		235.8

The above tabulation reveals that the depletion effected by the projects contemplated in the coordinated report are well within New Mexico's water allocation. In fact, additional depletions averaging 235,800 acre-feet of water per year can be made for other developments, including the proposed Animas-LaPlata participating project, without exceeding New Mexico's allocation of Colorado River water.

Senator ANDERSON. Next I will call on Congressman Montoya for his statement with reference to this.

Congressman Montoya is author of the companion bill in the House. I am glad to have you here this morning.

STATEMENT OF HON. JOSEPH M. MONTOYA, A UNITED STATES REPRESENTATIVE FROM THE STATE OF NEW MEXICO

Mr. MONTOYA. Thank you, Mr. Chairman and members of the committee. I appear today on behalf of S. 3648, a bill which would authorize the Navajo Indan irrigation project and the initial stage of the San Juan-Chama diversion project, both participating projects of the great Colorado River storage project, now under construction.

I appreciate very much the apportunity of appearing on behalf of both participating projects, and I cannot emphasize too strongly the importance of these programs to the people of my State.

I would also like to mention at this point that I have introduced a companion bill in the House, H. R. 12170, and although hearings have not been scheduled as yet, I want to assure this committee that I will do everything I can to get expeditious action on the House side.

The Navajo irrigation project located in northeastern New Mexico will irrigate over 100,000 acres of Indian lands, and quite clearly the ultimate value to the Indian people cannot be measured only on a dollar-by-dollar basis. The project actually can go a long way toward making the Navajo people self-sustaining and provide them with the self-respect engendered through productivity brought about by their own toil and work on their own farms.

They need this chance and they most certainly deserve this chance. Historically, the Navajo people have suffered hardships and depressions, and their courage to withstand defeat should be rewarded at the earliest opportunity—an opportunity present right now.

The Navajo project will support over 20,000 people through employment on the project and through farming of their own tracts of land.

In addition, of course, the welfare payments by governmental agencies eventually would be sharply decreased and savings in that field alone could well justify the Congress in taking this important step. This is not a temporary medium of alleviation but rather potentially permanent, because with adequate irrigation, which is not now present, climatic conditions would strongly favor the growing of many crops, fruits, vegetables, and livestock feeds. I sincerely hope that this committee in its wisdom will see fit to aid a courageous people to become self-supporting.

A few words, if I may, as to the San Juan-Chama project which is located in north central New Mexico and southern Colorado. It is contemplated that in this initial stage approximately 110,000 acre-feet of water would be diverted annually from the San Juan River into the Rio Grande for the purpose of providing needed supplemental water for existing irrigation projects and for industrial and municipal uses in the greater Albuquerque area, which is the largest metropolitan center in New Mexico.

Many important defense installations are located in this area, and there is a rapidly growing need for additional industrial and commercial water supply. New projects and new programs which are vital to our national defense are on a constant increase, and clearly the deficient waters of the Rio Grande and Canadian River Basins cannot meet the demand.

In addition, agricultural irrigation has become a major problem in the area and the project is so designed as to provide material and needed aid.

Also, the project ultimately would greatly improve wildlife, fish, and recreational activities in the Rio Grande Basin, one of the largest tourist attractions in the United States.

The project as authorized in the bill has been determined economically justified and feasible by the Department of the Interior and to have engineering feasibility.

If the committee will permit me, I would like to suggest a specific declaration of intent on the part of the committee indicating that the existing water rights that appertain to the landowners in the Questa and Cerro, N. Mex., part of the project will be fully respected in the final planning of this project. This assurance has been given to me by responsible officials of the State of New Mexico who have been working in cooperation with the Bureau of Reclamation on this project.

I bring this to the attention of the committee because of a feeling among certain people in the Questa and Cerro, N. Mex., area indicating a fear that they will lose their existing water rights should this legislation be approved.

Mr. Chairman, we have with us many distinguished and capable persons from my State who have made exhaustive studies as to the great economic benefits to be derived from these projects, and I am sure they can fully advise the committee on any phase of the proposed

undertakings. Therefore, I do not desire to take any more of the committee's time, but I do want to reiterate my appreciation and again assure the committee that I will do all that I possibly can on the House side.

Thank you very much.

Senator ANDERSON. Thank you, Congressman Montoya.

It is now my great pleasure to introduce to this hearing the fine Governor from New Mexico, Gov. Edwin L. Mechem, who has made a long and careful study of the needs with reference to these two important projects.

Governor Mechem, we appreciate the fact that you have come here personally to help us in the understanding of this bill and to give us your recommendations on it. I want to express my appreciation to you for being here.

STATEMENT OF HON. EDWIN L. MECHEM, GOVERNOR OF THE STATE OF NEW MEXICO

Governor MECHEM. Thank you, Senator Anderson. I am appearing before you on behalf of S. 3648, a bill to authorize the Navajo irrigation project and the initial stage of the San Juan-Chama project.

The need for both of these projects has long been recognized and planning has been underway for a quarter of a century. Not until the upper Colorado River compact was negotiated in 1948, however, were the State and the Department of Interior able to consider finally detailed plans for their construction.

The plight of the Navajo Indians and their pressing need for relief from their severe and chronic economic distress need not be belabored before this subcommittee. Ample testimony on this subject is already before the Congress. The Navajos are a proud people, independent, intelligent, and industrious. Lack of opportunity alone has kept them from becoming self-sufficient.

The Navajo project is the vehicle upon which they pin much of their economic hopes. At their own expense, the tribe is already initiating an on-the-job training program to develop qualified farmers for the project. The Navajo irrigation project should be authorized and constructed at the earliest possible date.

A transmountain diversion of some of the waters of the San Juan River is essential in filling needs in water-short areas of the Rio Grande Basin. A supplemental supply for the city of Albuquerque, one of the fastest growing cities in the country, is one of the most pressing needs. Several local irrigation developments in the economically depressed areas in Santa Fe, Rio Arriba, and Taos Counties in nothern New Mexico are in danger of going completely out of production if they are not rehabilitated and if supplemental water and storage are not provided to stabilize their agricultural economy.

Recent studies have shown that the water supply of the Middle Rio Grande project, once thought to be ample, must now be increased to provide sufficient dependable water for present requirements of the district. These projects constitute the most immediate and pressing needs which justify the San Juan-Chama initial phase project.

To implement the provisions of the Federal treaty with the Navajo Indian Tribe and to bolster the economy of this, the most populous

tribe of Indians in the United States, the Department of the Interior about 10 years ago recommended congressional authorization of a Navajo irrigation project.

Although the State of New Mexico wholeheartedly agreed with the desirability of and need for this project it was necessary at that time to point out that the Indian project would compete for the same water supply as other potential New Mexico water uses, and that it would be necessary, therefore, that the plans for these competing projects be correlated before any of them could be authorized. These potentialities included the San Juan-Chama transmountain diversion project and the South San Juan irrigation project in addition to the Indian project.

On August 30, 1950, the Secretary of the Interior set up an Inter-Agency Technical Committee to study the problem and to derive data upon which an intelligent decision on water allocations could be reached. This committee was composed of engineers of the Bureau of Reclamation and the Bureau of Indian Affairs.

A representative of the State engineer office attended all meetings of the committee in an advisory capacity. The results of these studies were presented to and were fully discussed with the several interested groups and agencies in both the San Juan and Rio Grande Basins.

On March 4, 1958, the State crystallized its decision on the sizes of the potential projects to be studied by the Department of Interior. The State requested that the Secretary of the Interior undertake the project studies, and recommended the criteria of water use to be adopted for these studies.

Since then a great deal of effort has been expended and a number of important decisions have been reached in the course of bringing project plans to their present stage.

The desirability of importing San Juan River water to areas of deficient supply in the Rio Grande Basin has been under consideration by the State for many years. Such a project requires the construction of water storage and transportation facilities in Colorado for the benefit of New Mexico.

One of the provisions of the Rio Grande compact, adopted 20 years ago, gave the consent of the State of Colorado to a transmountain diversion of water from the San Juan River in Colorado to the Rio Grande Basin in New Mexico.

Article XIV of the upper Colorado River compact of 1948 also provides for the construction of works in Colorado for the benefit of New Mexico and provides for the delivery by Colorado of sufficient water, together with water originating in New Mexico, to enable our State to make full use of its apportioned supply.

The original studies of the San Juan-Chama project contemplated an average annual diversion of 235,000 acre-feet per year and S. 3648 seeks congressional approval of this general plan. The State at this time, however, is seeking authorization of an initial phase project for an average annual diversion of only 110,00 acre-feet.

One of the complicating factors involved in planning for the best use of the available water supply of the San Juan River was the dominant position of the Navajo Indian project.

Numerous meetings were held with the Navajos and their representatives in the Bureau of Indian Affairs to work out a satisfactory operating agreement for the projects.

Following a 2-day meeting at Window Rock in December 1957, the Navajo Tribal Council unanimously approved a resolution advocating equality of use of the waters of the San Juan and its tributaries at or above Navajo Reservoir for all future projects including the proposed Navajo irrigation project.

This action of the Navajo Tribal Council is an historic one. It recognizes that the best possible use of the available water supply involves the sharing of shortages by all water users under future projects at times of extreme drought when the runoff is inadequate for those uses.

The language of section 7 of the pending bill provides for equality of use while fully protecting the water supplies of the two projects authorized therein. This provision is important to developments in the basin which require Federal expenditure and private risk capital, and these developments will greatly benefit the Navajos. I strongly recommend this important provision to the Congress.

The State engineer in 1955 and 1956 initiated filings covering all of the unappropriated waters of the San Juan River and its tributaries above Navajo Dam. These filings were assigned to the Secretary of the Interior some months ago. The Secretary has submitted plans pursuant to these filings in compliance with New Mexico law and is, therefore, enabled not only to protect fully the water uses sought in the current legislation, but also to plan future developments so that ultimate usages will have an adequate water supply without threatening that of the earlier developments.

Under the provision of S. 3648 all uses to be made of water covered by the Secretary's filings, including the authorized Hammond project, will be served in parity. This provision does not, of course, apply to any uses existing or authorized under State or Federal law earlier than the priority date of the Secretary's filings.

I have gone into the above matters in some detail because I feel that it is important to show that the State, in cooperation with the Bureau of Reclamation, the Bureau of Indian Affairs, and the Navajo Tribe has spent a great deal of time and effort to develop a plan which will provide for the optimum use of available water supply and permit orderly planning and development of future water uses in accordance with New Mexico's compact allocation.

The plan embodied in the present bill represents the culmination of years of careful detailed planning. Because of the wisdom and statesmanship displayed by New Mexico people in both basins we have avoided the pitfalls inherent in this coordinated plan of development which involves both in-basin and out-of-basin uses.

I will not attempt to describe or comment on the technical aspects of the two projects. Firstly, I don't understand them and don't wish to confuse you thereby, but they will be detailed fully to you by engineers of the Department of Interior and will be touched upon by New Mexico's engineers.

At this time I want to discuss some of the critical comments and objections made by interested States concerning the proposed legislation.

Most of the unfavorable comment comes, as can be expected, from southern California representatives whose chief interest here is to prevent permanently and forever every project for consumptive use of water in the upper Colorado River Basin. Water allocated to but not used by any such project will, by the law of gravity, flow on downstream and be available for the development of hydroelectric energy and for beneficial consumptive uses in the lower basin, chiefly southern California.

New Mexico is able at present to utilize only about 10 percent of the water allocated to our State by the Colorado River compacts. Other States of the upper basin find themselves much in the same situation. In contrast, extensive development of Colorado River water has been made in the lower basin, chiefly in southern California and Arizona.

Following the ratification of the Colorado River compact of 1922, Hoover Dam, Parker Dam, and Davis Dam, and the All-American Diversion Dam and Canal, all of which benefit the States of the lower Colorado River Basin only, were constructed with the agreement and active cooperation of the upper basin States.

Thus, for many years, the beneficiaries of these works have enjoyed the fruits of the major construction needed to utilize the Colorado River waters allocated to the lower basin.

As a secondary result, it has been possible for them to use the entire flow of the river at Hoover Dam for the production of hydroelectric power, pending contemplated depletions in the upper basin.

Thus power interests have been able for many years to utilize for power production not only lower basin water, but also water allocated by the seven-State compact for consumptive uses in the upper basin.

Substantial amounts of this power, although as dependable as firm power, have been sold to the power companies at dump rates which are about one-fourth the rate for firm power. This has resulted in beneficial use of the water, but it should be noted that the Boulder Canyon Adjustment Act, under which the power contracts are being operated, contemplates that the upper basin States will ultimately make full use of their compact allocations.

In her official comments, the State of California makes three recommendations:

1. In the event the San Juan-Chama and Navajo projects are authorized, the authorizing legislation provides specifically that the projects shall not impair in either quality or quantity the rights of the State of California in and to the waters of the Colorado River.

The State of New Mexico and the other States of the upper Colorado River Basin intend to comply fully with the several documents which comprise the law of the river.

Public Law 485—the Colorado River Storage Project Act of 1956—reaffirms these documents. A reiteration of their principles in the present legislation is unnecessary because the law of the river is already clearly established.

Senator ANDERSON. Could I interrupt the statement to state that the State of New Mexico and the other States of the Upper Colorado River Basin intend to comply fully with several documents on the law of the river. When the upper Colorado River bill was before the Congress people from California came forward with some amendments which frankly we thought were unnecessary and which the

attorneys advised were unnecessary, but we wanted to make amply sure everybody would live up to the spirit of the previous charters.

We intended also to see to it that the law of the river was maintained. I think having done that we come into this hearing with pretty clean hands.

I am awfully glad that you recognized that fact and stressed it. I think it is a very important fact.

Governor MECHEM. Thank you, sir.

The Colorado River compact of 1922 allocated—

in perpetuity to the upper basin and to the lower basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum.

The compact also stated that—

present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this compact.

This latter is a simple declaration of fact. It is self-evident that the consumptive use of 7,500,000 acre-feet of water above Lee Ferry will inevitably change both the quantity and quality of the remaining flows to the lower basin and the signatories agreed that these changes would not impair present perfected rights.

Aside from this, however, the assumed detriment to the lower basin users by reason of transmountain diversions of "good quality" water is a misconception which should be laid to rest once and for all.

The mechanics of successful irrigation require that dissolved solids in the water be flushed out by drainage and return flows to the stream; otherwise the salts would accumulate in the soil and the growing of crops would soon become impossible.

Thus the water is consumed while the dissolved solids are retained in the residual stream flows. Since transmountain diversions remove both salts and water from the basin, the remaining supply is actually of better quality than would result had the same water been consumed in the basin.

Thus California appears to be misguided, or misguiding, when she focuses her objections on transmountain diversion projects.

2. Any authorizing legislation provides that none of the waters of the Colorado River system shall be exported from the natural basin of that system by means of works, constructed under authority of this act, or extensions or enlargements of such works, to the Rio Grande Basin for consumptive use outside of the State of New Mexico, and no such water shall be made available for consumptive use in any State not a party to the Colorado River compact by exchange or substitution or by use of return flow; nor shall the obligations of the State of New Mexico under the provisions of the Rio Grande compact be altered by any operations of any project for transmountain diversion of Colorado River system water into the Rio Grande Basin.

New Mexico intends to comply fully not only with the Colorado River compact, but also with the Rio Grande Compact of 1938. In fact, there is a special provision in section 2 of Public Law 485 which specifically protects the rights of the other States signatory to the Rio Grande compact. A substantial amount is included in the cost estimate for the San Juan-Chama project to install and operate a large number of gaging stations on the Rio Grande and its tributaries and to keep accurate accounts of the uses of all imported waters. Such accounting will provide adequate assurance to the States of both the Rio Grande and Colorado River Basins.

The amendment recommended by California would provide that none of the waters of the Colorado River system shall be made available for consumptive use in any State not a party to the Colorado River compact by exchange, substitution, or return flow.

Any transmountain diversion results in comingling imported waters with in-basin waters. When the waters are once commingled the imported water cannot be used without involving, to some degree, substitution or exchange with in-basin water.

In the instance of almost every possible upper basin transmountain diversion there are downstream States, not parties to the Colorado River compact, which have rights to a portion of the in-basin waters and, therefore, substitution or exchange of imported water for in-basin water in which other States may have rights, is inescapable.

The Colorado River compact provides for transmountain diversion projects and thus by any commonsense construction of its provisions permits substitution or exchange. New Mexico maintains her right to substitute or exchange Colorado River water for Rio Grande water in which Texas may have a right.

Senator ANDERSON. I will suggest that the exact language of the amendment from the State of California appear in the record, and I read it:

None of the waters of the Colorado River system shall be exported under the natural basin of that system by means of works constructed under authority of this act or extensions and enlargements of such works, to the Rio Grande Basin for consumptive use outside of the State of New Mexico, and no such waters shall be made available for consumptive use in any State not a party to the Colorado River compact by exchange or substitution or by use of return flow; nor shall the obligations of the State of New Mexico under the provisions of the Rio Grande compact be altered by any operations of any project for transmountain diversion of the Colorado River system water into the Rio Grande Basin.

I point out that once you mix water it is pretty hard to separate it again. But you regard this amendment as intending to help or to hinder any posisble transmountain diversion?

Governor MECHEM. I am afraid it might hinder it.

Senator ANDERSON. I am afraid it might hinder it also.

Governor MECHEM. California asserts that New Mexico would violate the Colorado River compact should one drop of return flow from imported Colorado River water pass down the Rio Grande to another State. New Mexico believes that, if the imported water is put to beneficial use within her boundaries, the escape of return flow to Texas would not constitute a violation of the 1922 compact.

However, New Mexico contemplates that in this instance the imported water will be so measured and managed that its equivalent will be fully consumed within the State.

The main storage reservoir of the San Juan-Chama project will be constructed in the Rio Grande Basin on the east side of the Continental Divide. It will be necessary, in years when the San Juan River has a good water supply, to export and store amounts of water substantially greater than the average annual diversion in order that the needs of water users under the project can be met in years when little water is available for exportation. While the amount of water exported may vary widely from year to year, the annual amount drawn from storage will, of course, be fairly uniform.

In her comments California appears to contend that water exported from the upper basin must be accounted as a consumptive use in the year exported even though the water is stored out of the basin for use in a later year.

California further contends that with exported water thus accounted for the total consumptive use in the upper basin may not exceed 7.5 million acre-feet in any year.

California's implication is that, when consumptive uses in the upper basin approach the limit allowed by the 1922 compact, it would be necessary to reduce in-basin consumptive use in years when larger than average amounts of water are exported for out-of-basin storage.

New Mexico takes the position that, even if article III (a) of the compact were construed to set the upper limit of beneficial consumptive use in any year rather than the average, it is perfectly clear that water which has been exported and stored has not been applied to beneficial consumptive use any more than water stored within the basin.

Water cannot properly be accounted as beneficially consumed under the provisions of the compact until it has been released from storage for use or is actually consumed by evaporation.

It is obvious that California cannot in good conscience request the impossible. The 1922 compact is not a one-way street, but is a solemn agreement between the States of the basin providing for and guaranteeing the water requirements for all of the States.

California also recommends that—

> 3. Comprehensive studies be undertaken by the Department of the Interior to ascertain the effects of the proposed San Juan-Chama and Navajo projects, as well as other future water-development projects on the quality of the waters of the Colorado River.

I am advised that comprehensive detailed studies of the effects of future development of projects on the quality of waters of the Colorado River are now being conducted by the Secretary of the Interior in accordance with requirements of Public Law 485. The determination of basic data on the Colorado River must be carried on in both the upper and lower basins so that all States may know the facts and be fully protected in their water developments.

California comments include criticism of the economic aspects of the Navajo and San Juan-Chama projects. California analyzes the economic of the two projects using her own set of assumptions and arrives at the conclusion that neither project is justified economically. This analysis has been loaded with the same specious criteria and assumptions which were used by the State in opposing the authorization of the Colorado River Storage project 2 years ago and which the Congress resoundingly rejected at that time.

For example, California's economic analysis charges $800,000 of the cost of Navajo Reservoir against the diversion project. She overlooks the fact that Public Law 485 authorized Navajo Dam and Reservoir as an initial unit of the storage project, all of the costs of which are to be repaid from power revenues.

In making its economical appraisal of the project the Bureau assessed an annual use charge, based on the average annual depletion, to take into account the project's appropriate share of the cost of the authorized initial storage units.

This assessment against the San Juan-Chama project amounts to $2 per acre-foot of depletion, or $220,000 per year. In a 100-year analysis this annual charge is sufficient to retire a capital investment of $8 million at 2½ percent.

California's assessment of $800,000 of the costs of Navajo Dam against the San Juan-Chama project is small as compared to the storage assessment used in the Bureau analysis, but nonetheless its use results in a duplication of charge for storage.

Similarly, California's analysis of the Navajo project duplicates charges by adding costs of construction of Navajo Dam to the costs of the irrigation project even though the Bureau of Indian Affairs' economic analysis already includes a charge of $2.50 per acre-foot of depletion to account for the project's share of the cost of the storage units.

In its comments, which are attached to and made a part of the State's comments, the Colorado River Board of California states that the consumptive use of water by the proposed projects would "reduce the hydroelectric power output at downstream—Hoover Dam—plants" and "would be a detriment from the national standpoint" and, therefore, "the value of the lost power should be deducted from the estimated project national benefits."

The use of water for development of power is subservient to use for domestic and agricultural purposes under the terms of the compact. Further, the legislation under which Hoover Dam was authorized recognized that progressive depletions of the water supply would be made by upstream developments and specific reductions were made in the power schedules to reflect these depletions. For this reason, the economic analyses set forth in the Secretary's report do not include negative power benefits resulting from depletions by projects envisioned by the Colorado River compact.

In its benefit-cost analysis, the Colorado River Board assigns the $2,800,000 deferred costs as a charge against the San Juan-Cham project costs. This figure represents the increased cost of building the transmountain diversion tunnel to a size which can physically deliver an average of 235,000 acre-feet to the Rio Grande Basin—ultimate size—and thus is properly charged against future uses.

In requesting Congress to approve the plan for the large-size transmountain diversion project, New Mexico only seeks authority from the Secretary to construct the larger size conduit and thus provide the flexibility required for future developments.

New Mexico thinks it undesirable and unnecessary at this time to make final allocations of the use of San Juan waters, but seeks construction in accordance with a plan that will permit development of water for use on either side of the Continental Divide.

Should a second-stage diversion project be constructed at some future date, the large size diversion tunnel would save about $15 million in construction costs necessary to provide the increased conduit capacity across the divide.

On the other hand, the State has agreed to pay the additional costs from her share of the Colorado Basin fund revenues in case the ultimate stage development is not constructed.

By assuming a higher interest rate and a longer construction period than that used by the Department of Interior, and by other devices including those mentioned above, California seeks to show

that the two projects are uneconomic. I would point out to the committee that both of these projects have been carefully analyzed by the Department of the Interior in accordance with criteria specified by Public Law 485 and criteria adopted and accepted by that Department and the Congress for the evaluation of water projects. Under these criteria both projects have been found to be economically feasible.

The desirability of providing support for 18,000 Navajo people and improving the economic life of the entire reservation by the development of a Navajo irrigation project was discussed at length in earlier hearings on the storage project legislation.

Congress at that time made the decision that a nonreimbursable Indian project, when and as authorized, was proper and desirable in fulfilling the Government's obligations to the tribe.

Senator ANDERSON. I think that this is a very important statement. Congress has passed on this as far as the desirability of the Navajo project is concerned, has it not?

Governor MECHEM. Yes, sir.

Senator ANDERSON. It has ample notice and full hearings. The Navajo Indian question was presented and a decision was reached for a nonreimbursable project. That has been done. Therefore, the question of feasibility to a degree was ruled out by the Congress. I am hopeful that the Congress will reaffirm its former decision.

I am glad that you are willing to state this again that we are carrying on an obligation to the tribe that Congress has already althorized, and I think we were a little tardy in recognizing it perhaps when you consider the long history.

Governor MECHEM. The cost of rehabilitating the tributary projects in the depressed areas of northern New Mexico is admittedly high and the repayment capacity of the water users is not great.

However, if the agricultural situation in these areas is allowed to disintegrate, a large part of the presently invested capital, in time, may well be lost to the farmers and, of course, to the Nation. The projects do comply fully with reclamation law and with the repayment features of the Storage Project Act.

The State of Colorado has commented favorably on the proposed projects. The San Juan-Chama project plan provides for bypasses adequate to protect existing rights and fishing in Colorado, but interests on the west slope in Colorado have expressed concern that the depletions that would be effected by the projects to be authorized by S. 3648 would not leave sufficient water within New Mexico's allocation for the proposed Animas-La Plata project.

Since she has an interest in that project, which would be constructed in both Colorado and New Mexico, Colorado has requested from New Mexico detailed information on present and proposed uses of New Mexico's compact allocation. We have compiled and furnished the information requested and it shows clearly that there will be adequate water for the Animas-La Plata project.

I have also assured Colorado of New Mexico's continued cooperation in studies and negotiations directed toward the determination of facts and the full and optimum development of the waters of the upper basin.

In conclusion, I wish to voice my appreciation of this opportunity of appearing before this subcommittee and of expressing my deep convictions regarding these projects. Both are of vital concern to the development and welfare of our State. Your favorable consideration of S. 3648 is earnestly solicited.

Senator ANDERSON, I want to express my appreciation for the opportunity of being here.

Senator ANDERSON. I want to thank you for a very fine statement, Governor. I am delighted that you go into the questions of the compact, what our obligations are to the compact and how well we have lived up to them. I think it is extremely significant that the chief executive of the State, states fully and frankly that we do not intend to give up our compact obligations but we intend to insist upon the things that are fair and proper for us.

I think it is a very fine statement. I appreciate it a whole lot.

I want to recognize the fact that Mr. Tom Morris is here, not because he is a nominee of any one of the political parties for some office but because he has had some connection with the Interstate Stream Commission. I believe, Tom, you have been chairman of that.

Mr. MORRIS. Yes, sir.

Senator ANDERSON. Have you heard any discussions with reference to these projects in the commission?

Mr. MORRIS. Yes, sir.

Senator ANDERSON. Do you subscribe in general to what the Governor has said about the desirability as a member of that board?

Mr. MORRIS. I certainly do, wholeheartedly, sir.

Senator ANDERSON. Now we will move to the category of witnesses from the Department of the Interior. The Department's report on S. 3648 has previously been submitted.

First, from the group that may be primarily interested in Indian matters.

Rex Lee?

Our next witness, representing the Department of the Interior, will be H. Rex Lee from the Bureau of Indian Affairs.

I want to say, Mr. Lee, it has been a long-time association you have had with the Department and working on Indian affairs.

STATEMENT OF H. REX LEE, LEGISLATIVE ASSOCIATE COMMISSIONER, BUREAU OF INDIAN AFFAIRS

Mr. LEE. Mr. Chairman, when the dates were announced for these hearings, Commissioner Emmons was on an extended field trip. Because of his great interest in how this project would affect the Navahos and Pueblos, he considered canceling his trip and returning to Washington for this hearing this morning. In reviewing his itinerary, however, he found that some of his commitments were simply impossible to cancel, and so he sends his regrets.

He did prepare a statement of his interest in this project with his views on it, and asked me to present it to you this morning.

Senator ANDERSON. Could I stop you there, Mr. Lee, and say that this morning I received a telegram from Martin Vigil, chairman of the All-Pueblo Council, saying:

We strongly recommend congressional approval of proposed San Juan-Chama diversion project. Approximately 20,000 Pueblo Indians will benefit directly from the project. The project will enhance economical development of Indian land resources through additional irrigation and will open opportunities for

industrial development on or near Indian lands. We pledge full support of this proposed project.

Since you mentioned Pueblos as well as Navahos, I thought that should be in there.

Mr. LEE. We have with us Mr. George B. Keesee, our area general engineer. Also, with him is Mr. W. A. Jones, the Navaho area general engineer, as well as Mr. W. L. Miller, our chief irrigation engineer.

Mr. Keesee is prepared to give a full statement on the Navaho project and to explain in full detail how it would affect the area.

Mr. Emmons did prepare and send to us the statement that he would like to have presented to the committee. I will leave it to your judgment, Mr. Chairman, as to whether you would like me to read this or present it for the record.

Senator ANDERSON. I think it had better be read. The Commissioner of Indian Affairs is a long time friend of all of us; but, more important than that, he represents a very important segment of American life, and I think his comments are extremely important, because the Indian portion of this project is of great importance, the Navaho part of it, and the welfare of the Pueblo Indians is very much involved. The comments of the Commissioner of Indian Affairs are important to this hearing.

STATEMENT OF GLENN L. EMMONS, COMMISSIONER OF INDIAN AFFAIRS, DEPARTMENT OF THE INTERIOR, AS PRESENTED BY H. REX LEE, LEGISLATIVE ASSOCIATE COMMISSIONER

Mr. LEE. This is the statement of Glenn L. Emmons, Commissioner of Indian Affairs.

Mr. Chairman and members of the committee, my purpose in coming before you here today is to give you my views both as Commissioner of Indian Affairs and as a longtime friend of the Navaho people, concerning the proposed Navaho Indian irrigation project which you have under consideration.

Although I have known the Navaho people and their problems rather intimately since 1919, the proposal to develop a large irrigable area south of the San Juan River predates me by quite a bit. In fact, it goes back to the early years of the present century. During this whole period the people of northwestern New Mexico, both Indian and non-Indian, have been waiting, sometimes patiently and sometimes eagerly, for this great development to become a reality.

The feasibility report on the Navaho irrigation project of January 1955 and the supplemental report of March 1957 had been prepared by the Bureau of Indian Affairs. The reports were coordinated with those of the Bureau of Reclamation on the San Juan-Chama project. The status of that coordination will be presented later by Mr. Dominy, the Associate Commissioner of Reclamation. The coordinated development of these two projects would materially benefit the Indians both on the Navaho Reservation and on the pueblos in the Rio Grande Basin.

Other witnesses who are present here are better qualified than I am to testify on the economic and engineering aspects of this proposal for the Navaho Indian irrigation project. My primary aim will be to bring out some of the nontechnical considerations which I believe

are fundamentally important. More specifically, I want to emphasize how tremendously desirable I think this project would be in terms of the future welfare of the Navaho Indian people.

First, I would like to put the Navaho project in the framework of the total program to help the Navaho people in solving their more urgent problems. Notwithstanding the recent large increase in tribal income mostly from oil and gas leasing, the poverty which prevails among the Navaho people today is primarily a result of the lack of balance between the rapidly increasing population and the resources upon which they depend for support. As the population has expanded—it has multiplied about nine times since 1868 when the Navahos were released from Fort Sumner—the basic standard of living has declined. This central problem was recognized by the departmental report of March 1948, which led to the enactment of the Navaho-Hopi Rehabilitation Act of 1950. In that act there is a strong implication that construction of the Navaho Indian irrigation project could be of great benefit in any sound approach to a solution of the total Navaho problem.

The departmental report of 1948 lays great stress on the project as a feature of Navaho economic rehabilitation. The act of 1950 provided an authorization of $9 million for reservation irrigation projects and for study of the Shiprock, or, as it is now called, the Navaho Indian irrigation project.

The Congress in the enactment of Public Law 485 authorizing the Colorado River storage project recognized the importance of the Navaho Indian irrigation project to the Navaho people in directing the Secretary of the Interior to give priority to the completion of a planning report on this project as well as other irrigation projects.

At this point, however, I want to emphasize that in dealing with the complex and many-sided problem of the Navaho people, we are not relying on any one line of approach. It is abundantly clear that only by a comprehensive and concerted program can we hope to make real progress. As you all know, we recognize the fundamental importance of education, and, through our Navaho emergency education program, beginning in the school year 1954–55, we have provided schooling for more than 10,000 additional Navaho children who had never previously seen the inside of a classroom. We are emphasizing adult training and helping in the relocation of those who want to move off the reservation in search of better job opportunities. We are, in every possible way, encouraging the development of industry and business and thus opening the way to increased Navaho employment in the immediate area. Emphasis is also being given to preventive medicine and to resources use and conservation.

The Navaho irrigation project could be an extremely beneficial supplement to these constructive programs we now have under way. If we are able to place 1,100 Navaho families on the proposed project, we can foresee several primary and secondary results. Another 2,200 families would find employment in service and other related project activities. This means that a total of approximately 18,000 Navaho men, women, and children, in addition to 2,000 non-Indians, would be direct beneficiaries of the project. The indirect benefits would be even more far-reaching.

Present pressure of overuse of the Navaho Reservation range would be substantially relieved. Schools for this population, farmers and

nonfarmers alike, could be built on a day-school basis. Every social service, to which the Navahos located on or near the project are entitled, could be more efficiently and economically administered. I foresee that the Navaho irrigation project would have profound, far-reaching, permanent, and expanding influence in helping the tribe find economic stability.

The Navaho Tribe, as you know, is the largest one in the country. Its problems, as a whole, represent the larget single complex of Indian problems with which the Congress and the Bureau have to deal. We have all been acutely aware of this fact since the great blizzard of the late 1940's which swept the Navaho onto the front page of the national press. National interest in the Navaho has remained constant, as I can well attest since I came to Washington.

If, with the assured support of the Navaho people themselves, we can set this fine group of people on the road to economic self-sufficiency, we will be meeting the expressed wishes of the American people. In this task, as I have said, the construction of the Navaho irrigation project could be tremendously beneficial.

I urge you to consider the factor of cost in a broad framework. I do not know how many millions of dollars have been spent over the years, not only in meeting the basic human needs of Navaholand, but in carrying the essential services of welfare and administration. As I said earlier, I have lived intimately close to this situation for years. I know the total sum expended by the Federal Government must have run to a gigantic figure.

However, there is more involved here than cost. There is also the human need of the Navaho people. The Navahos have lands aggregating 16 million acres; yet the astounding fact is that out of all the vast territory, only 21,500 acres can be hazardously dry-farmed. Apart from the Navaho (Shiprock) project, there is only a total irrigable acreage of 58,900 acres, of which 36,600 acres are actually irrigated on some 73 projects ranging in size from 20 to 6,500 acres. Of these projects only 9 have an assured water supply either from storage or perennial flowing streams or springs. The remainder receive their supply by diverting the intermittent flows resulting from normal rainfall.

One important question that needs to be faced, of course, is whether the Navaho people can and will farm the land productively once it is developed. For an answer, we have two things to go on: our past experience and the training plans we have in mind for the Navaho before he goes onto this project if it is constructed.

Let me mention first our past experience.

As you fly into Farmington, N. Mex., after passing over the dry eroded area to the south, you see a ribbon of green all along the San Juan River. This in other words, is a prosperous valley and was even before the recent coming of gas and oil development, uranium mining and processing, and helium production in the area. Some Navaho Indians have had real experience with irrigation on the Fruitland and Hogback projects and are contributing substantially to the agricultural production of the valley.

The two Navaho irrigation projects on the San Juan, Fruitland, and Hogback, are producing annually more than $300,000 worth of crops from a total of 7,669 acres. Both projects are seriously handicapped because of the small acreage allotted to the Navaho families, an average of 11 acres on the Fruitland and 7½ acres on the Hogback. The reason we have such farm acreage is because of decisions made years ago to crowd as many Navaho families onto the land as possibe on a subsistence basis.

This scheme has not worked because the Navaho farmers have had to leave their farms to seek seasonal jobs off the reservation. Nevertheless, on the Fruitland project 93½ percent of the land was in use last year and only 6½ percent idle. This compares with the usual experience of 10 percent idle land on public and private irrigation projects. On the Hogback project, the idle acreage was large, a little over 20 percent, due directly, I believe, to the limited size of the farm units.

If the Navaho irrigation project should be authorized it would be possible for us to enlarge the farm units on these two projects. Our experience, however, in spite of the heavy handicap which I have indicated, proves that the Navaho Indian can and will become an irrigation farmer, as he is now doing with more success than we could reasonably expect under the circumstances, raising alfalfa, corn, beans, small grains, fruit, and garden vegetables. The Navaho has a strong feeling for the land and its use, and I am wholly convinced that, given the opportunity and the training, he can be successful in irrigation farming.

It is clear, however, that we must have Navaho operators prepared to use the land properly if this new project should be authorized. Navahos will be eagerly waiting for the opportunity to move onto this land; but more important, they must know how to operate and manage an irrigated farm unit. It is of utmost importance, therefore, that we anticipate this need and provide as a corollary to this project a well-planned training program to give Navahos the know-how to use the land when it is ready.

Anticipating this need for trained operators, we have prepared the blueprints of an education-training program that will be geared both directly and indirectly to this project. The training program objectives are threefold:

1. Eradicate illiteracy and raise the general educational level of the Navaho people.

2. Carry out a well-planned adult-training program in the practices and techniques of irrigated farming for Navaho adults interested in locating on irrigated lands.

3. Prepare future operators through high-school programs of vocational agriculture.

In addition to the Bureau's program of educating and training the Navahos in irrigation practices, the Navaho Tribe has established a training program financed wholly from tribal funds and supervised in its entirety by tribal personnel. This tribal program is now training 18 Navahos who will be placed next year on economic farm units on Hogback project.

Finally, I would like to mention the possibilities for future economic development which I can visualize in the entire San Juan Valley area above Shiprock. It promises to become one of the really balanced economic areas industrially and agriculturally in the whole Southwest.

I have previously mentioned the successful irrigation farming by Navaho Indians utilizing the waters of the San Juan River. In recent years, we have seen the important development of gas deposits. We have seen the area intimately linked with the uranium processing mill and testing plant and the reactivation of the helium processing plant at Shiprock. We know that private industry is working toward the development of the great coal deposits near the area. Construction of homes has kept abreast of the growing population. The Navaho Tribe built a modern motel at Shiprock; it is full every night and has been enlarged. We have seen the town of Farmington grow from 3,600 to 22,500 in the past 8 years.

The area is richly endowed. It is coming into its own. It has natural energy in its coal and gas resources. It has manpower in its Navaho people. It has water in the San Juan River.

The Navaho irrigation project, if built, would give vast and growing impetus to the whole economic life of northwestern New Mexico.

For centuries, the Navahos have lived along the San Juan River. To them, it is "our river," yet they have been most reasonable and practical in recognizing the needs of the Rio Grande Valley, and they have shown a willingness to work cooperatively with the State of New Mexico in developing a broad plan for the use of the waters of the San Juan River.

The decision is in the hands of Congress. In these remarks, I have emphasized the important contribution which the Navaho Indian irrigation project could make toward the creation of greater economic stability in the Navaho area; the past experience of Navahos in irrigation farming in the San Juan Valley; the plans for training and preparing Navahos for resettlement; and the developing economy of the entire San Juan Valley, which could benefit most effectively from construction of the project. I earnestly hope that all these matters will have your most thoughtful consideration.

Thank you.

Senator ANDERSON. Mr. Lee, you have been in a responsible administrative position in the Bureau of Indian Affairs for a great many years. As a result of that experience, do you feel that the Navahos could operate successfully and properly on this basis?

Mr. LEE. No, I have no question but that if the project were built, the Navahos would operate the land successfully.

Senator ANDERSON. And you think it would be a worthwhile project, a solution to some of the problems that they have in unemployment?

Mr. LEE. In terms of their needs, it would certainly be a great boon to the Navaho people. They are our most serious problem in terms of overpopulation and lack of economic opportunities.

Senator ANDERSON. Now you wish Mr. Keesee to make a statement, did you not?

Mr. LEE. Mr. Keesee has a statement describing the project and is available for questioning on the project.

Senator ANDERSON. Mr. Keesee, I would like to say, has been in the Gallup area for a number of years. He has been intimately acquainted with this project for at least 15 years, has done a very fine piece of work in getting it ready, and I think is a very important witness to us in this matter.

I am very happy, Mr. Keesee, that you can be here again with us on the project and give us your appraisal of it.

STATEMENT OF G. B. KEESEE, AREA GENERAL ENGINEER, GALLUP AREA OFFICE

Mr. KEESEE. I am G. B. Keesee, the area general engineer of the Gallup area office.

The Navaho Indian irrigation project in northwestern New Mexico is situated on an elevated plain south of the San Juan River in San Juan County. The lands proposed for irrigation are located primarily in two large areas. One tract containing a net irrigable area of 28,289 acres is located east of the Chaco Wash and extending eastward for a distance of approximately 36 miles and southward from the San Juan River for approximately 18 miles. The other tract containing a net irrigable area of 62,341 acres is located west of the Chaco Wash and centered around the village of Newcomb, approximately 40 miles south of the village of Shiprock and is approximately 30 miles in length in a north-south direction and 14 miles in an east-west direction.

The total net project area as now proposed is 110,630 acres, and is 26,620 acres less than the net area proposed in the 1955 feasibility report. This reduction is due to several factors.

(1) A policy decision by the State of New Mexico as to the location of lands to be developed for non-Indian farmers.

(2) An agreement between the Navaho Tribe, Bureau of Indian Affairs, and the State of New Mexico that the Navaho Indian irrigation project would be built solely for settlement and use by the Navaho Indians and would contain a net irrigable area of not less than 110,630 acres of land, requiring annually at the point of diversion not more than 508,000 acre-feet of water.

(3) That the Federal and State lands located eastward from the east boundary of the Navaho Reservation and within the limits of the project boundary, subject to irrigation from the main gravity canal, be included as part of the Navaho Indian irrigation project.

(4) Because of the State's policy in respect to the development of other lands for non-Indian use, it permitted the exclusion from the originally proposed project area all of those lands situated in long, narrow valleys requiring long and costly lateral canals to provide them with water and resulting in a more compact body of land west of the Chaco Wash which would reduce the construction costs and make for more economical operation and maintenance of the project.

The project lands located on the Navaho Reservation are presently used by individual Navaho Indians under assignment from the tribe for grazing purposes, and those project lands located outside the boundary of the reservation are used by Navaho Indian allottees and private ranchers for the same purpose. The productive capacity of the proposed project, under present use of the lands proposed for irrigation, support 5,116 sheep units year-long. The same lands, under irrigation, would support, under average managerial efficiency, about 436,000 sheep units year long.

The construction of the Navaho Indian irrigation project would provide a means of self-support for 1,120 families on farm units and would create employment for an additional 2,240 families. Thus, the Navaho Indian irrigation project would provide a substantial living for about 17,000, or 19 percent of the present Navaho population.

The project lands range in elevations from 5,580 to 5,950 feet and lie from 200 to 500 feet above the entrenched river. The project area has a temperate and semiarid climate. The summers are characterized by warm days and cool nights. The mean average annual temperature is about 51° Fahrenheit varying from a minimum of −21° Fahrenheit to a maximum of 110° Fahrenheit. The frost-free period is about 160 days.

The average annual precipitation varies from 8.99 inches at the Bloomfield station to 7.5 inches at the Shiprock station. About half of the rainfall occurs during the growing season making irrigation necessary for successful crop production. Winds are common in the spring and fall, but seldom of violent magnitude.

Only those lands in the class I and II categories will be developed for irrigation. There are a total of 31,921 acres of class I land and 30,420 acres of class II land to be developed for irrigation farming in the area west of the Chaco Wash and 8,038 acres of class I land and 40,251 acres of class II land in the area east of the Chaco Wash. Drainage investigations do not indicate that unfavorable drainage problems will develop during the operation of the project. With irrigation, the project lands are well suited for the raising of the types of crops normally grown on irrigated lands in the San Juan River Basin. The soils contain a low content of salt which will not interfere with plant growth.

Water for the irrigation of the project lands will be supplied out of New Mexico's share of the Colorado River water. The water will be stored in the Navaho Reservoir, presently under construction, one of the storage reservoirs of the Colorado River storage project authorized by Public Law 485, 84th Congress, 2d session, approved April 11, 1956. The project's requirements of 508,000 acre-feet of water will be diverted from the Navaho Reservoir near Navaho Dam. Reservoir operation studies of the Navaho Reservoir indicate that sufficient water will be available for a full project supply with reasonable annual shortages. Details of the water supply aspects for this project and the initial stage of the San Juan-Chama project will be covered by Bureau of Reclamation.

The agreement as discussed in the second paragraph of this statement involving the project size and use of the project lands resulted in a revision of the project works west of Kutz Canyon pumping plant proposed in the January 1955 report. The location of the main gravity canal from Navaho Dam to the inlet of the Kutz Canyon pumping plant remains approximately in the same position as originally proposed. The maximum capacity of the canal was reduced from 2,630 cubic feet per second to 2,405 cubic feet per second. The water for the project will be diverted from the Navaho Reservoir at elevation 5,990 feet as originally proposed.

The Kutz Canyon pumping plant is eliminated in the present plan and replaced with a siphon crossing Kutz Canyon, and the main gravity canal continues across the project area 170 feet higher in elevation than the original Shiprock main gravity canal. At a distance of 75.6 miles from the main gravity canal heading, the water required for serving project lands west of Chaco Wash will be dropped through the Gallegos powerplant. The remaining 77 miles of the main gravity canal is located as originally proposed in the 1955 report.

A maximum of 15,000 kilowatts of power will be generated at the Gallegos powerplant only during the irrigation season and will be used solely to operate the Gallegos, Newcomb, and Bennett Peak pumping plants, supplying water to three subareas above the gravity main canal on the Navaho Reservation. The turbines will operate under 172.5 feet of head and be designed to generate the power required during the irrigating season. A maximum of 1,150 cubic feet per second water is available to generate the maximum power requirements.

Senator ANDERSON. Mr. Keesee, you refer again to some of the changes that have been made to the project and to the shifting of lands east of the reservation.

At the time that the Senate bill 500 was under consideration covering the authorization of this project, a number of figures were picked out of the 1955 report to show extravagantly high costs for extremely narrow fingers of land that range up into the areas to the west.

Have those narrow fingers of land with extremely high cost been eliminated from the project?

Mr. KEESEE. Yes, sir.

Senator ANDERSON. Therefore, any comments that might be made on the floor of the Senate, if this bill reached there, to the effect that this was like growing bananas on Pikes Peak would hardly be in order, would they?

Mr. KEESEE. No, sir. That new body of land around Newcomb is well compact, and we have eliminated the long, narrow strips to the north of this new compact body around Newcomb.

Senator ANDERSON. It makes it a much more economical project, does it not?

Mr. KEESEE. Yes.

In comparison with the 1955 report, it reduced the overall cost of the project by about $25 million.

The Gallegos pumping plant will be located on the main gravity canal at the east reservation boundary line and will supply water to a net area of 9,273 acres. The Newcomb pumping plant located approximately 4 miles south of the village of Newcomb will supply water from the main canal to a net area of 6,688 acres located west of United States highway 666. The Bennett Peak pumping plant located approximately 7 miles north of the village of Newcomb will supply water from the main canal to a net area of 12,940 acres located west of United States highway 666.

The total length of each section of the main gravity canal, the total length of canal, total length of tunnels, total length of siphons, and the initial capacity of each section are shown in table I.

(The table referred to is as follows:)

TABLE I

Canal section	Total length	Open canal	Tunnels	Siphons	Initial capacity
	Miles	*Miles*	*Miles*	*Miles*	*Cubic feet per second*
Dam to Kutz Canyon	29.3	13.6	10.1	5.6	2,405
Kutz Canyon to Gallegos powerplant	46.3	38.4	2.7	5.2	1,973
Gallegos powerplant to end	77.0	67.2		9.8	1,150
Total	152.6	119.2	12.8	20.6	

The static head and quantity of water to be pumped for each of the pumping plants are shown in table II.

TABLE II

Pumping plant	Static head	Quantity
	Feet	*Cubic feet per second*
Gallegos	214	156
Newcomb	170	130
Bennett Peak	170	252

Mr. KEESEE. The estimated total cost of building the works to serve the Navaho Indian irrigation project based on unit prices as of January 1958 is $134,359,000 and is $25 million or 15.7 percent less than the plan proposed in the 1955 report. The total estimated cost does not include $974,000 of prior investigation costs, nor are any of the costs of the Navaho Dam and Reservoir included.

A period of 14 years is required to complete the Navaho Indian irrigation project of which the first 2 years after authorization would be used to develop the definite plan and other preconstruction activities and the remaining 12 years for the building of the project works. The delivery of water to the first of the project lands could be accomplished within 5 years.

The project is adaptable to serve municipal and industrial water users as well as its primary purpose of irrigation. The preceding costs are for works to serve irrigation requirements only. The following analysis considers those benefits associated with construction of the irrigation works.

The project would produce four types of measurable benefits. Three of these are: Direct benefits—the increased net farm income resulting from irrigation; indirect—the benefits derived from secondary use of the project's products; and public—the benefits resulting from increased or improved settlement, employment, and investment opportunities, community and service facilities, and the stabilization of local and regional economy. The fourth type of benefit is peculiar to only a project concerned with the Indian people. This benefit measures the reduction in cost to the United States Government in fulfilling its obligation to provide schools for Navaho children.

Direct, indirect, and public benefits were computed by standard procedures adopted by the Department of the Interior. They are based on the price index of 250 for prices received, 265 for prices paid and the period 1910–14 equals 100. Education reduction cost benefits were determined through an analysis of past schooling costs and a pedication of conditions with the Navaho project in operation. The benefits are summarized below:

Type of benefit:	*Annual amount*
Direct	$3,365,400
Indirect	3,019,900
Public	1,194,000
Subtotal irrigation benefits	7,579,300
Education cost reduction	957,600
Total	8,536,900

Benefit-cost ratios were computed for both a 50-year and 100-year period of analysis. In these computations interest during construction was computed at 2½ percent per annum during the 12-year construction period and total Federal costs were amortized over the 50- and 100-year periods at the rate of 2½ percent interest. These procedures are consistent with current practices in the analysis of reclamation projects. The benefit-cost ratios for the project would be:

100-year period of analysis:	
Direct irrigation benefits	0.64 to 1
Total irrigation benefits	1.44 to 1
Total irrigation and school benefits	1.62 to 1
50-year period analysis:	
Direct irrigation benefits	0.52 to 1
Total irrigation benefits	1.17 to 1
Total irrigation and school benefits	1.31 to 1

A more complete derivation of the benefit-cost ratio is given as attachment A.

A total of 1,120 new farms would come into existence as a result of project construction. Farm budget analysis for typical 90-acre farms on class I lands and 105-acre farms on class II lands determined the per acre repayment ability to be $9.25 for class I lands and $7.50 for class II lands. Deduction of operation, maintenance, and replacement charges of $4.35 per acre per year results in amortization capacities of $4.90 and $3.15 per acre per year for class I and class II lands, respectively. This computation is presented in table III.

(The table referred to is as follows:)

TABLE III.—*Repayment capacity of project lands*

Item	Class I land	Class II land
Annual payment capacity per acre	$9.25	$7.50
Annual operation, maintenance, and replacement charges per acre	4.35	4.35
Annual amortization capacity per acre	4.90	3.15
Maximum annual repayment	418,400	
Maximum repayment, 50 years	20,920,000	

Mr. KEESEE. Project farm operators would pay annual operation, maintenance, and replacement assessments. In addition, the operators would have the capability of repaying $418,400 annually or $20,920,000 during a 50-year period toward the construction costs of the projects. This amounts to about 16 percent of the construction costs. Under Public Law 485, 84th Congress, 2d session, approved April 1, 1956, costs within the capability of the land to repay is subject to the act of July 1, 1932, 47 Statutes 564, and is not subject to collection as long as the land remains in Indian ownership. Costs in excess of repayment ability would be nonreimbursable.

Now we come to table IV.

(The table referred to is as follows:)

TABLE IV.—*Summary of data, Navajo irrigation project, New Mexico*

Net irrigated acreage: 110,630 acres.
Principal anticipated agricultural production: Alfalfa, pasture, small grains, sheep, and dairy cows.
Irrigation water supply: Average annual diversion, 508,000 acre-feet; average annual stream depletion, 281,000 acre-feet.
Project works: main canal, initial capacity, 2,405 cubic feet per second; main canal, 152.6 miles long, including 119.2 miles open canal, 12.8 miles tunnel, and 20.6 siphon; Gallegos, Newcomb, and Bennett Peak pumping plants; Gallegos powerplant; laterals; distribution; and drains. About 14 years would be required for construction of the project.

Estimated construction cost	$134,359,100
Replayment ability of water users, 50 years	20,920,000
Costs in excess of water users' repayment ability	113,439,100
Annual operation, maintenance, and replacement costs	481,200
Benefit-cost ratios:	
100-year period of analysis:	
Direct benefits	0.64:1.0
Total irrigation benefits	1.44:1.0
Total irrigation and education benefits	1.62:1.0
50-year period of analysis:	
Direct benefits	0.52:1.0
Total irrigation benefits	1.17:1.0
Total irrigation and education benefits	1.31:1.0

Mr. KEESEE. Now may I call your attention to the attachment A to my statement.

(The attachment referred to is as follows:)

[Attachment A]

Benefit-cost ratio (100-year analysis)

Total costs:[1]		
Total field costs		$111,082,000
Plus 12 percent for contingencies		124,415,600
Plus 8 percent for engineering and overhead[2]		134,359,100
Total cost plus 2½ percent interest during construction		154,513,000
Annual equivalent costs:		
2½ percent over 100 years (0.02731)		4,220,000
O. M. & R., at $4.35 per acre		481,200
Colorado River depletion charge, at $2 per acre-foot		563,600
Total		5,264,800
Benefits:		
Direct irrigation, at $30.42	$3,365,400	
Total irrigation, at $68.51		7,579,300
Education cost reduction		957,600
Total irrigation, at $68.51		7,579,300
Benefit-cost ratio:		
Direct irrigation benefits		0.64 to 1.0
Total irrigation benefits		1.44 to 1.0
Total irrigation and school benefits		1.62 to 1.0

[1] Does not include cost of dam and reservoir.
[2] Does not include prior investigation costs of $974,000.

Benefit-cost ratio (50-year analysis)

Total costs:[1]		
Total field costs		$111,082,000
Plus 12 percent for contingencies		124,415,600
Plus 8 percent for engineering and overhead[2]		134,359,100
Total cost plus 2½ percent interest during construction		154,513,000
Annual equivalent costs:		
2½ percent over 50 years (0.02731)		5,448,100
O. M. and R., at $4.35 per acre		481,200
Colorado River depletion charge, at $2 acre-feet		563,600
Total		6,492,900
Benefits:		
Direct irrigation, at $30.42	$3,365,400	
Total irrigation, at $68.51		7,579,300
Educational cost reduction		957,600
Total irrigation and educational cost reduction		8,536,900
Benefit-cost ratio:		
Direct irrigation benefits		0.52 to 1.0
Total irrigation benefits		1.17 to 1.0
Total irrigation and school benefits		1.31 to 1.0

[1] Does not include cost of dam and reservoir.
[2] Does not include prior investigation costs of $947,000.

Mr. KEESEE. That concludes my statement, Mr. Chairman.

Senator ANDERSON. How many times have you been over this land, Mr. Keesee?

Mr. KEESEE. I do not know. I never kept track of it.

Senator ANDERSON. You have been over it dozens and almost hundreds of times; have you not?

Mr. KEESEE. That is right.

Senator ANDERSON. In cars and planes, every way under the sun. Some of the time I have seen you on foot.

Mr. KEESEE. That is right.

Senator ANDERSON. You are familiar with it, I know. People speak of knowing land like the palm of their hand. You know this land like the palm of your hand, do you not?

Mr. KEESEE. Almost.

Senator ANDERSON. And you are fully convinced that this is a feasible and worthwhile project?

Mr. KEESEE. Very definitely so, Senator.

Senator ANDERSON. Thank you very much.

Do you have anything further?

Mr. LEE. That is all, Senator.

Senator ANDERSON. Governor Mechem, there is no reason why you cannot interrogate a witness if you wish to, or Mr. Morris, or anyone else officially connected with this. We would be happy to have you join in at any time you wish to.

Governor MECHEM. Thank you, Senator. I have interrogated these gentlemen over a period of time.

Senator ANDERSON. I know you have, but I wanted to say that that period had not ended, and you could start again if you wished.

Thank you very much, Mr. Lee.

Now, the Bureau of Reclamation witnesses.

Mr. Dominy?

The witnesses of the Bureau of Reclamation will be Floyd E. Dominy, N. B. Bennett, Jr., and Ralph Charles.

I might say that this committee has seen these men quite frequently. We are always glad to have you here.

Mr. Dominy, I am very appreciative of the fact that you have given a lot of your personal time to this, since you have helped push some of these reports through to completion, which I for one appreciate very much.

Many times these reports that come in are just taken as a matter of routine work that you do in the Department. But if somebody is not there to shove it through, they never see the light of day. I want to give you my personal thanks for what you have done.

STATEMENT OF FLOYD E. DOMINY, ASSOCIATE COMMISSIONER, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. DOMINY. I appreciate your comment, Mr. Chairman, and it is always a pleasure to appear before your committee representing the Department of the Interior on matters pending before your committee.

We appreciate this opportunity this morning of presenting information on the plan of development for the proposed San Juan-Chama project in Colorado and New Mexico. This project is one of the potential participating projects which is given priority to completion of planning reports as provided by section 2 of the Colorado River Storage Project Act of April 11, 1956 (70 Stat. 105).

The bill, S. 3648, being considered by your committee, would, among other things, approve this proposed water resource development as a participating project of the Colorado River storage project. The bill would also authorize construction of an initial stage development of that proposed participating project.

Construction of this proposed project is urgently needed to stabilize the irrigation economy of irrigation units on the tributaries of the Rio Grande Basin in New Mexico. Development of these tributary units would alleviate the economic distress to a measurable degree in these areas that have long been plagued with problems of low-level standards of living and employment. Development of the initial stage of the project would also provide badly needed supplemental irrigation water supplies for lands in the Middle Rio Grande Conservancy District. In addition, it would provide a water supply for rapidly growing requirements of municipalities and defense establishments in the Rio Grande Basin.

The Bureau of Reclamation's initial investigation and preparation of the regional director's report of November 1955 on the San Juan-Chama project were based upon criteria established by the State of New Mexico in Governor Mechem's letter of March 4, 1953, to the Secretary of the Interior. The proposed comprehensive plan for development of the project was coordinated with the plan of the Bureau of Indian Affairs for development of the Navaho Indian irrigation project. In August 1956 these proposed coordinated plans were submitted by the Secretary to the State of New Mexico for resolution

of its water-allocation problems and selection of projects in the San Juan River Basin.

The State's recommendations for development of these two projects as participating projects of the Colorado River storage project were set forth in Governor Simm's letter of December 12, 1956, to the Secretary. As a result of those recommendations, the Bureau of Reclamation prepared a supplemental planning report dated May 1957. That report presents a plan for an initial-stage development of the San Juan-Chama project.

A proposed coordinated report of the Commissioner of Reclamation and Commissioner of Indian Affairs, dated September 6, 1957, was approved and adopted by Secretary Seaton on October 16, 1957. The proposed report was transmitted on October 17, 1957, to the affected States and interested Federal agencies for review as required by law and interagency agreement. The coordinated report on these two projects, together with comments received from the affected States and the other agencies, were transmitted by the Department of the Executive Office of the President on July 3.

Thus, as the processing of the planning report has not been completed as required by reclamation law, it is the Department's suggestion that the committee may wish to defer action on the bill until the report has been submitted to the Congress. Copies of the proposed coordinated report, however, have been furnished your committee, and I understand that that report has been made a part of the record.

Senator ANDERSON. Mr. Dominy, may I ask you what this last part of the report of July 8 means? It says:

> The Bureau of the Budget has advised that, while there would be no objection to the submission of such report as we deem appropriate, it would recommend against the enactment of S. 3648 at this time since it would have no basis, until the review of the planning report has been completed, to assess the merits of the projects or the need for additional amendments of the bill.

That is from the Bureau of the Budget, which is a part of the Executive Office of the President.

Mr. DOMINY. That is right, sir.

Senator ANDERSON. I am trying to find out whether you know whether this language is written out of the general program we have for the slowing down of some of these projects, or whether it is true that the Bureau of the Budget cannot assess the merits of the projects?

Mr. DOMINY. I think, Mr. Chairman, that this is a standard type of report from the Bureau of the Budget, when it has had too short a time for actual review of the proposal. Notwithstanding that, the Secretary of the Interior, who has of course the primary responsibility for assembling this information, analyzing it, and preparing a planning report in a form suitable for consideration throughout the Government and Congress, has recommended favorably in that report. The Bureau of the Budget did not receive the report until this week. The significance of this language is merely that the Bureau of the Budget would oppose enactment of the bill until such time as it has completed its review of the report and determined that the proposal is in accord with the overall objective of the administration.

Senator ANDERSON. Mr. Dominy, you realize that these questions are not directed against you or the Bureau of Reclamation because I have previously put into the record my appreciation of the work the

Bureau of Reclamation has done. But this is close to the end of a congressional session, and the House committees will not consider legislation received after a certain date. I do not believe they have set a final deadline now, but it generally comes a little earlier than the Senate, and I am extremely anxious that we get full opportunity to consider this if we can, because all of us have been looking forward to it for a long time.

But if the Bureau of the Budget does not get its study up here within the next 2 weeks, it effectively forecloses the possibility of action unless the Congress just overrides the Bureau of the Budget.

I think you were here one day when I recounted one of my experiences. The then President of the United States suggested to me a type of legislation that he was very much interested in seeing proposed. After we had a discussion of it, he said, "Get it ready and submit it to the Congress."

I worked pretty hard, got it ready very carefully and submitted it to somebody in Congress exactly the way he wanted it. It went to the Bureau of the Budget, and the Bureau of the Budget said it was not in accordance with the program of the President—which was indicative of how we operate in this world.

I know that the Secretary of the Interior is sympathetic—I do not want to misquote, but I would almost say enthusiastic—certainly, to the Navaho project. And here we are at a time when we need to pass something through, but the Bureau of the Budget would recommend against enactment of it. It is hard to get large-scale pieces of irrigation legislation through the Congress these days.

Have you any idea when the Bureau of the Budget might have a chance to study it? I ask that because your own report here indicates that the Department has been dealing with these supplemental reports, and that the Bureau of Reclamation prepared the supplemental report dated May 1957. A proposed coordinated report was dated September 6, 1957, and was approved by Secretary Seaton October 16, 1957. Then, this has been sent to the affected States for review. I assume the comments have been received from the affected States. They have 90 days, do they not?

Mr. DOMINY. Not all of the States.

Mr. BENNETT. We have received comments from all States of the Colorado River Basin except Arizona and Nevada.

Senator ANDERSON. I do not believe Nevada is overly exercised about this project, because it has a little trouble getting water away from California and Arizona, itself.

Mr. DOMINY. I would like to say that we in the Department of the Interior and the Bureau of Reclamation share your concern about the early consideration of this, because we are proceeding with the construction of the Navaho Dam, and the purpose of that dam is to provide water for these two participating projects. We of course would like to have that work all coordinated to the best economic advantage.

Senator ANDERSON. Would we not say that the purpose of the dam is stream regulation and one of its byproducts will be the effect it will have upon the Navaho irrigation project?

I say that because none of the costs of the dam is being charged against the Navaho Indian irrigation project, and I want to be real

sure that it is a stream regulating dam; and I am sure it is. But surely the dam will afford an opportunity for these projects.

The report that Mr. Keesee has given would indicate that it would be within 5 years that water would be available before that type of land would produce a satisfactory crop. It can have cover crops, maybe, for a year or two, but that puts it 7 or 8 years away, maybe a little longer. And it would be, I think, extremely important, if one of these projects or both of the projects in this bill get approval.

But I wonder if you have any ideas as to when the Bureau of the Budget might think it will take a chance on assessing the merits of the projects.

Mr. DOMINY. I would think, Mr. Chairman, that the Bureau of the Budget ought to have its position firmed up very quickly, because although the report was not transmitted formally until last week, the Bureau's staff has had some opportunity to review preliminary information which we made available to them.

Senator ANDERSON. And if the Bureau of the Budget wanted experts on the question of the engineering soundness of this proposal, it would have to turn to the Bureau of Reclamation. It has no experts of its own comparable to the people inside the Bureau of Reclamation.

Mr. DOMINY. We in the Interior Department are prepared to work with the Bureau of the Budget on a day-to-day basis, and you may be sure we will cooperate as effectively as we can to get prompt consideration.

Senator ANDERSON. I just got through saying that you have done a good job of pushing these things along, and I merely wanted your assurance for the record that you were going to try to push the Bureau of the Budget along a little bit, too, because I know that it sees the present budget situation, that it constantly presents to the Senate Finance Committee. Each time we take up in the Senate Finance Committee any considerations that look toward tax reduction, the Bureau of the Budget points out to us the size of the deficit. I realize that they take that into consideration in these matters as well.

But as was pointed out in the comments of the Commissioner of Indian Affairs, Mr. Emmons, which Mr. Lee presented, the solution of the Navaho Indian problem is not purely a question of dipping into the Federal Treasury. We have obligations to these individuals, and we would probably save an awful lot of money if we started making them independent of the Federal Treasury, as we might well do by their development of oil, gas, and various other resources, plus taking about 17 percent of the population and putting them on productive land.

Mr. DOMINY. The Department's legislative report, which has been made a part of the record here, I think clearly indicates that the Secretary of the Interior has no reservation concerning his endorsement of the principles of the project proposal covered in the bill. The report does suggest certain amendments which would clarify certain portions of it, but they are not of major significance in terms of changing the plans as proposed in our coordinated report.

Senator ANDERSON. I have talked enough to Secretary Seaton that I am convinced that he is enthusiastically in support of this, and those of us who knew him when he was in the Senate and have been

very close to him since know that he is wholeheartedly in favor of water development.

Mr. DOMINY. We have Mr. N. B. Bennett here, who is the Chief of our Project Development Division, and he can present the engineering details of the plan. We also have Ralph Charles from our Albuquerque project office, who also is available to answer any questions concerning the engineering details.

Senator ANDERSON. Mr. Bennett, we are very happy to have you back here with us.

STATEMENT OF N. B. BENNETT, JR., CHIEF, DIVISION OF PROJECT DEVELOPMENT, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. BENNETT. Thank you, Mr. Chairman.

I have three statements, Mr. Chairman, one, a general statement dealing with the San Juan-Chama project; one dealing with the water-supply aspects of the San Juan River proper; and one dealing with an explanation of the proposed amendment to section 7 of S. 3648.

I will start first with the water-supply aspects of the San Juan River, which deals with both the San Juan-Chama project and the Navaho Indian irrigation project.

New Mexico entitlement and use.—The water supply for the San Juan-Chama project and the Navaho Indian irrigation project would be obtained from the San Juan River and its tributaries. Based upon the State of New Mexico's interpretation of its entitlement to the consumptive use of water apportioned to it by the upper Colorado River compact, the following table shows that present and authorized project uses plus uses caused by development of the two proposed projects still would leave some 258,000 acre-feet of unassigned depletions available for future development in that State.

Average annual stream depletion at sites of use

	Thousand acre-feet
New Mexico entitlement for planning purposes[1]	838.0
Uses by present and authorized projects:	
Present use	92.3
Share of evaporation losses from main-stem reservoirs	72.3
Hammond project	6.8
Extension of Indian projects	24.7
Navaho Reservoir losses	36.0
Pine River extensions	1.4
Total by present and authorized projects	237.5
Available for proposed and future developments	600.5
Proposed in coordinated report:	
Navaho Indian irrigation project	252.2
Initial stage, San Juan-Chama project	110.0
Total proposed	362.2
Available for future developments	238.2

[1] 11.25 percent of (7,500,000—50,000).

Mr. BENNETT. In regard to the above table, Mr. Chairman, may I point out that New Mexico's entitlement amounts to 838,000 acre-feet in the manner in which New Mexico interprets the various documents.

By subtraction of the depletions for present and authorized projects, there remain 600,500 acre-feet for proposed and future developments.

The depletions proposed by the Navaho Indian irrigation project and the San Juan-Chama project, leave available for future developments 238,200 acre-feet.

Senator ANDERSON. So that it is your testimony as an engineer that if both these projects are authorized and completed, there would still remain sufficient water so that New Mexico would not have overdrawn its count?

Mr. BENNETT. That is correct, Mr. Chairman. Keep in mind, however, that the figures I have just cited are depletion figures and not water-supply figures.

Water to fulfill entitlement.—The San Juan River, second largest tributary of the Colorado River, originates on the western slope of the Continental Divide in southwestern Colorado. The source of most of the flow of the river is the winter snow pack in the San Juan Mountains. The greater portion of the runoff occurs in the form of spring floods which generally peak in May or June. The average annual flow at its mouth is in the order of 2¼ million acre-feet, per year.

The recorded runoff of the river near Blanco, N. Mex., was used to estimate the flow at the Navaho storage unit. This unit would regulate flows of the river for the indicated multiple uses. The flow of the San Juan River at the stream gage near Blanco averaged about 1,026,000 acre-feet annually during the study period of 1928–51 and about 1,007,000 acre-feet for the period of 1928–54. A maximum annual runoff of 2,551,000 acre-feet at that gaging station was recorded in 1941 and a minimum of 326,000 acre-feet in 1951. This gage, however, was discontinued in January 1955.

Water supply operation studies have determined that generally there would be an available water supply in the river to fulfill development of the entitlements to consumptive use of waters presently being claimed by the State of New Mexico. In years of extreme drought, water shortages would be experienced by the water users.

Navaho storage unit.—Regulation of the flow of the river by the Navaho storage unit, which is now under construction and estimated to be completed in fiscal year 1963, would provide the source of water supply for the Navaho Indian irrigation project. It will also regulate the river flows for the authorized Hammond participating project in New Mexico and other uses, and has the effect of providing storage for potential uses above the Navaho Reservoir.

The Navaho Reservoir will have a storage capacity of 1,700,000 acre-feet, of which over a million acre-feet will initially be active capacity. Hydrologic studies indicate that the minimum operating pool in Navaho Reservoir could be filled in a single year in more than 50 percent of the years. Under the most adverse conditions slightly less than 3 years might be required. The construction work now underway and the initial reservoir filling operations can be so coordinated as to provide water when required by the Navaho Indian irrigation project.

In determining the total divertible water supply of the San Juan River available for its entitlements of consumptive use in connection with its water allocation in the San Juan Basin, the State of New Mexico made operation studies of the Navaho Reservoir for the study period 1928–54. In addition to the demands for water required by the committed and proposed uses previously described, the State considered an annual demand of 224,000 acre-feet for possible future municipal and industrial uses in those reservoir operation studies. The results of those studies indicated that the available water in the San Juan River at the Navaho Dam site—inflow plus storage release from the reservoir—would have served all those uses during that 27-year period with shortages occurring in only 4 of the years.

Extension of the studies through the subsequent extremely low years and ending with 1957 would indicate heavy shortages in the three consecutive years of 1954, 1955 and 1956. Records show, however, that such drought conditions have occurred only once in a period of over 62 years.

Water for Navaho Indian irrigation project.—As previously stated, the Navaho storage unit would regulate flows of the San Juan River to provide the water supply for the Navaho Indian irrigation project. The annual diversion requirement for about 106,000 acres of land in the project's productive area would be about 508,000 acre-feet. Applying this project demand in the Navaho Reservoir operation studies previously discussed shows that during said 30-year period the annual Navaho Indian irrigation project shortage would have averaged about 32,000 acre-feet. The maximum shortages, which would have occurred in the years 1955 and 1956, were about 50 percent of the normal diversion demand.

Water for San Juan-Chama project.—The water supply for the initial stage development of the San Juan-Chama project would be obtained by diversion of a part of the flows of the Rio Blanco and Little Navaho and Navaho Rivers, all tributaries of the San Juan River. Regulation of the flows diverted into the Rio Grande Basin would be provided by the proposed Heron No. 4 reservoir on Willow Creek, a tributary of Rio Chama.

Operation studies of the initial stage plan of development were made for the period of record 1928–51, which period was used in Reclamation's report of 1955. The results of these studies show that there might be an occasional year of minor shortage and that the average annual shortage for the study period would be negligible. An average annual diversion of about 110,000 acre-feet would have been possible during that period. Subsequently, the study was extended to include the drought period 1952–55. The results of that study show that about 105,000 acre-feet of water could have been diverted and indicate that a maximum probable shortage of 9,500 acre-feet, or about 9 percent of the average annual project demand, would have occurred in 1955.

General Statement on San Juan-Chama Project

The proposed San Juan-Chama project is designed to improve and stabilize the economy of the water deficient Rio Grande and Canadian Basins of New Mexico by providing supplemental water to meet rapidly increasing needs. Such a comprehensive plan could be accomplished by diverting an average of 235,000 acre-feet of water annually from the upper tributaries of the San Juan River to those basins.

Under the ultimate plan, the water would be used to supplement irrigation of about 224,000 acres of arable land in the project area and as an additional supply for municipal and industrial purposes. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the project. If a need for such purpose is determined to be required in some future or ultimate stage of development of the project, a portion of the water also would be used for replacement of watershed and pumping depletions caused by miscellaneous uses throughout the Rio Grande Basin. Such a determination, however, is not expected in the foreseeable future because of uncertainty about ultimate requirements in both the Rio Grande and San Juan Basins.

On the basis of January 1958 prices, the estimated construction cost for project facilities studied in the ultimate plan of development, comprising principally regulating and storage reservoirs, collection, diversion and conveyance systems and associated works, is about $149 million. The evaluated total annual benefits exceed the estimated annual costs in a ratio of about 1.7 to 1.

Initial stage of development.—The plan for initial stage development of the San Juan-Chama project, as recommended by the State of New Mexico, contemplates an average annual diversion of about 110,000 acre-feet from San Juan River for utilization in the Rio Grande Basin in New Mexico.

Senator Anderson. But this initial stage is all that is authorized by this bill.

Mr. Bennett. That is correct.

Senator Anderson. Even though the previous authorizing legislation mentions the full 235,000 capacity?

Mr. Bennett. That is correct.

Senator Anderson. I did not want anybody to believe that we were trying to authorize by this legislation 235,000 acre-feet of diversion. It is only 110,000 feet.

Mr. Bennett. That is correct.

The imported waters would be used to provide a supplemental irrigation water supply of about 30,000 acre-feet to 39,300 acres of land in the Cerro, Taos, Llano, and Pojoaque tributary irrigation units in the Rio Grande Basin in New Mexico to provide supplemental water supply of about 23,000 acre-feet for irrigation of 81,600 acres of irrigable land in the existing Middle Rio Grande Conservancy District; and about 57,000 acre-feet for an additional municipal and industrial water supply for the city of Albuquerque. Recreation and the preservation and propagation of fish and wildlife would also be purposes of the initial stage.

Senator Anderson. You were here when we read the reference from the California resolution about the use of return flows and the splitting of any water that might be of benefit to any State outside the compact, which probably means the State of Texas. If the city of Albuquerque is now pumping its water from the Rio Grande Valley and it obtains its supply of water from the San Juan transmountain diversion, does that help the general water supply situation in the

middle Rio Grande Valley, and as to those States affected by the Rio Grande Valley compact, would there not be return waters which would be beneficial to people in other irrigation districts below the middle Rio Grande district?

Mr. BENNETT. It is not contemplated that by virtue of this project there would be an increase in flow at the State line.

Senator ANDERSON. At which State line?

Mr. BENNETT. The New Mexico-Texas State line.

But the water will be delivered for use by the city of Albuquerque and the middle Rio Grande project.

Senator ANDERSON. If you put 110,000 acre-feet of water from another basin into the Rio Grande Basin, how can you keep it from increasing the flow at the State line?

Mr. BENNETT. Part of the Rio Grande water will be taken out and used on the tributary irrigation units which, without the importation of replacement waters, would diminish the supply in the Rio Grande.

The (continuing statement) plan of development for the initial stage involves three major elements: the diversion facilities, regulation facilities, and water use facilities. Minimum basic recreation facilities would also be provided at the five project reservoirs as recommended by the National Park Service. Details of the proposed plan of development will be explained later.

The estimated construction cost of the project features of the initial stage, on the basis of January 1958 prices, is about $86 million, which includes $400,000 for minimum basic recreation facilities. Project operation, maintenance, and replacement costs are estimated at about $324,000 annually, excluding recreation facilities.

Of the project construction costs, reimbursable allocations of about $53,400,000 are made tentatively to irrigation, $29,200,000 to municipal and industrial water supply, and $3 million to future uses. The recreation costs would be nonreimbursable.

The initial stage development has engineering feasibility and is found to be economically justified in that the evaluated total benefits exceed the estimated annual costs in a ratio of 1.26 to 1 for a 100-year period of analysis. If direct benefits only are considered in a 50-year period of analysis, that ratio would be about 0.81 to 1.

Irrigation water users probably would repay about $8 million of the allocation to irrigation. Repayment contracts would be made with organizations of the type provided in section 4 of the act of April 11, 1956 (70 Stat. 107), for contracting on the participating projects authorized by section 1 of that act. The costs allocated to irrigation in excess of the irrigators' ability to repay would be paid from New Mexico's apportionment of the Upper Colorado River Basin fund revenues as provided in the act.

Costs allocated to municipal and industrial water supply, including interest during construction, would be repaid over a 50-year period with interest on the unamortized balance. The total to be repaid by the municipal water users would be about $58,600,000. The cost of raw municipal water would be about 7.7 cents per 1,000 gallons, or about $25 per acre-foot.

Senator ANDERSON. How does that cost 7.7 cents compare with some of the costs of municipal water on recent projects? For instance, the recent project in Texas, where a good deal of municiapal water has been made available? Does that run a little bit higher than that?

Mr. BENNETT. I believe it does, yes. 7.7 cents is a generally reasonable cost of municipal water, raw water. We have projects where the cost is double that.

Senator ANDERSON. Off the record.

(Discussion off the record.)

Senator ANDERSON. Back on the record.

Is this figure of 7.7 cents higher or lower than the figures used in the San Angelo project in Texas, which was pretty largely municipal water supply?

Mr. BENNETT. My recollection is, Mr. Chairman, that this is a little more than the figure for the San Angelo but it is somewhat less than that cost for municipal water for the authorized Canadian River project which was estimated to be a little over 11 cents per thousand gallons.

Senator ANDERSON. If the Canadian River figure of about 11 cents were to be used would that change the general economic feasibility of the project and increase the ratio any?

Mr. BENNETT. It would not increase the benefit cost ratios, but it would, of course, either put additional revenues into the basin fund or have the effect of retiring this investment at a faster rate.

Mr. DOMINY. But it could of course put it at a level higher than the alternate sources of supply might be locally. In setting the municipal water rate on any of our projects, we have to take into acount the estimated costs for an alternate supply.

Senator ANDERSON. Yes, but in consideration of the Saline water bill we had many suggestions that the community would be glad to pay a fairly substantial price for water.

Mr. DOMINY. In some communities where there are no alternative sources, that is certainly true.

Senator ANDERSON. If you have a river that is short of water, you do not have too many alternative sources without dipping into that water supply.

Mr. DOMINY. It all has to be taken into acount. That is right.

Mr. BENNETT (continuing with general statement). Costs allocated to future uses, which involve the provision of excess capacity in the initial stage to permit later project expansion, would be also an obligation against New Mexico's share of the basin fund revenues, to be paid from that apportionment if not otherwise collected as a result of subsequent allocations to the water users.

PLAN OF DEVELOPMENT

Diversion facilities.—The diversion facilities would consist of three concrete diversion dams of Rio Blanco, and Little Navaho and Navaho Rivers; feeder canals from the headworks of the diversion dams to the main canal; and the main conduit.

There would be three short feeder canals from the streams to the main conduit which would be about 29 miles long and consist of tunnels, siphons, and open canal. The diversion canal would carry water into Willow Creek, a tributary of the Rio Chama.

Regulation facilities.—The regulation facilities would comprise the proposed Heron No. 4 dam and reservoir, located on Willow Creek near its confluence with the Rio Chama, and the enlargement of the outlet works of the existing El Vado Dam. Heron No. 4 reservoir,

28624—58—5

which is the "single offstream dam and reservoir on a tributary of the Chama River" referred to in section 2 of the act of April 11, 1956, would have a capacity of about 400,000 acre-feet at normal water surface elevation. The enlargement of the El Vado outlet would permit passing of Heron No. 4 releases through El Vado Reservoir unimpeded in order to insure compliance with the Rio Grande compact.

Water use facilities.—The imported water would be used as previously explained. Water allocated to the Middle Rio Grande Conservancy District and to municipal and industrial supply would be released directly to those users from Heron No. 4 reservoir with no specific facilities provide for the delivery of these waters. Releases would also be made from Heron No. 4 to replace in the Rio Grande new water consumed on the tributary irrigation units. Four reservoirs would be required for regulation of tributary flows to furnish water directly to the lands of those units.

Operation plan.—Available flows of the Rio Blanco, Little Navaho, and Navaho Rivers, all of which are tributaries of the San Juan River, would be diverted by the diversion works and feeder canals previously mentioned. Flow available for diversion is considered to be the runoff at each diversion dam site minus prior right bypass and maintenance of flows to preserve fish and wildlife values and sanitary stream conditions. Those divertible waters would be conveyed by a main conduit extending between those streams and continuing through the Continental Divide for release into the Willow Creek watershed of the Rio Grande Basin.

Based upon a repetition of the runoff period 1928–51, inclusive, an average annual diversion of about 110,000 acre-feet for initial stage purposes would have been possible. This amount has been used for project analysis. The waters imported into the Rio Grande Basin would be captured and regulated in the Heron No. 4 reservoir. Regulated waters would be released directly into the Rio Chama to fulfill the allocations for the several project purposes. Such reservoir regulation would also preclude interference with flows of the Rio Chama and its location would preclude storing any of the flows of the Chama which is the intent of the proviso of section 2 of the act of April 11, 1956. The enlarged outlet works at El Vado Dam would, in turn, permit passing imported water immediately through El Vado Reservoir for the several project purposes.

As previously discussed, one of the project purposes is to provide supplemental water supplies for the so-called tributary units. Imported water would be released from Heron No. 4 reservoir to replace the increased depletions of Rio Grande flows resulting from the tributary irrigation units. The replacement water would be measured at the Otowi gaging station. An important factor in the rehabilitation of the tributary units is the increased water supply made available through regulation or improved delivery. The plan for development of each of those units will be discussed later.

A water measurement program is contemplated for project operation to account for both Rio Grande flows and imported San Juan River flows through various river reaches. This program will be such as to assure complete replacement of water to the Rio Grande for depletions caused by additional irrigation on the tributary units.

The plan of development does not contemplate use of the imported waters to meet any deficiencies that now or in the future accrue under

the Rio Grande compact. Also, it is not intended that the flow of the Rio Grande at the New Mexico-Texas line be increased.

TRIBUTARY UNITS

Cerro unit.—The plan provides for furnishing a supplemental irrigation water supply for about 12,000 acres of land adjacent to the Red River in the vicinity of Questa, N. Mex., and in the Sunshine Valley area. The water supply would be improved by constructing the Zwergle Dam and Reservoir of 5,700 acre-foot capacity on the Red River and utilizing the Cabresto Dam and Reservoir, an existing irrigation reservoir on Cabresto Creek, for regulation storage. Six diversion dams consisting of existing structures on Cabresto and Latir Creeks and new structures on the Red River, Cabresto Creek, Rio Primero, and Rio del Medio would be used to supply the main canal.

The Sunshine Valley canal would divert water from Red River and the Latir canal would divert water from Latir Creek, Rio del Medio, and Rio Primero. Distribution facilities would be provided for about 8,000 acres of new lands, and the irrigation system now serving about 4,000 acres of irrigable lands would be rehabilitated. About 2,000 acres of class 6 lands now being irrigated would be retired from cultivation and the water used on new irrigable lands.

Construction of the Cerro unit features is estimated to cost about $6,400,000. This unit's proportionate share of the joint construction costs of the initial stage amounts to about $5,100,000, making the total construction costs about $11,500,000.

After allowing for operation, maintenance, and replacement costs the irrigation water users probably would repay a total of $1,400,000 for the 50-year repayment period. The remainder of the construction cost would be repaid from the Upper Colorado River Basin fund. The benefit-cost ratio of this unit has been estimated to be about 1.2 to 1.

Taos unit.—The facilities planned for the Taos unit would provide an adequate water supply for a total of about 21,000 acres of arable land. Both Indian and non-Indian-owned land would be served.

The storage features would consist of the proposed Valdez Reservoir on Rio Hondo, and the proposed Indian Camp Reservoir on the Rio Grande del Rancho. The Valdez Reservoir would have a capacity of about 15,000 acre-feet and Indian Camp Reservoir would have a capacity of 12,000 acre-feet. Nine new diversion dams and 30 miles of canals would be provided. Two existing diversion dams would be rehabilitated. Distribution facilities would be provided for about 7,000 acres of new lands, and the systems presently servicing about 14,000 acres of irrigable lands would be rehabilitated.

Construction costs of the unit are estimated to be about $14 million. This unit's proportionate share of joint construction costs of the initial stage is $2,700,000. The irrigation water users probably would repay a total of $3,225,000 for the 50-year repayment period. The remainder of the construction cost would be repaid from the basin fund. The benefit-cost ratio for this unit is estimated to be about 1.1 to 1.

Llano unit.—The initial stage plan for the Llano unit would furnish irrigation water to 1,900 acres of new lands, primarily Indian-owned, which would be furnished a full water supply and 2,600 acres of Santa Cruz Irrigation District lands which would receive a supplemental

supply. The unit works would consist of a new diversion dam located on the Rio Grande above Velarde, and about 19 miles of main canal, and the necessary distribution and interconnection systems. Drainage would be provided to protect presently irrigated San Juan Indian pueblo lands.

Cost of constructing all features within the unit is estimated to be about $1,600,000. Joint construction costs to be shared by the unit is about $4,400,000, making the total construction cost $6 million. About $700,000 over the 50-year repayment period would be returned by the water users. The remainder of the total construction cost would be repaid from the basin fund. The benefit-cost ratio for this unit is estimated to be about 1.2 to 1.

Pojoaque unit.—The unit plan provides for furnishing a supplemental irrigation water supply for more than 2,400 acres of land now irrigated along Pojoaque and Nambe Creeks. Both Indian and non-Indian lands would be included.

Unit features include the proposed Nambe Falls Dam and Reservoir on Nambe Creek. The reservoir will have a capacity of some 1,500 acre-feet. Two diversion dams would be used; an existing dam on Nambe Creek at the upper end of the presently irrigated area, and a new concrete structure on Pojoaque Creek. The three main diversion canals would consist primarily of existing canals, enlarged, rehabilitated, and interconnected in such a way that water would be made available to the irrigated land. Rehabilitation of the distribution system will provide the connections with the proposed main canals and a minimum of rehabilitation of the existing lateral systems.

Construction costs of the unit are estimated to be about $1,900,000. The Pojoaque unit's share of joint construction costs amounts to about $600,000. Water users probably would repay about $800,000 for the 50-year repayment period. The remainder of the total construction costs of this unit will be repaid from the basin fund. This unit is estimated to have a benefit-cost ratio of about 1.2 to 1.

Middle Rio Grande Conservancy District unit.—The initial stage plan provides for furnishing supplemental irrigation water to the irrigable lands of the Middle Rio Grande Conservancy District now being rehabilitated by the Bureau of Reclamation. These lands comprise about 81,600 acres which were found by classification to be arable and to have repayment capacity. No new irrigation works are provided in this plan. The water would be released from Heron No. 4 Reservoir as needed and diverted to the district lands through the existing irrigation system.

The estimated cost of this unit would be about $17 million which comprises the allocated share of the construction costs of the joint project works. The water users in the conservancy district would repay a total of about $2 million of these allocated costs. The remainder would be repaid from the basin fund. We estimate the benefit-cost ratio for this unit to be about 1.2 to 1.

Municipal and industrial water supply for Albuquerque.—The plan provides for supplying 50,000 acre-feet of water annually for municipal and industrial uses by the city of Albuquerque. This will require a total of about 57,000 acre-feet to be delivered to Heron No. 4 Reservoir in order to provide for channel and reservoir losses. Releases would be made from Heron No. 4 Reservoir as required to meet the city's demand, would be measured at the key gaging stations en route, and would be delivered in the river channel or at diversions to be provided by the city. The proposed plan assumes that delivery will be through recharge of the ground-water aquifer and that the city's existing pumping system will be expanded to utilize the supplemental water as it is required. The State engineer has assumed jurisdiction over ground-water withdrawals in the Rio Grande Basin and has established regulations that recognize the interrelationship of surface and ground waters in the basin.

The estimated construction cost for delivering municipal and industrial water supply to the city of Albuquerque is $29,200,000. The benefit-cost ratio of this unit is estimated to be about 1.4 to 1.

A number of different arrangements for repayment may be given consideration in the contract negotiations. Discussions with the city of Albuquerque on the schedule of water deliveries indicate that the city will desire the full amount of its share of project water immediately upon completion of construction. The initial obligation of about $31 million which includes interest during construction would be paid by the water users over a 50-year period, together with interest at the rate to be certified by the Secretary of the Treasury as required by the Colorado River Storage Project Act of April 11, 1956.

Summary.—As previously indicated, the construction costs allocated to irrigation in excess of the irrigators' ability to repay would be repaid from New Mexico's apportionment of the basin-fund revenues as provided by the act of April 15, 1958.

Schedules presented in that analysis show that by fiscal year 2049 there would accrue to the credit of New Mexico more than $144 million in apportioned surplus power revenues, of which only a little more than $2.3 million would be needed for presently authorized participating projects in that State. The irrigation repayment assistance required by the proposed initial stage development of the San Juan-Chama participating project as presently evaluated amounts to about $45.4 million. The analysis also shows that sufficient apportioned surplus revenues required for repayment of this assistance would accumulate by fiscal year 2023.

The State of New Mexico advises that there is an urgent requirement for this proposed water-resource development and has recommended that the initial stage of development be authorized for construction as a participating project of the Colorado River storage project.

That completes the general statement on the San Juan-Chama project, Mr. Chairman.

Senator ANDERSON. I have the responsibility of representing people whose interests may be contrary to my own, sometimes. I have a wire from George D. Wisehard, Questa, N. Mex., saying:

> Questa residents strongly oppose construction of Zwergle Dam on Red River and its subsequent diversion of waters. Such diversion would create hardship to Questa farmers and also would ruin tourist industry in this area.

Then, I have a petition on behalf of the people of Questa:

> In behalf of the people of Questa, we, the undersigned, most respectfully ask you to protest to any diversion of water from the Red River or its tributaries to any other sections of the country where it would interfere with, or be detri-

mental to, the long-established water rights of the people of Questa and the surrounding farming districts—specifically being the Citizens Ditch Corp.

I am going to ask the State engineer to comment on this when it gets to be his turn; but does the Bureau of Reclamation have any comment on the diversion of this water from the Red River and its tributaries to any other section of the country? Do you contemplate that this Cerro project is a diversion from the Red River to another part of the country?

The revised report of 1957 is supposed to have and I believe did eliminate that.

Mr. DOMINY. I think Mr. Charles can give you some information that would be helpful on this.

Senator ANDERSON. I thought since the Bureau of Reclamation was here, we had better nail this down. I have been trying to assure these people that while there was a proposal to consider this in the original project, the Bureau of Reclamation eliminated it. But they do not want to take my word for it. I am not an engineer. But they would like to have the Bureau of Reclamation state whether it is true.

Mr. CHARLES. That is right.

Senator ANDERSON. Will you state what is right. When you say that is right, it could mean a lot of things. What is right?

Mr. CHARLES. The original plan included the Cimarron Creek unit which contemplated a diversion of water from above the town of Red River across the divide into the Canadian River watershed. In our reevaluation we were unable to develop a feasible unit in the Cimarron Creek area, and therefore this unit was omitted from the plan. The Cimarron unit is not in the initial stage development.

Senator ANDERSON. Is there a project to divert water from the Rio Grande into the Canadian River system as it now stands?

Mr. CHARLES. No, sir.

Senator ANDERSON. The reason I asked that was, they said that this was sort of a triple play: The San Juan to the Rio Grande and the Rio Grande over into the Canadian.

It is your testimony, then, that the proposal to divert water into the Canadian River is not in the plan as now submitted.

Mr. CHARLES. That is correct.

Senator ANDERSON. I would think that answered these two petitions.

This other petition reads a little differently:

> We, the undersigned ditch and irrigation companies in the vicinity of Questa and Cerro, N. Mex., respectfully call your attention to the Cerro unit of the San Juan-Chama project, now pending before Congress. We understand that committee hearings will start soon and possibly around July 9 of this year. We respectfully and strongly request you to protect our rights that will be undoubtedly infringed upon if the present program is passed by Congress.
>
> We ask you to protest the inclusion in any bill of anything that will interfere with our established and valid water rights. The present program calls for the retiring of some 2,100 acres of so-called class 6 lands, now being irrigated under our ditch system.
>
> The reasons for our protests are as follows:
>
> 1. We and our forefathers have been living upon and irrigating these lands for over 100 years. If the 2,100 acres are retired, as stated in the present program, many of us will have to move from our homes where we were raised and where we are now raising our children and where we expect to be buried if allowed to stay.
>
> 2. The so-called class 6 lands are good farming lands. We have seen the map and we cannot understand how these lands were classified so low. * * *

Can you give us any comment on this?

Mr. CHARLES. Yes, sir.

Our reconnaissance land classification in the Cerro area indicated that there were about 2,100 acres of class 6 land that under Bureau policy could not be provided a new irrigation water supply. If the land classification is correct—and I believe it is—the people themselves would be better off if they would exchange their class 6 land for irrigable land. Such action would be entirely voluntary. If they want to keep their class 6 land and irrigate it, there is nothing to keep them from irrigating it as long as they want to. There is nothing compulsory about the proposed exchange. It is simply an opportunity for these people to participate in an exchange program that would improve their economic condition.

Senator ANDERSON. In other words, these people do not want to be deprived of their class 6 land. They want to retain it, and they mean to.

Mr. CHARLES. Yes, sir.

Senator ANDERSON. With their present water rights.

Mr. BENNETT. With their present water rights.

Mr. DOMINY. Yes; that is the important thing.

If they have a water supply and want to continue putting that water on those class 6 lands, we have no objection, and have no proposal to force them to discontinue this. But since we consider class 6 land a poor investment over the long pull, we would not want to put new water on class 6 lands.

Senator ANDERSON. I think that is a good, sound position.

These two petitions will appear as an appendix at the end of your testimony. I do not want them to appear at this point, but at the end of the testimony.

May I ask, Mr. Bennett, whether, with reference to these two petitions I have just referred to, you would take them and prepare a specific statement on each one of them for inclusion in the record at this point.

Mr. BENNETT. We will be glad to do so.

Senator ANDERSON. Your answers have been satisfactory; I am not questioning those. But many times in these irrigation projects, people get stories as to what is going to happen to them.

I remember one project where people wrote me letters and said all their farms were going to be wiped out; they were going to be moved out of the area. And the water did not come within 30 miles of them. Somebody had given them an old map for the modern map.

I appreciate what Mr. Charles has said with reference to these extra diversions. If you will take these two and prepare a statement for the record, it will reassure these people who have been worried about this.

Mr. BENNETT. We will do that, Mr. Chairman.

Now I would like to take up the application of the proposed procedures for sharing water supply during periods of shortage in the San Juan River Basin.

Senator ANDERSON. Now what you are saying is in accordance, in compliance with the letter sent by the Department, and with the suggestions that have been made with reference to section 7?

Mr. BENNETT. Yes, sir. This is a rather detailed explanation of how the proposed section 7 as contained in the Secretary's report

operation would actually apply. We think it is very important that there be a complete understanding of this section of the bill, as it does state a new principle, and one which has been requested by the Navaho Indian Tribe and by the State of New Mexico.

Senator ANDERSON. I think it was a very fine thing for the State of New Mexico when the Navaho Tribe attempted to sit down and work out a formula which seemed to be satisfactory to them. I have a good many questions about it, but I also recognize that if you are going to succeed in doing anything, generally compromise is the route by which you get it done. I want to be very sure that all the parties of the agreement understand it, and I am glad that you have made this analysis and very happy you are going to present it to us.

Mr. BENNETT. The proposed amendment to section 7 of S. 3648 is consistent with the objective of said section as now contained in the bill. This objective broadly stated is that during times of water shortages, water users will each assume a pro rata share of that shortage. To state this another way, each water user, in times of short supply, will share that supply, rather than to rely upon a system of priorities. Adoption of this objective or principle leads to broader reservoir development.

The principle would apply only to water to which the United States has a right, with the exceptions of certain small existing Indian projects and extensions thereto. Valid prior existing rights to water would, of course, not come under the principle but would continue to be honored. Available inflow to be shared is then the actual, or estimated, or forecasted inflow minus sufficient water to serve diversions not subject to the sharing principle.

Operating studies made by the State officials show that the principle is workable within the limits of contracts for water which the Secretary might reasonably make. As provided in the last sentence of section 7 (a), the Secretary would be precluded from making contracts in amounts such that application of the principle would create intolerable shortages.

The sharing of shortages principle is deemed essential by both the State of New Mexico and the Navaho Tribe in the interests of providing reasonable assurances of the availability of water for future municipal and industrial uses. In order to broaden the base of economic opportunity in the area, both the State and the tribe wish to encourage such uses within reasonable limits that will not impair the feasibility of the irrigation developments proposed in the legislation. They have both requested, therefore, that the Secretary of the Interior administer the available water supply in such manner as to give effect to the principle of equality in the sharing of that water. This would be accomplished through the medium of contracts covering uses hereinafter instituted embracing the sharing of water concept. Obviously, the key to assuring that the available water supply will not be overburdened by demand in the event of shortage, to the consequent detriment of all users, lies in the determination of the total amount of water that will be placed under contract, including the preceding requirements provided for in the legislation.

Section 7 contains, in that respect, an admonition to the Secretary not to enter into contract beyond such total amount as will in his judgment, in the event of shortage, leave a reasonable amount of water available to meet the diversion requirements of the Navaho Indian irrigation project and the initial stage of the San Juan-Chama project as provided in sections 2 and 6 of the bill.

Application of the principle, in terms of procedures to be followed, is somewhat complicated. For this reason, the procedures to be followed and the steps to be taken are hereinafter set forth in mathematical terms of formulas.

Mr. Chairman, I do not know whether you want me to go through that or not. It gets a little complicated.

Senator ANDERSON. I do not think so.

(The mathematical information referred to is as follows:)

The evaporation factor E is here handled as a reduction to inflow. By this process water users above, below, and from Navajo Reservoir stand a share of the Navajo Reservoir evaporation loss. The principle could also apply if evaporation was considered as an addition to, or part of, total demand. In this latter event it would be necessary to assign a share of the evaporation loss to the group of contractors above Navajo and to the group below such that D_a+D_b would continue to equal D, even though D contained the evaporation factor E.

The results of the two methods could be the same by appropriate assignment of the evaporation factor E. For simplicity, however, the first-described method has been adopted herein. Evaporation cannot here be considered a reduction in available water stored in Navajo Reservoir as to do this would require only those users from or below Navajo to stand the evaporation loss.

In those years in which a shortage is anticipated, or has been determined to exist under the terms of section 7, it will be necessary to make at least monthly estimates of inflow and storage content, with corresponding adjustments if needed in apportioned supply.

Definitions of the symbols used in the formulas are as follows:

R = Available water stored in Navajo Reservoir.

E_r = Estimated evaporation for year concerned.

I = Anticipated or forecasted inflow (minus uses not subject to sharing) into Navajo Reservoir for year concerned. ($I=I_a+I_b$).

I_a = Available runoff (inflow) apportioned to the group of contractors above Navajo Reservoir.

I_b = Available runoff (inflow) apportioned to the group of contractors below Navajo Reservoir.

I_p = Available runoff physically available at point of contractor's diversion.

D = Total normal diversion requirements of all contractors. ($D=D_a+D_b$).

D_a = Total normal diversion requirements of the group of contractors above Navajo Reservoir.

$D_{a\,1,\,2,\,3,}$ etc. = Normal diversion requirements of respective contractors diverting above Navajo Reservoir.

D_b = Total normal diversion requirements of group of contractors diverting from or below Navajo Reservoir.

$D_{b\,1,\,2,\,3,}$ etc. = Normal diversion requirement of respective contractors diverting from or below Navajo Reservoir.

Step 1—Determination of water shortage

"Such contracts shall make provision, in any year in which the Secretary anticipates a shortage taking into account both the prospective runoff originating above Navajo Reservoir and the available water in storage in Navajo Reservoir, for sharing available water * * *."

A water shortage is determined to exist when the available water stored in Navajo Reservoir (R) and the anticipated or forecasted inflow into the reservoir (I) is less than the total normal diversion demand of all contractors, or

$$R+(I-E_r)<D$$

Step 2—Apportionment of available water supply between contractors above and those at or below Navajo Reservoir

In the event it is determined by step 1 that a water shortage exists, the prospective runoff, the right to which the United States is entitled as defined in the proposed amendment to section 7, would be "apportioned between the contractors diverting above and those diverting at or below Navajo Reservoir in the proportion that the total normal diversion requirement of each group bears to the total of all normal diversion requirements," or

The share of available inflow for the group of contractors above Navajo Reservoir, (I_a), is

$$\frac{D_a}{D}\times(I-E)$$

The share of available inflow for the group of contractors below Navajo Reservoir, (I_b), is

$$\frac{D_b}{D}\times(I-E)$$

Step 3—Sharing of available runoff apportioned to contractors above Navajo Reservoir

"In the case of contractors diverting above Navajo Reservoir, each such contract shall provide for a sharing of the runoff apportioned to the said group in the same proportion as the normal diversion requirement under said contract bears to the total normal diversion requirements of all such contracts," or

$$\frac{D_{a1}}{D_a}\times I_a,$$

$$\frac{D_{a2}}{D_a}\times I_a,$$

and so forth, for each of those contractors.

Step 4—Reapportionment when water apportioned is in excess of runoff available to to contractor above Navajo Reservoir

"*Provided*, That for any year in which the foregoing sharing procedure either would apportion to any contractor diverting above Navajo Reservoir an amount in excess of the runoff anticipated to be physically available at the point of his diversion, or would result in no water being available to one or more such contractors, the runoff apportioned to that group shall be reapportioned as near as may be among the contractors diverting above Navajo Reservoir in the same proportion that the normal diversion requirement of each bears to the total normal diversion requirements of the group."

Actually, the manner of handling this provision will depend upon physical factors of amount of diversion and respective locations of points of diversion of contractors to each other. In general, the provision would be accomplished in the following manner when the procedure of step 3 results in apportioning more water to a contractor (D_{a1}) than is physically available at his point of diversion:

$$D_{a1}=I_p$$

$$\frac{D_{a2}}{D_a-D_{a1}}\times(I_a-I_p)$$

$$\frac{D_{a3}}{D_a-D_{a1}}\times(I_a-I_p),$$

and so forth.

Step 5—Sharing of remaining available runoff and available stored waters among contractors at or below Navajo Reservoir

"In the case of contractors diverting from or below Navajo Reservoir each such contract shall provide for a sharing of the remaining runoff together with the available storage in the same proportion as the normal diversion requirement under said contract bears to the total normal diversion requirements under all such contracts," or

$$\frac{D_{b1}}{D_b}\times(I_b+R)$$

$$\frac{D_{b2}}{D_b}\times(I_b+R)$$

$$\frac{D_{b3}}{D_b}\times(I_b+R),$$

and so forth, for each of those contractors.

Conclusion

Application of the principle of sharing available water has been studied by State officials. The State's study covered the period 1928–54 and included a diversion demand of some 224,000 acre-feet of water for potential municipal and industrial purposes as well as the presently authorized and contemplated developments. The study showed shortages in only 4 years which averaged about 3 percent for the total period. An extension of the State's study through 1957 resulted in an average shortage of about 6 percent for the total extended period.

Senator ANDERSON. I would like to ask you this now.

This formula which you have introduced, and the figures that you have presented here, do they represent a sufficient study by the Department of the Interior and the Bureau of Reclamation so that it may be regarded a legislative history for the purpose of subsequent operation under the act?

Mr. BENNETT. Yes, sir. That is our intent in having it here in this formal manner. We have studied it in considerable detail. We have discussed it at length with the responsible State officials, and the formula as spelled out in this statement is based upon the results of operating studies. It is the manner in which we would propose to operate in the event that the bill is enacted.

Senator ANDERSON. I had a scientist come into the Joint Committee on Atomic Energy and say, "This is a very simple matter. It is just an ordinary equation." And he put up something that I am sure was very ordinary. It just happened that I had never encountered it before.

Some of these figures such as the ones on page five I have never encountered before. It is not important that I do encounter them. The only thing is that this does give such information so that in a subsequent determination by the Secretary of the Interior, he could rely upon this statement as guidance to him in applying the formula?

Mr. BENNETT. Yes, sir. That is the intent of setting it up in this manner.

Senator ANDERSON. Now, has the State of New Mexico had an opportunity to examine this paper?

Mr. BENNETT. Yes, sir. The State officials have gone over the formula, not of this particular paper, but have gone over the formula in some detail.

Senator ANDERSON. Perhaps I should ask, Has the State of New Mexico had an opportunity to examine the background material that has gone into this paper?

Mr. BENNETT. As a matter of fact, the State of New Mexico prepared the background material that went into this.

Senator ANDERSON. May I go on and say, has the Navaho Indian Tribal Council or its representatives had a chance to examine the background of these tables that you have presented here?

Mr. BENNETT. Not to my knowledge. We have taken it up with the officials of the Bureau of Indian Affairs; perhaps through them they have seen it. I do not know.

Mr. PAUL JONES. It was not given to the tribe, not the way it is diagramed here.

Senator ANDERSON. Mr. Jones, I recognize that they may not have taken it table by table or one bracket by another bracket up with you. But have your people had a chance to pass on the principles that are involved in these figures?

Mr. PAUL JONES. Yes.

Senator ANDERSON. Through your proper legal representatives and engineering counsel, will you make a study of this particular table and supply for the record a comment as to whether the Navahos agree that this is a basis upon which the Secretary could administer the provisions of the bill in case it were to be enacted?

Mr. PAUL JONES. Yes, sir.

(Mr. Jones subsequently advised that he had no further comments.)

Senator ANDERSON. I would say, Mr. Dominy, that would pretty well establish how this is to be handled if the State has agreed to it and the Navaho Tribal Council officially expressed itself on it.

Mr. DOMINY. I think that is an excellent way to handle it, Mr. Chairman.

Senator ANDERSON. In the absence of complicating statements on the floor, certainly this will be legislative history.

Mr. BENNETT. It might be helpful, Mr. Chairman, if I took a minute and roughed it out for you.

Senator ANDERSON. Yes, indeed.

Mr. BENNETT. The statement itself is keyed directly to the language of the bill.

Senator ANDERSON. You mean the language of the amendment and not the language of the bill, but the language of the amendment as suggested by the Department?

Mr. BENNETT. That is right.

Senator ANDERSON. And therefore, I will put in the record at this point a redraft of section 7 (a) sent me and dated July 8 by the Department of the Interior.

DEPARTMENT OF THE INTERIOR REDRAFT OF SECTION 7 (a)

SEC. 7. (a) No person shall have or be entitled to have the use for any purpose, including uses under the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project authorized by sections 2 and 8 of this Act, of water stored in Navajo Reservoir or of any other waters of the San Juan River and its tributaries originating [illegible] to the users, which the United States is entitled, except under contracts satisfactory to the Secretary of the Interior and conforming to the provisions of this Act. Such contracts, which in the case of water for Indian uses, shall be executed with the Navajo Tribe, shall make provision, in any year in which the Secretary anticipates a shortage taking into account both the prospective runoff originating above Navajo Reservoir and the available water in storage in Navajo Reservoir, for sharing of the available water in the following manner: The respective runoff shall be apportioned between the contracting [illegible] and those diverting at or below Navajo Reservoir in the proportion that the total normal diversion requirement of each group bears to the total of all normal diversion requirements. In the case of contractors diverting above Navajo Reservoir each such contract shall provide for a sharing of the runoff apportioned to said group in the same proportion as the normal diversion requirement under said contract bears to the total normal diversion requirements of all such contracts that have been made hereunder: *Provided*, That for any year in which the foregoing sharing procedure either would apportion to any contractor diverting above Navajo Reservoir an amount in excess of the runoff anticipated to be physically available at the point of his diversion, or would result in no water being available to one or more such contractors, the runoff apportioned to said group shall be reapportioned as near as may be among the contractors diverting above Navajo Reservoir in the proportion that the normal diversion requirements of each bears to the total normal diversion requirements of the group. In the case of contractors diverting from or below Navajo Reservoir, each such contract shall provide for a sharing of the remaining runoff together with the available storage in the same proportion as the normal diversion requirement under said contract bears to the total normal diversion requirements under all such contracts that have been made hereunder. The Secretary shall not enter into contracts beyond a total amount of water that, in his judgment, in the event of shortage will result in a reasonable amount being available for the diversion requirements for the Navajo Indian irrigation project and the initial stage of the San Juan-Chama project as specified in sections 2 and 8 of this Act.

(b) (Same as subsection (b) in S. 3648).

(c) This section shall not be applicable to the water requirements of the existing Fruitland, Hogback, Cudai, and Cambridge Indian irrigation projects, nor to the water required in connection with the extension of the irrigated acreages of the Fruitland and Hogback Indian irrigation projects in a total amount of approximately 11,000 acres.

Governor MECHEM. Senator, section 7 (c), the language of the amendment?

Mr. BENNETT. May I answer that?

Senator ANDERSON. Yes; I would rather it would be answered by the Department.

Mr. BENNETT. The section (c) is a new subsection which is the language that excludes from the application of the formula the existing four little Indian irrigation projects.

Senator ANDERSON. Which would total about 26,000 acres. They have prior established water rights, and it would be a question of whether you can go in and interfere with those water rights at a subsequent time. Is that not correct?

Mr. BENNETT. It was not our intention that those projects be subject to the sharing formula, and because of the language used in subsection 7 (a) that the formula applies to the water to which the United States is entitled, which would automatically include those four units, we had to exclude them specifically by a new subsection (c).

Senator ANDERSON. I think, Governor, it is like some of these other questions we have had up here, where you have extinguished this prior established right, and where the water has been put to beneficial use. There might be some question whether you could go back retroactively and interfere in any way with their rights. Since they involve only 11,000 acres and it is water that is already being taken, the sharing principle need not apply to those particular pieces of land, and therefore the Department of the Interior has opposed the elimination of a piece of land, so that there would be no legal question coming in at a later date over the sharing principle. It could be possible that if the bill were to be enacted into law, and someone wanted to make trouble purely the spirit of making trouble, they might go and get [illegible] to come in as a party to litigation and say, "I have been deprived of my rights," and that would be an unfortunate circumstance. I would think.

Go ahead, Mr. Bennett.

Mr. BENNETT. To apply the provisions of the proposed amendment to section 7 of the bill requires 5 steps. The first step is the determination of whether or not a shortage is likely to exist. That happens when the available water stored in Navaho Reservoir and the anticipated or forecasted inflow into the reservoir is less than the total normal diversion demand.

If the Secretary determines that such a shortage is likely to exist, then he goes through steps 2 through 5.

Step 2 would require that the runoff available for apportionment be split between the contractors above the Navaho Reservoir and those who divert from or below the Reservoir. He has to split it between the two groups. That is done on a simple ratio of diversion demand.

Step 3 involves those contractors above Navaho Reservoir. The share of the runoff apportioned to them is reapportioned among the contractors above the reservoir on the basis of their ratio or diversion demands.

Step 4 is an exceptional situation that can occur physically when the application of the apportionment formula results in apportioning to a user more water than is physically available in the river at his point of diversion, which can happen. So step 4 proposes a way of handling that unique situation.

Again, it goes basically to the idea of proportioning in the ratio of diversion demand.

Step 5 deals with the water apportioned to the contractors diverting below or from the Reservoir. The water apportioned to that group, then, is reassigned within the group on the basis of the ratio of diversion demand.

That is much oversimplified, Senator, but that is the basic principle involved here.

Senator ANDERSON. I think possibly before Mr. Bennett leaves I had better ask:

Mr. Reynolds, does the State engineer's office have any question that you would like to direct to Mr. Bennett?

Mr. REYNOLDS. No, sir, thank you. I have been over this material with Mr. Bennett in detail.

Senator ANDERSON. Mr. Jones, do you know whether your representatives have any questions to direct to Mr. Bennett at this time?

Mr. PAUL JONES. No.

Senator ANDERSON. Thank you.

Have you finished your testimony?

Mr. DOMINY. Yes, sir.

Senator ANDERSON. Then I think we had better recess until 2 o'clock.

(Whereupon, at 12:50 p. m., the subcommittee recessed, to reconvene at 2 p. m.)

AFTERNOON SESSION

Senator ANDERSON. We will incorporate in the record by reference at this point four reports: the supplemental report on San Juan-Chama project, Colorado-New Mexico, May 1957 by the Bureau of Reclamation; United States Department of Interior; their report dated November 1955, supplemental report, March 1957 to feasibility report, January 1955 on Navajo project, New Mexico, by Bureau of Indian Affairs; feasibility report, January 1955, Navajo project, New Mexico, Bureau of Indian Affairs.

(The reports are on file with the committee for reference purposes.)

Senator ANDERSON. Mr. Woodson.

STATEMENT OF ROBERT C. WOODSON, OFFICE OF CHIEF OF ENGINEERS, ALBUQUERQUE DISTRICT, ALBUQUERQUE, N. MEX.

Mr. WOODSON. Mr. Chairman and members of the subcommittee, I am Mr. Robert C. Woodson, Chief, Engineer Section, Albuquerque district, Albuquerque, N. Mex. I have been designated as the representative of the Department of the Army in behalf of the Department of Defense to present a statement regarding the present and future water requirements for military stations in New Mexico which may be affected by the San Juan-Chama project.

I have a brief prepared statement which I would like to present to the subcommittee:

There are two principal areas in New Mexico where military stations are located which could be affected by the San Juan-Chama project. These are:

(1) The Albuquerque area which lies within the Rio Grande watershed; and

(2) the Tularosa Basin which is east of and adjacent to the Rio Grande watershed in the southern part of New Mexico. The Tularosa Basin is included because importation of water from the Rio Grande has been proposed.

In the Albuquerque area are three military stations. Kirtland Air Force Base, Sandia Base—including Manzano Base—and West Mesa Air Force Station. At the present time these stations obtain their water supplies by purchase from the city of Albuquerque and from Government-owned wells. The entire area is dependent upon flow from wells developed near the Rio Grande.

Present requirements by the 3 military stations is 3,995 acre-feet per year. It is estimated that by 1965 the requirement will be 6,545 acre-feet and by 1975, 8,045 acre-feet. These future requirements will have to be met by additional purchases from the city of Albuquerque and/or by the development of additional Government-owned wells.

In the Tularosa Basin there are three military stations. They are White Sands Missile Range, Holloman Air Force Missile Development Center, and the New Mexico facilities of Fort Bliss, Tex.

Water supplies for these military stations are obtained from both ground and surface supplies within and adjacent to the Tularosa Basin. Present requirement of these military stations is 3,660 acre-feet per year.

It is estimated that by 1965 the requirement will be 8,065 acre-feet and by 1975, 19,650 acre-feet. This requirement would be met by the expansion of existing sources and development of new sources of supply.

Preliminary investigation by the United States Geological Survey indicates the Valmont area which lies within the confines of the recently purchased McGregor range and the Hueco Bolson in New Mexico, a large part of which lies within the boundaries of the Fort

Bliss Reservation, are capable of producing water of good quality and considerably in excess of the quantity required to satisfy the estimated future water requirements of all stations within the Tularosa Basin. An investigation program now being developed will include field investigations required to confirm the preliminary findings.

In the Tularosa Basin, present cost of water averages $247 per acre-foot due largely to necessity of hauling water to certain areas. However, over 90 percent of the total supply is obtained for a cost between $81.50 to $91.50 per acre-foot.

According to estimates by the Bureau of Reclamation, the cost of San Juan-Chama water delivered to Holloman Air Force Missile Development Center would be about $125 per acre-foot.

The cost of developing future in-basin Tularosa supplies for Holloman Air Force Missile Development Center is estimated to be $81.50 per acre-foot. This would indicate that use of San Juan-Chama water for stations within the Tularosa Basin would be uneconomical unless the requirements should greatly exceed the present estimate.

In the Albuquerque area the average cost of water delivered to the military stations is $83 per acre-foot. The estimated cost of providing the future additional requirements is $104 per acre-foot. No estimates are available as to the cost of San Juan-Chama water delivered to the military stations in the Albuquerque area. According to the Bureau of Reclamation, the San Juan-Chama water can be obtained at lesser cost than alternate sources.

In view of this, it is believed that the cost of providing the future requirements of these stations could be reduced if San Juan-Chama water were available.

The Rio Grande Basin in the vicinity of Albuquerque has been recently declared a closed basin by the State engineer of New Mexico. It is understood that in accordance with State law additional supplies of water for the military stations in the future would require the acquisition of surface water rights and the retirement of land from cultivation in order to drill additional wells.

With San Juan-Chama water available, these additional requirements could be met from this source and would obviate the necessity of retiring land from cultivation which would have adverse effects on the economy of the area.

In addition, the position of the military stations would be greatly strengthened by availability of increased supplies of water for the military and civilian population residing in Albuquerque which supports these stations and upon whom the efficient operation of the stations are dependent. The Department of Defense favors the San Juan project and believes that it would have a substantial effect in strengthening this area in the interest of national defense.

I have appreciated this opportunity of appearing before the subcommittee and shall be happy to answer any questions you have.

Senator ANDERSON. Mr. Woodson, you say on the bottom of page 2 of your statement that the estimate of delivering San Juan-Chama water to the two Holloman Air Force Missile Development Centers would be about $125 per acre-foot.

Mr. WOODSON. Yes, sir.

Senator ANDERSON. That involves quite a bit of extra handling and work of that nature when you get it over there. But when you get to the Albuquerque area you estimate that the additional supplies would be $104 per acre. However, you do not estimate the cost of the water.

If you estimated to the Holloman Air Force Missile Development Center, why can you not estimate what it would be to the Sandia Base?

Mr. WOODSON. The reason for that is this: The present area which is occupied by the military bases has an adequate area to drill additional wells. The problem of securing water supplies is simply the drilling of additional wells. We know very well what the present cost of drilling additional wells would be and the providing of the necessary distribution system.

We also know that in the future if we have to acquire surplus water rights it will increase our cost of building wells.

The reason we do not have any figures on the cost of the San Juan-Chama water delivered to the military bases is because of the fact that the surface water supply would require treatment and it would probably be better for us to secure additional supplies from the city of Albuquerque by purchase rather than by developing our own facilities.

But we do not know at the present time what the cost of treated water would be.

Senator ANDERSON. The city of Albuquerque feels that it is going to get this water if it is able to bring it down by pipeline and ditch and bring it into the cost that is lower than the present pumping cost. Certainly that cost would be available to the military, would it not, also?

Mr. WOODSON. If it is made available it would probably be made available to us cheaper than it can now be obtained.

Senator ANDERSON. Are these figures that you have here only the requirements of the military, these estimates of the number of acre-feet? Do they include the dependents and the necessary people that always accompany the development of additional personnel? If you put a few thousand people in an area you have to have schools, you have to have garages, stores, and everything of that nature. Are these figures which show increased requirements in Holloman from 3,660 acre-feet to 19,650 acre-feet, military people only?

Mr. WOODSON. Those are on-base requirements; yes, sir.

Senator ANDERSON. Therefore, if you are trying to take care of their families and the service establishments at Holloman and so forth——

Mr. WOODSON. It would include all those residing on the base.

Senator ANDERSON. On the base only?

Mr. WOODSON. But nothing outside the confinements of the military reservation.

Senator ANDERSON. Thank you. I think I have no additional questions. Thank you very much, Mr. Woodson.

(Mr. Bennett subsequently submitted the following two statements:)

STATEMENT CONCERNING PETITION OF THE CABRESTO IRRIGATION CORP. AND THE CERRO DITCH CORP.

In this petition, dated June 16, 1958, some of the water users of these two ditches have expressed the belief that the rehabilitation contemplated by the proposed Cerro unit would interfere with their existing water rights, and that the proposal to exchange class 6 land for irrigable land, within the unit, would

force many of them from their homes. These water users point out, however, that they do not have enough water for their lands at present.

The irrigators' water rights are fully protected under the statutes of the State of New Mexico. The Bureau of Reclamation is prevented, both by law and by long-established policy, from interfering with any such rights. The Bureau is also prevented by law from providing any new water to class 6 lands—lands which have been determined by an economic land classification to be unsuited for crop production, under irrigation, over a long period of time.

The plan for the Cerro unit provides for supplying the additional water that the petitioners state they need, and for working out with them an exchange of lands within the project area whereby their nonirrigable lands of low productivity could be retired and their water used on more productive lands. The plan of development does not propose to force these people to retire their class 6 lands. If they have a water supply, and wish to continue using it on land of low-productive capacity, they can do so. The Bureau, however, would not be permitted to provide a supplemental supply needed by those lands. It is possible that when the details of the plan are worked out with the local people during the advance planning activities, the petitioners will desire the opportunity to improve their economic condition through the irrigation of the more productive lands prepared to be developed in the proposed Cerro unit.

STATEMENT CONCERNING PETITION OF THE CITIZENS DITCH CORP.

In its petition of June 16, 1958, the Citizens Ditch Corp. expresses opposition to the diversion of any water from the Red River to another river basin, because of the detrimental effect of such a diversion on the water rights of the people of Questa and on the fish and wildlife program of the area which constitutes a major part of the basis for the tourist industry. The petitioners also feel that the proposal in the Cerro unit plan which would permit retirement of class 6, nonirrigable, land and use of the available water on more productive land is an injustice.

The plan for the initial stage of development, for which authorization is being sought, does not contemplate diverting any water out of the Red River Basin. Moreover, it provides for regulating the stream at the Zwergle dam site above the town of Red River which will improve, rather than damage, the fishery values of the Red River. Although no provision has been made in Zwergle Reservoir for a minimum pool, to be used for fishing and recreation, the State of New Mexico has agreed that if those interested in such a pool will acquire a suitable water right, plans for such a pool may be included. If the initial stage of development is authorized, the plans for a minimum operating pool will be worked out with the Fish and Wildlife Service in accordance with the provisions of section 2 of the act of August 12, 1946 (60 Stat. 1080).

The plan for the Cerro unit would not impair in anyway the existing water rights of the water users on the Citizens Ditch. Those rights are fully protected by New Mexico law as well as by the Federal laws governing the Bureau of Reclamation. Moreover, the plan would not force the retirement of class 6 land, as stated by the petitioners, but would offer them an opportunity to improve their economic condition by using their water supply on more productive land. They may continue to irrigate their class 6 lands if they wish, but the Bureau of Reclamation is not permitted to rehabilitate the works supplying irrigation water to those lands or to provide them with a supplemental water supply.

Senator ANDERSON. Now we come to some New Mexico witnesses, Mr. Reynolds and Mr. Bliss. I can only say that I am very happy to have both Mr. Reynolds and Mr. Bliss here. I think my office probably is a pretty frequent communicator with them and we have had a great many discussions back and forth over a period of years with the office of the State engineer of the Upper Colorado River Commission and I am very pleased that you are here to testify today.

Mr. REYNOLDS. Thank you, Senator.

STATEMENT OF S. E. REYNOLDS, STATE ENGINEER AND SECRETARY OF THE INTERSTATE STREAM COMMISSION OF THE STATE OF NEW MEXICO, AND JOHN H. BLISS, UPPER COLORADO RIVER COMMISSIONER FOR NEW MEXICO

Mr. REYNOLDS. My name is S. E. Reynolds. I am State engineer and secretary of the Interstate Stream Commission of the State of New Mexico.

In these capacities I have responsibility for the administration and development of the water resources of the State of New Mexico.

John H. Bliss, who joins me in this statement, is Upper Colorado River Compact Commissioner for the State of New Mexico.

The Secretary of the Interior's coordinated report on the Navajo Indian irrigation and San Juan-Chama diversion projects represents the culmination of years of planning effort. Men of vision in New Mexico, including the chairman of this subcommittee, had conceived these projects in a general form more than a quarter of century ago.

The Secretary's report presents the plans in the detail require to reveal the merit of those early concepts of the development and utilization of the water resources of New Mexico.

New Mexico's plans for the use of her allocation of the water resources of the Upper Colorado River Basin have crystalized only after meticulous consideration of all the factors involved including the potential uses that might be made of this water.

The Department of Interior, through its Bureau of Reclamation and Bureau of Indian Affairs, has played a role of leadership in planning the use of the water, but has remained at all times fully sensitive to the wishes of the state.

The plans presented by the Secretary were developed only after extensive consultation with all of the affected interests including the Navajo people.

The State of New Mexico is deeply grateful for this excellent coordinated report, and for the great assistance that representatives of the Department of the Interior have given us in the resolution of the very difficult water use allocation problems that faced the State. I am sure I need not elaborate for this committee the accomplishment represented by the resolution of those problems.

The Navajo project is one of the participating projects for which the legislation authorizing the Colorado River storage project provided priority in the completion of planning. The project would provide water for irrigation of a net area of 110,630 acres of Navajo Indian lands. This water would be furnished from Navajo Dam and Reservoir, a storage unit of the Colorado River storage project, which is already under construction. Water would be conveyed from the dam to the lateral system serving the lands by Navajo canal, which would have a total length of about 150 miles.

The Bureau of Indian Affairs' 1955 feasibility report on this project contemplated the irrigation of a total of about 137,000 acres, about 27,000 of which were to be non-Indian lands. Upon reviewing that report the State of New Mexico recognized the need for reducing the size of the project to: (1) achieve a more feasible project, and (2) to

reserve a larger amount of water for future municipal and industrial uses in the San Juan Basin and for lands in the proposed Animas-LaPlata project.

Subsequent conferences among representatives of the Navajo Tribe, the Bureau of Indian Affairs and the State of New Mexico led to the conclusion that the project should be reduced to approximately 110,000 acres for Indian use only, utilizing only the best of the lands incorporated in the plan described in the 1955 report. The Bureau of Indian Affairs' 1957 report on the project reflects those changes.

The changes described in the 1957 report contemplate that the Navajo Tribe will acquire nonreservation lands, some of which belong to the State of New Mexico. These State lands can be acquired for the Indian irrigation project by purchase or exchange through relatively simple administrative procedures.

It is our understanding that the Indians have already put these procedures in motion, and that S. 3648 makes necessary provisions for the utilization of all the nonreservation lands that must be acquired for that purpose.

The Navajo Indians have suffered privation almost continuously since their occupation of the reservation lands in 1868. The kind of poverty they suffer today isn't the kind that keeps a family nervous about the rent and riding in a secondhand jalopy. Theirs is the kind if grinding poverty that keeps them cold, poorly fed, and sick. We have filed with this statement pictures showing the exterior and interior of Navajo hogans which are typical of the one-room mud, rock, and stick huts that provide shelter for the Navajo family on the reservation.

In the winter the temperature at Window Rock, near where these pictures were taken, drops to 30 degrees below zero and the wind sweeps cold, sharp, and unobstructed for miles.

Paul Jones, chairman of the Navajo Tribal Council has said of his people:

> My people have new hope for the future. That hope depends largely on two things: education and water. Without both, we have little chance to enjoy the life we believe we have the right to expect. * * * We want only the chance to earn our own way and support ourselves.

The Navajo Tribe is counting heavily on this irrigation project to provide at least some of their people an acceptable way of life. The tribal council has initiated an on-the-farm training program for candidates for the farms to be created by the project. These candidates are to be carefully selected to insure that only those capable of succeeding at the enterprise are trained and placed on the farms. The Navajos have already proven their capability as farmers on the presently operating Hogback and Fruitland projects on the Navajo Reservation.

This subject does not require lengthy treatment before this committee; the Congress demonstrated its awareness of the plight of the Navajos and the responsibility of the entire Nation to the Navajos by authorizing Navajo Dam and appropriating funds for its construction, and by providing in Public Law 485 that the costs of construction of the Navajo irrigation project which are beyond the ability of the lands to repay would be nonreimbursable.

Senator ANDERSON. The photographs which have been submitted by the State engineer of New Mexico will be received and made a part of the files of the committee.

I do not believe there would be any point in trying to reproduce these.

Mr. REYNOLDS. I think that is correct, sir.

The Navajo project would provide a total of about 1,100 farms for the Indians and the project would support about 18,000 Navajo people by farming and allied industries.

The economics of the project have been analyzed using the criteria usually applied by the Department of the Interior and accepted by the Congress for the evaluation of irrigation projects, and in accordance with the 1957 supplemental report the total benefits are found to amount to 1.39 times the project costs.

The Navajo Canal, in addition to supplying the water for the irrigation of Navajo lands, can be used to convey water for domestic and industrial purposes.

The Navajo Tribe has entered a lease contract with the Utah Construction Co. for the mining of coal on the reservation to produce steam-electric power. It is estimated that the production of power will ultimately require a diversion of 55,000 acre-feet of water per year. Allied industries which the Navajos hope will be attracted to the reservation by this power may require large additional amounts of water.

Also, the town of Gallup has expressed an interest in contracting for water from Navajo Dam to be conveyed through the canal to a point on the reservation about 75 miles from Navajo Dam for diversion into a reservoir and pipeline serving the domestic and industrial needs of the town of Gallup.

Both the Utah Construction Co. and the town of Gallup have already opened negotiations with the Secretary of the Interior for water storage and delivery service.

The State of New Mexico believes that the authority which would be given the Secretary of the Interior by S. 3648 will permit him to anticipate and provide for these potential domestic and industrial requirements through Navajo Canal.

The San Juan-Chama transmountain diversion project was also given priority for study by Public Law 485. The project has been contemplated by New Mexico for more than a quarter of a century, and both the Colorado River compact of 1922 and the upper Colorado River compact of 1948 make provision for such usage of the waters of the upper Colorado River system.

New Mexico contemplates that water imported by the initial stage of the project would be utilized in accordance with the following developmental priorities:

1. Municipal and industrial supplies
2. Development of water supplies for irrigation units on tributaries to the Rio Grande in depressed areas in northern New Mexico, and
3. Supplemental irrigation.

It is presently contemplated that 57,300 acre-feet of the imported water will be contracted for by the city of Albuquerque. The present source of municipal and industrial water in the Albuquerque area is the underground reservoir in the valley fill. This underground res-

ervoir is interrelated with the surface flows of the Rio Grande and all ground water pumped is ultimately derived from surface water supplies.

Since November 1956 ground water pumping in the Rio Grande Valley has been regulated to protect the fully appropriated surface water supply from new ground water developments. The San Juan-Chama project proposes that Albuquerque's future requirements will be met from underground sources with the effects of the pumping on surface flows being offset by imported water released into the Rio Grande.

Albuquerque is one of the most rapidly growing cities in the United States. Located there are large installations which play a vital role in our program of research and development for national defense.

An assured water supply is essential for the continuation and possible expansion of that program in the Albuquerque area, and to take care of the anticipated growth of Albuquerque as a trade, industrial, and recreation center in the Southwest. The 1956 population of metropolitan Albuquerque was 220,000 with an estimated water usage amounting to 53,500 acre-feet per year.

According to estimates used by my office, the population of the Albuquerque area will be 730,000 by the year 2000 with water requirements amounting to 204,000 acre-feet per year.

These estimates are based on figures used by public utility companies for their planning, and are believed to be conservative.

Approximately 30,000 acre-feet per year of the imported water would be used on irrigation units on tributaries of the Rio Grande in northern New Mexico. These irrigation units cannot directly divert the imported water which is brought into the Rio Grande in the channel of the Chama River; however, the additional water to be used on these tributary irrigation units will be replaced by imported water.

These tributary irrigation units are desperately needed to stabilize and expand the agricultural economy of Taos, Rio Arriba and Santa Fe Counties. These counties are included in the rural development program—a Department of Agriculture program inaugurated in 1954 to attack the problems of low-income farming areas.

Approximately 7 percent of the population of 41,500 in Santa Fe County is receiving financial assistance from the State department of public welfare. The total amount of this assistance is $1,250,000 per year.

In Taos County 17 percent of the total population of 15,000 is receiving such assistance with total annual payments amounting to $960,000.

In Rio Arriba County 12 percent of the population of 25,200 persons is dependent upon public assistance with total annual payments amounting to $1,264,000. The annual contribution of the Federal Government to these welfare payments in Santa Fe, Rio Arriba and Taos Counties amounts to $2,320,000.

As of 1956 the per capita income of Santa Fe County was $1,446 per year, Taos County $635 per year, and Rio Arriba County $537 per year. The economy of the area is traditionally based on agriculture, and the realistic solution to its problems is a reliable water supply for irrigated lands.

New Mexico has recognized the serious and chronic economic distress in Taos, Rio Arriba, and Santa Fe Counties and has recognized the wisdom of using a portion of the State's power revenue credits to rehabilitate the agricultural economy of these counties and thus return the people of the area to economic independence. It is clear from the figures that I have quoted above that this use of power revenue credits will materially decrease the welfare burden of the Federal Government.

Senator ANDERSON. I would just like to ask you there if the Taos and Rio Arriba areas have not experienced extreme growth in population but Santa Fe has, but the section of Santa Fe that you expect to help by these projects and areas in Taos and Rio Arriba—would this water not be able to sustain them for quite a while at the present rate of growth?

We have certain areas in New Mexico that are growing rapidly. These are not areas that are growing rapidly, outside of Santa Fe. If this water supply was introduced it would probably cure the water problem for a long, long time in these particular areas.

Mr. REYNOLDS. In those particular areas that is true, sir.

The initial stage of the San Juan-Chama project which would be authorized by S. 3648 would import 22,600 acre-feet of water for supplemental irrigation in the middle Rio Grande Conservancy District. Deducting transportation losses, 19,500 acre-feet of this water would be available for diversion within the district.

The analysis of water requirements made in the planning of the authorized Middle Rio Grande project indicated a consumptive use of 1.76 acre-feet per acre per year for the lands in the district, and it was anticipated that when the Middle Rio Grande project works were constructed there would be a full water supply for the district lands under the terms of the Rio Grande compact.

Reevaluation studies conducted by the Bureau of Reclamation indicate that this amount is too low to provide a full water supply for the crops being grown at this time; these studies indicate a total consumptive use of 2.03 acre-feet per acre.

Thus, an additional 22,000 acre-feet is required for the 81,610 acres of arable lands within the district. The initial stage would provide 19,500 acre-feet of this additional demand. This amount added to the available Rio Grande water would provide nearly a full supply for the conservancy district lands.

No new irrigation works would be required to distribute the supplemental water to the conservancy district lands. The water would be released as needed from Heron No. 4, the reservoir in which the imported water will be stored on the east side, and diverted to district lands through existing facilities.

The additional water made available by the project would stabilize and improve the farm economy of the middle valley and, by assuring a nearly full supply of water, would encourage improved farm practices.

For example, in some areas alfalfa is not replanted when it should be because of the uncertainty of a water supply adequate to start a new stand; also the supplemental water supply would insure timely planting, obtain better crop rotation, and maintain higher yields.

Lands that now lie idle a good share of the time because of the uncertainty of an adequate supply would be put in regular production.

Senate bill 3648, in addition to authorizing an initial stage of the San Juan-Chama project for an average annual diversion of 110,000 acre-feet, would give congressional approval of an ultimate plan for a diversion averaging 235,000 acre-feet per year.

The Secretary of the Interior's 1955 feasibility report on the San Juan-Chama project describes such a plan and shows it to be feasible. However, estimates of anticipated power revenue credits available to New Mexico, as set forth in the Secretary's Financial and Economic Analysis of the Colorado River Storage project, make it appear that a number of years must elapse before construction beyond an initial stage for the diversion of 110,000 acre-feet can be undertaken.

It is impossible to know at this time whether the 125,000 acre-feet per year which might be imported to the Rio Grande by subsequently authorized stages of the project will ultimately be more urgently needed in the San Juan Basin. For this reason New Mexico seeks authorization for only the initial stage constructed in substantial accordance with the plan described in the 1957 supplemental report.

The Secretary's 1955 feasibility report tabulates additional water requirements in the Rio Grande Basin amounting to 315,000 acre-feet per year presently, and 341,500 acre-feet per year within 50 years. Potential requirements which have come to light since the compilation of the report through notices of intention filed with the State engineer include 50,000 acre-feet per year for defense activities and related requirements in the Tularosa Basin of New Mexico, 5,000 acre-feet per year for the city of Santa Fe and 3,000 acre-feet per year for the city of Los Alamos.

With the chairman's permission we will file copies of those notices of intention of which I have referred.

Senator ANDERSON. They will be received and will be made a part of the files of the committee in connection with this bill.

You mentioned the city of Los Alamos in the statement that was given a moment ago by Mr. Woodson. You made the reference to defense establishments and included the area around Albuquerque and White Sands. You recognize, I am sure, that the city of Los Alamos is a very important defense installation.

Mr. REYNOLDS. That is certainly my understanding, Senator.

Senator ANDERSON. And if the studies that are now being made as to the merits of nuclear propulsion for certain sized ships and weapons continues to grow with the requirements, Los Alamos will continue to expand probably as an area in defense requirements rather than shrink.

For example, the discussion we have had of the testing of a nuclear propulsion plant this fall. The nuclear part of that is being built at Los Alamos and the remainder of it except as to the airframe is being built at Albuquerque. That certainly comes into the category of defense work even though that plant at Albuquerque was not listed by Mr. Woodson.

You feel that all those things would have a bearing on the water situation, do you not?

Mr. REYNOLDS. I do indeed, sir. I think that the notice of intention gives evidence of the fact that the people close to the work there at Los Alamos feel that there is going to be a growth in activities and population at that city.

Senator ANDERSON. Thank you.

Mr. REYNOLDS. We are filing with this statement copies of these notices of intention and a notice of intention filed by the city of Albuquerque.

In view of the foregoing there can be no doubt that it may be necessary to import up to 235,000 acre-feet per year for high order uses in the Rio Grande Basin.

Accordingly, the State considers it essential that the capacity of the conduit system of the initial stage of the diversion project be adequate to accommodate a possible ultimate diversion averaging 235,000 acre-feet per annum.

If the tunnel and conduit system of the initial stage is constructed for a diversion averaging only 110,000 acre-feet per year the construction costs of the initial stage could be reduced by about $2.8 million, but the importation of additional amounts of water would then require paralleling of the original tunnel and conduit system.

The cost of providing the additional capacity would then amount to about $15 million as compared to $2.8 million under the plan advanced in the supplemental report.

It is recognized that, if the contemplated future needs in the Rio Grande Basin are not met with San Juan water, about $2.8 million of the initial stage construction costs for tunnel and conduit capacity over and above that required for the diversion of 110,000 acre-feet per year will have to be met with power revenue credits allocated to New Mexico. The State feels amply justified in this commitment of power revenue credits to maintain flexibility in the distribution of its water resources.

The Bureau of Reclamation has analyzed both the ultimate stage and the initial stage of the diversion project in accordance with the usual economic criteria applied by the Department of the Interior to reclamation projects and accepted by the Congress for its evaluation of such projects.

According to the Secretary's 1955 feasibility report, a 100-year period analysis of the ultimate project shows a ratio of total benefits to costs equal to 1.84 with the ratio of direct benefits to cost equal to 1.22.

The Secretary's 1957 supplemental report on the initial stage project shows that for a 100-year period analysis the ratio of total benefits to cost is equal to 1.15 and the ratio of direct benefits to cost is equal to 0 88.

I am advised that the Bureau of Reclamation has brought the cost figures and farm budget data set forth in the 1957 report up to date and has found that the initial-stage project has a total benefit-to-cost ratio of 1.27.

From data set forth in the Secretary's 1957 Supplemental Report on the San Juan-Chama Project and data set forth in the Secretary's Financial and Economic Analysis of the Colorado River Storage Project dated February 1958, it can be shown that anticipated payments by the water users under the project and power revenues allocated to New Mexico are such that authorization and construction of the initial stage can be undertaken now.

The comments of the State of Texas on the San Juan-Chama project suggest that the authorizing legislation should include conditions and provisions requiring compliance with section 2 of Public Law 485, requiring that the project be constructed so as to permit compliance physically with all of the provisions of the Rio Grande compact and requiring operation of the works at all times in conformity with the Rio Grande compact.

New Mexico's only objection to those conditions and provisions would be that their reiteration in this legislation is not necessary.

Senator ANDERSON. As a matter of fact, every effort was made to put in the enabling legislation safeguards, not only in connection with the Rio Grande compact but the compacts relating to the use of water in the Colorado River.

Mr. REYNOLDS. Yes, sir.

Texas' comments also suggest that the details of project operation essential to the accounting of diverted San Juan River and Rio Grande flows shall be cooperatively developed through the joint efforts of the Rio Grande Compact Commission, the agencies of the affected States, including the State of Texas, and the various project entities.

Texas' comments also discuss in some detail the measurements that should be made and the relationships that should be developed for the administration and accounting of these flows, and suggest that the measurements to be made and relationships to be developed be incorporated in a written report and distributed to the affected States, including the State of Texas, as provided in the Flood Control Act of 1944 before any construction shall be undertaken.

New Mexico will work with the Bureau of Reclamation and the entities suggested by the State of Texas to develop a reliable and equitable system for the management and accounting of imported and Rio Grande waters, and agrees that it is reasonable to ask that a written report on the system finally adopted be circulated in accordance with the Flood Control Act of 1944 prior to construction.

Senator ANDERSON. Under the Flood Control Act of 1944 the only affected States as far as the Colorado River would be concerned would not include the State of Texas. That is why the legislation specifically provided that notices should be sent to the State of Texas as to whether legally they were entitled under the Flood Control Act to look at them, but actually they would be given an opportunity to pass upon it.

So there could not be any question about any plans with respect to the Rio Grande compact.

Mr. REYNOLDS. We agree that Texas has a very real interest in this project. We agree they should be fully informed and consulted right along the line.

Texas' comments also suggest that the legislation provide that,

> In event the quantity of imported water should be insufficient to satisfy the full allocation of such water, diversion shall be curtailed in proportion to the amount of water actually imported in any calendar year whenever New Mexico shall have an accrued debit as defined in the Rio Grande compact.

Senator ANDERSON. What does that mean?

Mr. REYNOLDS. We believe that Texas in making this suggestion has overlooked the fact that the water would be stored in an off-stream reservoir of 400,000 acre-feet capacity on Willow Creek.

We believe that Texas will agree that her interests would be unaffected if the project were operated in accordance with that language revised as follows:

> In event the quantity of imported water should be insufficient to satisfy the full allocation of such water, diversion shall be curtailed in proportion to the amount of imported water actually available from direct diversion and storage in any calendar year whenever New Mexico shall have an accrued debit as defined in the Rio Grande compact.

We believe further that the incorporation of such language in the authorizing legislation is not necessary since such operation would be required by our State law and the compact.

Senator ANDERSON. In other words, would it be fair to assume that you believe the language suggested by Texas is covered insofar as it should be covered by the compact we now have?

Mr. REYNOLDS. Yes, sir. That, and by our State law.

Senator ANDERSON. And by the construction of this Willow Creek Reservoir off the main stream it would not be necessary specifically to provide that diversion should be curtailed and proportioned to the amount of imported water available from direct diversion and storage in any calendar year because you have tried to protect it under the compact.

Mr. REYNOLDS. That is right.

The comments of the Elephant Butte Irrigation District in New Mexico generally parallel those of Texas and the foregoing discussion applies also to those comments.

For planning purposes New Mexico and the Department of the Interior have assumed that the State's entitlement to the waters of the San Juan River and its tributaries, under the provisions of the Colorado River compacts, amounts to a depletion at sites of use of 838,000 acre-feet per year.

Analysis of water supply records of the Colorado River shows that the use of 838,000 acre-feet per year for planning purposes is justified.

A report prepared in 1953 by Leeds, Hill & Jewett, consulting engineers for the State of Colorado, and published as Senate Document 23, 84th Congress, 1st session, shows that with a total reservoir capacity of 38 million acre-feet in the upper basin a delivery of 7.5 million acre-feet annually at Lee Ferry can be made with a depletion of 7.5 million acre-feet per year in the upper basin.

Present depletion of upper Colorado River water in New Mexico is estimated at 92,300 acre-feet per year. The total depletion by all present and authorized uses, including New Mexico's share of evaporation losses from the authorized units of the Colorado River storage project, and depletion that will result from the Hammond project, Pine River extension, and the extension of certain Indian irrigation projects amounts to 237,500 acre-feet per year.

Additional depletions at sites of use resulting from the projects that would be authorized by S. 3648 amount to 362,300 acre-feet per year. Thus, 238,200 acre-feet or 28½ percent of the depletion to which New Mexico is entitled would remain after these projects have been placed in operation. These figures are set out in tabular form for the convenience of this committee.

Upper Colorado River Waters Available for Use in New Mexico

Average annual stream depletion at sites of use

	1,000 acre-feet
New Mexico entitlement for planning purposes	838.0
Committed uses by present and authorized projects:	
Present uses	92.3
Share of evaporation losses from main-stem reservoirs[1]	73.3
Hammond project	6.8
Extension of Indian projects	21.7
Navajo Reservoir losses[2]	39.0
Pine River extension[3]	1.4
Total committed uses	237.5
Available for proposed and future developments	600.5
Proposed in coordinated report:	
Navajo irrigation project[4]	252.3
San Juan-Chama initial	110.0
Total proposed	362.3
Available for future developments	238.2

[1] 11¼ percent of 652,000 acre-feet. Represents estimated depletion due to evaporation of losses from Glen Canyon, Flaming Gorge, and Curecanti storage units. See p. 11, Financial and Economic Analysis, Colorado River Storage Project and Participating Projects, February 1956.

[2] From p. 11, Financial and Economic Analysis, Colorado River Storage Project and Participating Projects, February 1956.

[3] New Mexico share estimated to be 5 percent of total depletion. See pp. 50 and 11, Financial and Economic Analysis, Colorado River Storage Project, February 1958.

[4] Depletion due to irrigation of lands—p. 8, Navajo project, New Mexico, supplemental report, March 1957.

In addition to the contemplated uses set forth above, there is before the State engineer an application by the Utah Construction Co. to appropriate water for use in connection with a million kilowatt-hour steam electric plant. This plant will produce power from coal mined on the Navajo Reservation under contract with the Indians.

The depletion that would result from full development of this plan is estimated at 39,000 acre-feet per year. Thus when this depletion is added to the others mentioned, 199,200 acre-feet, or 23.8 percent of the annual depletion to which New Mexico is entitled remains.

Senator ANDERSON. That sort of development would further the projects that were mentioned awhile ago as providing additional earning opportunities for the Navajos. This would give them industrial opportunities.

Mr. REYNOLDS. That is right.

Senator ANDERSON. The Assistant Commissioner for Indian Affairs was pointing out that it was a desire to make them economically strong and help their whole population. In other words, the diversion of 39,000 acre-feet would have a large industrial effect which might be very helpful to the Navajos.

Mr. REYNOLDS. Yes, sir.

Senator ANDERSON. That would give some additional revenues to them.

Mr. REYNOLDS. Yes, sir. I might point out that while the Utah Construction Co. has made application for a permit to make independent development of water for its requirements, present indications are that the needs of the power plant will be met by diversions from Navajo Dam through the Navajo canal under contract with the Secretary of the Interior. It is my understanding that the Utah Construction Co. has already opened negotiations for such a contract.

Also not listed in the foregoing table are the requirements for New Mexico's portion of the proposed Animas-La Plata participating project. A feasibility report on this project is presently being prepared with interests in both New Mexico and Colorado contributing to the costs of the study.

New Mexico is interested in the ultimate full development of the Animas-La Plata project, and has made a filing reserving water for that project. The depletion that would result from New Mexico's portion of that project is estimated at 33,400 acre-feet per year.

If this project and all of the others which I have mentioned are placed in full operation, New Mexico's allocation will be 80.2 percent developed and 165,800 acre-feet of the annual depletion to which New Mexico is entitled will remain.

The proposed authorizing legislation sets forth the principle that all subsequent uses of the waters of the San Juan River and of its tributaries above Navajo Dam including water stored therein would share any shortage in proportion to the diversion requirements of those uses.

This provision, by equitably distributing shortages rather than placing the burden of the shortage entirely on the last user to contract for water, will provide for the fullest possible utilization of the flows of the San Juan River which are under the control of the Secretary of the Interior.

This principle of the legislation has been approved by all present prospective water users under the projects.

On December 12, 1957, the Navajo Tribal Council unanimously adopted a resolution supporting this equitable distribution of the available water.

The New Mexico statutes make special provisions for the reservation of water for Federal projects by the Department of the Interior. The Department of the Interior has acted in compliance with these statutes to reserve all of the presently unappropriated waters of the San Juan River and its tributaries above Navajo Dam for the projects which S. 3648 would authorize, for subsequent stages of the San Juan-Chama diversion project, and for the service of contracts for water from Navajo Dam and Reservoir for other uses.

In summary:

(1) The very difficult water allocation problems involved in the transmountain diversion and in the distribution of possible shortages have been resolved in such a manner that all affected interests support the proposed legislation;

(2) There is adequate water within New Mexico's entitlement for the projects which would be authorized by S. 3648 and for substantial future development including the proposed Animas La Plata participating project; and

(3) The water rights for the projects which would be authorized by S. 3648 have been obtained in accordance with New Mexico statutes.

In conclusion, Senator Anderson, we wish to express our appreciation of the opportunity to appear before this distinguished committee and to earnestly solicit your early and favorable action on S. 3648.

Senator ANDERSON. Thank you very much, Mr. Reynolds.

Mr. Bliss, do you have any comments?

Mr. Bliss. I have nothing to add.

Senator Anderson. You share in his presentation?

Mr. Bliss. Completely.

Senator Anderson. Governor Mechem, do you have a comment to make on this presentation?

Governor Mechem. No, sir, I have not.

Senator Anderson. Mr. Morris is partly from the interstate stream commission. Do you have any other comment on it?

Mr. Morris. No, sir.

Senator Anderson. Except support for it?

Mr. Morris. That is all.

Senator Anderson. Thank you.

Senator Anderson. Mr. Morris, we would be very happy to have your statement at this time.

STATEMENT OF THOMAS G. MORRIS, CHAIRMAN, NEW MEXICO INTERSTATE STREAMS COMMISSION

Mr. Morris. Mr. Chairman and members of the committee, my name is Thomas G. Morris. I am chairman of the New Mexico Interstate Streams Commission and I deeply appreciate your courtesy and indulgence in granting me this opportunity to make this statement concerning S. 3618, legislation of the most vital importance to New Mexico and, I believe, to the Nation itself.

The Governor of our State, our State engineer, and our upper Colorado River commissioner are presenting detailed statements which I feel cover the subject very thoroughly. However, I have had an opportunity to observe intimately the need for better development of the water resources of New Mexico, one of the most serious problems that always has confronted our State. As we know from past experience, the problem is the efficient and equitable utilization of our limited water supply so that none of the potential to accrue from this resource will be lost or wasted. The legislation under consideration is directed solely toward that end.

Under the Colorado River compact, New Mexico is entitled to an allocation of water amounting to approximately 838,000 acre-feet a year. Because of lack of proper storage and other facilities, we have been unable to utilize but a very small percentage of that water. It has flowed on down the Colorado River—much of it into the ocean—and the benefits that could accrue from it have been forever lost to us. It has been a serious blow to our economy and has created an intolerable situation that only this legislation can help to remedy.

I am not going to impose upon your indulgence by covering the same ground that the others have covered. I propose only to deal with the imperative need of the Federal Government for the benefits and security that the Navajo irrigation project and the San Juan-Chama project will provide for the Nation.

As you undoubtedly know, the taxpayers of this country over the years have spent many millions of dollars in support of the Navajo Indians as wards of the Government. The Indians themselves did not create this situation. It is our doing. If we are to be honest with ourselves, we are forced to admit that our record in this regard is not one of which we can be proud. It has not been an entirely intelligent

administrative handling of the situation during the years and it has been costly because we have not made the proper moves to provide the Navajo Indians with the means of self-development and self-support.

The Navajo irrigation project will bring, conservatively estimated, self-support to Navajo Indian families comprising about 18,000 members. That is a considerable segment of the Navajo Indian Tribe. As this development is carried to full fruition and the fertile land is provided with the water necessary to proper agricultural production, it necessarily follows that the burden on the American taxpayer will proportionately decrease. Instead of spending between $20 and $25 million a year to carry on the Navajo program as we have been doing for the past several years, it is not hard to foresee that this cost to our taxpayers can be reduced by at least one-half and eventually be eliminated.

The water resources that this project provides to the Navajos not only will develop the agricultural potential of more than 100,000 acres but it will also make possible the development of production and processing of the vast mineral resources of their land, such minerals as uranium and coal in addition to gas and oil. Water is the one essential to that development that they do not now possess.

It seems to me that it takes no mathematical genius to figure out that in a comparatively few years the saving to the taxpayers of this Nation will be far greater than any cost involved in this project. That is one economic phase that must not be disregarded.

The Federal Government has a far more than usual interest in the San Juan-Chama project which in its initial stage is planned to divert 110,000 acre-feet of San Juan River water into the Rio Grande watershed of our State. Aside from any other consideration, it must be apparent that the water problems confronting such vital and important Federal defense installations as those of the Atomic Energy Commission at Los Alamos and the Sandia Base, and of the Air Force at Kirtland Base at Albuquerque, must be solved as a matter of protection of our own national security. Today those installations have a problem which will worsen as consumption constantly increases, because of insufficient water supplies in the Rio Grande Basin. This condition can be corrected permanently only by diversion of such water into the Rio Grande Basin to assure them of an adequate future supply. This bill accomplishes that purpose.

The American people have billions invested in these atomic-energy installations. Billions that have given us the atomic bomb, the hydrogen bomb, and a great many of the nuclear developments that are now opening a new era of economic progress and development for our Nation. We cannot afford to impair in any way that progress, particularly when such actions as the enactment of this legislation will serve to remove one obstacle—lack of an adequate water supply.

I have not intended to go into these matters in detail because I feel that you have a full understanding of them. However, I did want to direct your attention to those benefits from this legislation which accrue directly to the Federal Government and the people of this country. It is not solely a New Mexico matter.

Thank you.

Senator Anderson. Thank you, Mr. Morris.

Our next witness is Mr. Love.

Mr. Bliss, do you have any comments?

Mr. BLISS. I have nothing to add.

Seantor ANDERSON. You share in his presentation?

Mr. BLISS. Completely.

Senator ANDERSON. Governor Mechem, do you have a comment to make on this presentation?

Governor MECHEM. No, sir, I have not.

Senator ANDERSON. Mr. Morris is partly from the interstate stream commission. Do you have any other comment on it?

Mr. MORRIS. No, sir.

Senator ANDERSON. Except support for it?

Mr. MORRIS. That is all.

Senator ANDERSON. Thank you.

Senator ANDERSON. Mr. Morris, we would be very happy to have your statement at this time.

STATEMENT OF THOMAS G. MORRIS, CHAIRMAN, NEW MEXICO INTERSTATE STREAMS COMMISSION

Mr. MORRIS. Mr. Chairman and members of the committee, my name is Thomas G. Morris. I am chairman of the New Mexico Interstate Streams Commission and I deeply appreciate your courtesy and indulgence in granting me this opportunity to make this statement concerning S. 3648, legislation of the most vital importance to New Mexico and, I believe, to the Nation itself.

The Governor of our State, our State engineer, and our upper Colorado River commissioner are presenting detailed statements which I feel cover the subject very thoroughly. However, I have had an opportunity to observe intimately the need for better development of the water resources of New Mexico, one of the most serious problems that always has confronted our State. As we know from past experience, the problem is the efficient and equitable utilization of our limited water supply so that none of the potential to accrue from this resource will be lost or wasted. The legislation under consideration is directed solely toward that end.

Under the Colorado River compact, New Mexico is entitled to an allocation of water amounting to approximately 838,000 acre-feet a year. Because of lack of proper storage and other facilities, we have been unable to utilize but a very small percentage of that water. It has flowed on down the Colorado River—much of it into the ocean—and the benefits that could accrue from it have been forever lost to us. It has been a serious blow to our economy and has created an intolerable situation that only this legislation can help to remedy.

I am not going to impose upon your indulgence by covering the same ground that the others have covered. I propose only to deal with the imperative need of the Federal Government for the benefits and security that the Navajo irrigation project and the San Juan-Chama project will provide for the Nation.

As you undoubtedly know, the taxpayers of this country over the years have spent many millions of dollars in support of the Navajo Indians as wards of the Government. The Indians themselves did not create this situation. It is our doing. If we are to be honest with ourselves, we are forced to admit that our record in that regard is not one of which we can be proud. It has not been an entirely intelligent

administrative handling of the situation during the years and it has been costly because we have not made the proper moves to provide the Navajo Indians with the means of self-development and self-support.

The Navajo irrigation project will bring, conservatively estimated, self-support to Navajo Indian families comprising about 18,000 members. That is a considerable segment of the Navajo Indian Tribe. As this development is carried to full fruition and the fertile land is provided with the water necessary to proper agricultural production, it necessarily follows that the burden on the American taxpayer will proportionately decrease. Instead of spending between $20 and $25 million a year to carry on the Navajo program as we have been doing for the past several years, it is not hard to foresee that this cost to our taxpayers can be reduced by at least one-half and eventually be eliminated.

The water resources that this project provides to the Navajos not only will develop the agricultural potential of more than 100,000 acres but it will also make possible the development of production and processing of the vast mineral resources of their land, such minerals as uranium and coal in addition to gas and oil. Water is the one essential to that development that they do not now possess.

It seems to me that it takes no mathematical genius to figure out that in a comparatively few years the saving to the taxpayers of this Nation will be far greater than any cost involved in this project. That is one economic phase that must not be disregarded.

The Federal Government has a far more than usual interest in the San Juan-Chama project which in its initial stage is planned to divert 110,000 acre-feet of San Juan River water into the Rio Grande watershed of our State. Aside from any other consideration, it must be apparent that the water problems confronting such vital and important Federal defense installations as those of the Atomic Energy Commission at Los Alamos and the Sandia Base, and of the Air Force at Kirtland Base at Albuquerque, must be solved as a matter of protection of our own national security. Today those installations have a problem which will worsen as consumption constantly increases, because of insufficient water supplies in the Rio Grande Basin. This condition can be corrected permanently only by diversion of such water into the Rio Grande Basin to assure them of an adequate future supply. This bill accomplishes that purpose.

The American people have billions invested in these atomic-energy installations. Billions that have given us the atomic bomb, the hydrogen bomb, and a great many of the nuclear developments that are now opening a new era of economic progress and development for our Nation. We cannot afford to impair in any way that progress, particularly when such actions as the enactment of this legislation will serve to remove one obstacle—lack of an adequate water supply.

I have not intended to go into these matters in detail because I feel that you have a full understanding of them. However, I did want to direct your attention to those benefits from this legislation which accrue directly to the Federal Government and the people of this country. It is not solely a New Mexico matter.

Thank you.

Senator ANDERSON. Thank you, Mr. Morris.

Our next witness is Mr. Love.

STATEMENT OF OSCAR M. LOVE, MEMBER, INTERSTATE STREAMS COMMISSION, PRESIDENT OF THE MIDDLE RIO GRANDE CONSERVANCY DISTRICT, AND EXECUTIVE VICE PRESIDENT, ALBUQUERQUE NATIONAL BANK

Mr. LOVE. Mr. Chairman, my name is Oscar M. Love, and my address is 814 Morningside Avenue SE., Albuquerque, N. Mex. I am a member of the Interstate Streams Commission of the State of New Mexico, am president of the Middle Rio Grande Conservancy District, and am executive vice president of the Albuquerque National Bank. My association with these and other similar organizations for three decades has permitted me to acquire some information and knowledge of economic and financial conditions existing in the northwestern section of our State, which is the portion most particularly affected by the bill S. 3648, which your committee has under consideration at this time.

The State of New Mexico was allocated approximately 838,000 acre-feet of water by the upper Colorado River compact and the present bill would authorize construction of certain projects which would permit the State to put to beneficial use their portion of the water of the San Juan River as allocated under the compact. These units are better known as the Navajo Indian irrigation project and the San Juan-Chama transmountain diversion. They are very essential and would complete New Mexico's program for utilization of their share of the Colorado water and allow full use of the Navajo Dam which is now under construction as authorized by previous congressional action. It is expected that the Navajo Dam project will cost approximately $40 million and that the completed units as outlined in Senate bill 3648 will cost not to exceed $208 million. These projects have been investigated thoroughly, and detailed reports have been submitted by various governmental units showing that these projects are justified from an economic standpoint and that the beneficial cost ratio is sufficient to justify favorable consideration of the Congress.

Although I feel that I am first representing the Interstate Streams Commission, which is a unit of the State government, and that certainly these projects would be of great benefit to the entire State, I feel that it is in order for me to submit a few facts regarding the northwest portion of the State which would be most directly and particularly affected through the authorization and construction of those units of the overall project which are now being considered.

The Navajo Indians have endured many years of hardship due to the large population and the lack of favorable agricultural areas and although they have received some funds from recent programs involving production of various minerals, I believe firmly that their future welfare and well-being depend on additional help and assistance which can be given through the development of agricultural and industrial programs which will be greatly implemented by the construction and development of the Navajo Dam and irrigation project.

The San Juan-Chama transmountain diversion initial stage involves the transportation of approximately 110,000 acre-feet of water into the middle Rio Grande Valley from the upper tributaries of the San Juan River in southern Colorado and northern New Mexico. There are 10 counties in this section of the State which would be directly benefited. The past records of population and resources in these counties indicate that there is a substantial growth and development. However, close examination of the reports made by the Bureau of Reclamation, and my personal knowledge of economic and physical conditions within this immediate area, lead me to believe that a point in their development has been reached where further progress will be greatly impeded or come to a complete stop until such time as there is additional water made available. The total population of these counties in 1940 was 230,418, as compared to a total estimated population in 1958 of 467,500 people. This is an increase of 103 percent in 18 years and the population of this area has grown from less than one-half that of the total population of the State to 69 percent of the total as now presently estimated. The total State population in 1940 was 531,818 and at the present time is estimated to be 681,187. The total estimated income for all farm produce in these counties in 1957 was approximately $9 million. The total income from other sources for the same period of time was estimated to be approximately $650 million. This indicates that while the water allocated for use by the various agricultural areas is very important, the water also allocated to the municipalities and industrial areas is of prime importance. I suggest that this condition is brought about by the extremely favorable climatic conditions for the development of industry and also because of the availability at nearby locations of extremely important natural resources. The major natural resources are in the petroleum and uranium fields and when combined with the availability of sufficient water encourages a continued growth of industry which we believe is essential under our present terrific increase in population throughout the country and particularly in the upper Colorado River Basin area.

I wish particularly to urge the favorable consideration of this project, also because of the help and aid it would allow various small communities through a guaranteed annual water supply which would permit the middle Rio Grande area to change its type of crops from those of small grains and hay into those of vegetables, fruits, and similar produce. A major portion of the vegetables and fruits consumed locally are shipped into our area from very distant points and the problem of conserving them for long periods of time and their transportation costs means that local citizens pay a premium for all fresh produce. We are reliably informed that the increase in population, following the construction of this project, would allow all of this type of agricultural production to be consumed locally and would not in any way interfere or detract from the other similarly producing areas which have already been intensively developed. A list of the 10 counties previously referred to with the figures as quoted is attached hereto.

I will not attempt to go any further into any technical explanations of the project or any of its units because I am sure that reports of the various governmental agencies, with the testimony as submitted by their representatives and other able witnesses, will certainly answer any questions the committee may have in mind at this time. I will be very glad to attempt to answer any questions the committee might have, which I would be qualified to answer through my long residence in this area, with particular reference to economic and

physical conditions that I have had the privilege of becoming familiar with through my association with various civic and private institutions through the years I have resided in this area.

Thank you for this opportunity to appear here today.

Population by counties

Counties	1958	1940	Farm income, 1956	Total income
Bernalillo	235,000	69,391	$1,967,000	$389,751,000
Los Alamos	13,200		0	39,845,000
McKinley	38,500	23,641	390,000	31,093,000
Rio Arriba	25,500	25,352	811,000	14,071,000
Sandoval	11,600	13,898	371,000	4,993,000
San Juan	51,200	17,115	1,070,000	67,366,000
Santa Fe	41,500	30,826	733,000	57,257,000
Socorro	9,900	11,422	1,074,000	9,407,000
Taos	15,000	18,528	379,000	9,266,000
Valencia	26,100	20,245	2,152,000	27,032,000
Total, 10 counties	467,500	230,418	8,947,000	650,081,000
Total State—New Mexico	681,187	531,818		

The 1958 population of the 10 counties reflects an increase of 103 percent over 1940.

The above 10 counties equal 69 percent of total State population.

Senator ANDERSON. Thank you, Mr. Love. You did not put in here one thing. How many years were you connected directly with the Albuquerque Chamber of Commerce, president of it or a member of the board of directors?

Mr. LOVE. Eight.

Senator ANDERSON. You have spent a good deal of time on projects there?

Mr. LOVE. I have spent 18 years on this one.

Senator ANDERSON. Eighteen?

Mr. LOVE. Yes, sir.

Senator ANDERSON. I have watched the growth of this particular area, and you have been a good careful banker. Is it your opinion that the construction of this transmountain diversion based on the growth of the community and the growth of these defense industries is a wise expenditure?

Mr. LOVE. Absolutely.

Senator ANDERSON. I think so too. I think it is a very important expenditure. We thank you. We appreciate your being here.

Mr. Coury.

STATEMENT OF I. J. COURY, MEMBER OF NEW MEXICO INTERSTATE STREAM COMMISSION

Mr. COURY. My name is I. J. Coury. I reside in Farmington, San Juan County, N. Mex. I am a member of the New Mexico Interstate Stream Commission. I appear here in support of S. 3648 which, if enacted, would authorize the construction of the Navajo Indian irrigation project and the San Juan-Chama project, and provide a means by which New Mexico can beneficially use water of the Colorado River system apportioned to it by the Upper Colorado River Basin compact.

The initial stage of the San Juan-Chama project, for which authorization is sought, will provide for the diverting of 110,000 acre-feet of water from the headwater tributaries of the San Juan River into the Rio Grande watershed. We of the San Juan Basin generally favor this project, as we realize the need for supplemental water if the Nation is to benefit from the full production capacity of the presently irrigated farms in the Rio Grande Basin. The need for an adequate and dependable water supply for increasing industrial and municipal used by the towns and cities located in the Rio Grande Basin is also recognized. Although present industrial and municipal requirements are not yet in dire straits, the rapid growths and demands are such that within a few short years the communities will find themselves unable to meet water requirements. The irrigators on the upper reaches of the Rio Grande have an inadequate supply of water and require substantial rehabilitation and betterment of their irrigation systems. We recognize that it takes considerable time to construct the necessary works sought under this legislation. We also recognize that in order to avoid acute shortages in the near future we must support such programs now in order that the proper Federal agencies may have facilities ready for use when needed. The Federal Government has many large installations on the Rio Grande that are important to the welfare and defense of our Nation. Water is, therefore, a very important commodity. The two great river valleys in northern New Mexico are tied together in development and use of oil and gas, the mining of uranium and other partially developed resources and industries. The water needs for both valleys are self-evident. New Mexico has resolved its water problems with reference to where and how its waters shall be utilized for the good and benefit of its citizens. It is the belief generally in the San Juan Basin that authorization and construction of the San Juan-Chama is not only important but essential.

The town of Gallup has testified before this committee as to its needs for additional water. We of Farmington support its position and urge that its requirements and request be given serious consideration. The United States largest known uranium deposits are in the vicinity of Gallup. Gallup, as well as Farmington, is located in close proximity to the large labor resources of the Navajo people. If these cities are to grow and provide industries, water becomes a prime factor. No community or area can grow or expand beyond its available water supply, and Gallup finds itself rapidly approaching the point of no return. It must have a dependable water supply, and its only source is from the Navajo Reservoir. Water can be delivered to the town's supply system through the main canal serving the Navajo Indian irrigation project.

We, the people of New Mexico, and, we, the people who live adjacent to the Navajo Reservation are actutely aware of the need for providing opportunities for the descendants of the first inhabitants of New Mexico. One of the means of making opportunities available to these people is the construction of the Navajo Indian irrigation project. While it is impossible to provide gainful employment for all the 90,000 Navajos on this project, its construction will provide opportunities for approximately 18,000 or 20 percent of the present Navajo population. Population curves estimate the popula-

tion of the Navajos will be in excess of 125,000 by 1975. As time marches on the problems will become greater and the burdens heavier, unless we begin to alleviate them immediately. Many people share my opinion that the United States has not fulfilled its obligations to the Navajo Indians as provided under the terms of the treaty of 1868.

To my knowledge the United States has never repudiated any treaty. However, it is my opinion that the treaty of 1868 has not been fully honored. Article V of the 1868 treaty is quoted as follows:

> If any individual belonging to said tribe, or legally incorporated with it, being the head of a family, shall desire to commence farming, he shall have the privilege to select, in presence and with the assistance of the agent then in charge, a tract of land within said reservation, not exceeding 160 acres in extent, which tract, when so selected, certified, and recorded in the "land book" as herein described, shall cease to be held in common, but the same may be occupied and held in the exclusive possession of the person selecting it, and of his family, so long as he or they may continue to cultivate it.
>
> Any person over 18 years of age, not being the head of a family, may in like manner select, and cause to be certified to him or her for purposes of cultivation, a quantity of land, not exceeding 80 acres in extent, and thereupon be entitled to exclusive possession of the same as above directed.
>
> For each tract of land so selected a certificate containing a description thereof, and the name of the person selecting it, with a certificate endorsed thereon that the same has been recorded, shall be delivered to the party entitled to it by the agent, after the same shall have been recorded by him in a book to be kept in his office, subject to inspection, which said book shall be known as the "Navajo Land Book".
>
> The President may at any time order a survey of the reservation, and when so surveyed, Congress shall provide for protecting the rights of said settlers in their improvements, and may fix the character of the title held by each. The United States may pass such laws on the subject of alienation and descent of property between Indians and their descendants as may be thought proper.

While the United States has developed approximately 34,700 acres of irrigated land for the Navajos on the reservation, many of the small tributary units have an intermittent water supply which does not produce dependable crops, but merely supplements their food supply and in no way approaches the promises given in article V of the treaty.

The Navajo Indian irrigation project will provide 1,120 farms for those eligible under the terms of article V of the treaty. It is realized that all the Navajos eligible for farming land assignments do not care to be farmers. You have heard Navajo witnesses tell of the efforts of the Navajo Tribe to properly train their people who desire to be farmers. The cost of this training is borne by the Navajo Tribe. The tribe is making every effort to provide properly trained Navajo farmers for the settlement on the lands to be developed by this project. These plans were formulated prior to the authorization of the upper Colorado River storage project and participating projects in anticipation of being able to provide these future Navajo farmers with economic farms. Surely it is not the desire or will of the people of the United States to give empty promises to the first inhabitants of our State. It is time we started to fulfill our obligations long past due.

I recommend your favorable consideration of S. 3648.

Thank you.

Senator ANDERSON. Thank you.

Mr. Coury, you have lived in that area a good many years, have you not?

Mr. COURY. Yes, sir, almost 20.

Senator ANDERSON. Were you there in 1940?

Mr. COURY. Yes, sir.

Senator ANDERSON. Mr. Love introduced a table of population figures here that shows that in 1940 the population of San Juan County was 17,115.

Mr. COURY. That is right.

Senator ANDERSON. I was running for public office in 1940. If I had come to your county and had predicted the population of San Juan County would exceed 50,000 people by 1958 would you have thought that I was ready to be committed to the State institution?

Mr. COURY. Probably.

Senator ANDERSON. I talked at that time to your then president of a bank, a very fine lady, and she talked about the future growth of Farmington and its possibilities for the future. She would have thought that anybody who predicted 50,000 for that county by 1958 would have been absolutely insane. Yet you and I believe now that the growth is going to continue?

Mr. COURY. Yes, sir. I think it is.

Senator ANDERSON. If this project were to be put through and the plan of the Utah Construction Co. to develop coal and probably petro chemical plants and things of that nature, couldn't it be possible that we might not yet have realized the possibilities of development in that area?

Mr. COURY. That is true. That is very true.

Senator ANDERSON. I say that because there are many parts of our State that might suddenly have a whole new growth of population that we do not at present anticipate. No one could have anticipated at the time that we are discussing that the oil and gas development would take place up in that country. There was a well that had been brought in, a little oil produced, but people said the supply was somewhat limited. Mr. Love will probably remember along with me when Neill B. Field and the Continental Oil Co. brought in a little oil structure, and I remember Mr. Field saying to me, "Well, it is all right. There isn't too much oil in there. We were just lucky to get some of it, but it is never going to be a very large field."

I must say that I fully agreed to it, I found out by mistake in subsequent years. But we do not know how many areas there are in this area to be served by water that may enjoy a like development.

In the last few days I discussed with an individual a possibility for an additional development in New Mexico far beyond what I would have thought possible only a few years ago.

New minerals and new wells constantly are being developed. I just thought the experience of this one county in going from 17,000 in 1940 to 51,000 in 1958 is indicative of how these demands for municipal services of all kinds suddenly grow and grow so rapidly that not even the most optimistic person can keep track of them.

I appreciate your statement.

I think I will stay in that part of the country now and take Mr. Bolack.

Mr. Bolack, I know of your interest in the passage of the Upper Colorado River Act and your support for it at all times and under all circumstances. I think it is a fine thing that you can be back here when we hold our first hearing looking to the New Mexico project.

STATEMENT OF TOM BOLACK, PRESIDENT OF THE FARMINGTON, N. MEX., CHAMBER OF COMMERCE

Mr. BOLACK. My name is Tom Bolack. I am president of the Farmington, N. Mex. (San Juan Basin's largest city) Chamber of Commerce and a member of the New Mexico State Legislature. I appear before you in behalf of S. 3648 and earnestly urge your favorable consideration thereof.

The Navajo Indian's plight and needs are most vivid to me as I have spent the last 16 years in their country. They are a proud and independent people, ready to accept an equal social and economic status when given the opportunity. The Navajo project is their greatest hope. The Navajo Indian resents being thought of as a burden to the Government; rather he has a sincere desire to be completely independent and contribute to our Nation's betterment. The Navajo project is the cornerstone for a new concept and a better way of life for those who have been so long forgotten or overlooked. The tribe will receive immediate benefits when this project is started. The subsequent relief to their present strained economy will be permanent and will bring many indirect benefits to the tribe and the Nation. This project will no doubt stand as the greatest single step toward the tribe's economic independence and self-support.

The few farms that Navajos have now in San Juan County plainly demonstrate their ability and diligence as farmers. The tribe has an extensive farm-training program in operation at this time. The crops to be grown in the proposed project are not among those expected to ever be surplus. Furthermore, very little of the Indian crops will reach the market and the major portion will be consumed in the immediate area. Most of this food will be used to fill the void of what the Indian goes without today but needs so much for better health and a higher standard of living.

The State of New Mexico is in agreement on the present and future uses of its waters (act of April 11, 1956, and other subsequent agreements). S. 3648 and its predecessor, Public Law 1956, are bipartisan and will contribute greatly to the overall economy of our State and Nation.

I appreciate this opportunity to appear before this committee.

Senator ANDERSON. Mr. Bolack, you have been actively drilling for oil and gas in this area, Four Corners area, for a good many years. Is it your opinion that we have reached the end of that development or only getting actually started?

Mr. BOLACK. Senator, probably the best way that I could answer that would be to say that 2 or 3 years ago when we had a thousand wells in San Juan I thought they had somewhere near reached the saturation point.

Now we have 3,000 wells in the area and still 100 rigs running. So I would say that the oil and gas potential of the San Juan Four Corners area has barely been scratched.

Senator ANDERSON. I think so too.

Would the development not indicate that we are going to have continued industrialization when you have an abundance of natural gas and an abundance of oil and an abundance of coal and add to it the possibility of developing water? Doesn't that tend to contribute to industrial development as well?

Mr. BOLACK. I think that is very true. In fact it is one of the few spots left in the United States where we have such unlimited coal reserves that could be stripped at a very shallow depth, together with the byproducts of petroleum that we have from natural gas at this time.

They are available and even a burden on the market now because the gas and oil has developed ahead of the other projects. It is ahead of it a little bit.

Senator ANDERSON. But in every part of the country when you start looking around you say that this part of the country has a nice climate but does not have natural resources or another part of the country has natural resources but does not have a nice climate. Some other may have a nice climate and not sufficient water supply. If you could take the Four Corners area and recognize that it has good climate and fine resources in coal, oil, and gas, and could add to it the potential of extremely fine water supply, surely it ought to be able to sustain a good agricultural unit, couldn't it, because all those people engaged in all those things need to eat. Wouldn't you say that the possibility of success of the Navajo Indian irrigation project was very good because of all of these side contributing factors?

Mr. BOLACK. I think that is very true. In fact the present market today is many times what it was just a few years ago from the number of people who are in there now.

Senator ANDERSON. Thank you. I appreciate your being here.

The next witness is Mr. Foster.

STATEMENT OF ED FOSTER, FARMINGTON, N. MEX.

Mr. FOSTER. Senator Anderson, I haven't any report. I have just got a few verbal ones. I think with your lawyers and Bureau's attorneys, they have given you a very good report on the entire setup, and there is no use, with the short length of time, in my going into it at any greater length of time.

But I will say that I have been with the Southern Union Gas Co. since 1929, am still with them. I came to San Juan County in 1894. I have been there ever since. I have seen the stream grow from just a mere dribble to the present time of 834,000 acre-feet of water.

In my opinion, with the reports you have got, you have got that whole thing in detail. But to go ahead and approve of Senate bill 3648, I heartily approve of, and think it is one way to put our water to beneficial consumptive use.

The Indians in those days were people that were progressive, they were trying to make their living. They did a very good job. And they have a group that, given a chance, will take care of themselves and show development.

The water under this present upper Colorado statute, and as you have all brought out here today, will give them about 120,000 acres of land. It will not take care of all of them, of course, but they will put it to good use, and you will find that those people are good workers and that they should be given a chance to develop that amount of water.

That will take care, of course, of much more than half of the water.

Now, the balance, to put it to beneficial consumptive use, in 1945 this was set up as New Mexico water, not as San Juan County or

as any part of the State. It was New Mexico water. And the diversion, to me, is a very, very good project and one that should be developed, because the water is there, and we far prefer to see it come over the mountain than to go down the river. Once it arrives in that old dam, it never returns.

So I do heartily approve the diversion, and feel that it puts it to the best possible use by a diversion.

Senator, I think that is all that I have to say on it. I have certainly appreciated being here with you, and hope that the Senate bill will pass, and that the water will be put to complete beneficial use.

Thank you.

Senator ANDERSON. I want to say for the record that Ed Foster has been at about every meeting I have ever seen when anybody wanted to develop the waters of New Mexico.

I did not realize that you had been living in the Farmington area for 64 years, but I will take your statement for that.

Mr. FOSTER. I am still a member of the chamber of commerce, and I pull for New Mexico.

Senator ANDERSON. I know how many good things you have done and how hard you have worked up there, and I am very happy you could be here to testify for us, Mr. Foster.

(Discussion off the record.)

Senator ANDERSON. Next we come to the witnesses from the Navaho Indians, Mr. Paul Jones, chairman of the Navaho Tribal Council; Norman Littell, general counsel for the tribal council; and I am also glad to welcome here Larry Davis, whom I see many times out on the reservation engaged in good work for the Pueblo Indians, and who has represented them in a number of main ventures, and I believe has worked very hard at it.

Would you not say so, Norman?

Mr. LITTELL. Yes, Senator. I am glad to yield to Larry Davis, who is assistant general counsel of the Navaho Tribe in Phoenix, Ariz., and has had the assignment of being a member of the legislative committee of the Upper Colorado River Commission, and who has done a distinguished job, as many of the members of the commission, the representatives here now, can testify, on the formation of the agreements which are at the bottom of this bill, the foundation of the bill.

I want to yield to Larry for that reason. He has done some very fine work for this project.

Senator ANDERSON. Mr. Jones.

STATEMENT OF PAUL JONES, CHAIRMAN, NAVAHO TRIBAL COUNCIL

Mr. JONES. Mr. Chairman, my name is Paul Jones. I live at Window Rock, Ariz.; and I am appearing here on behalf of the Navaho Indian people, of whom I am the elected chief executive, in support of S. 3648.

Going back to the statement made by Mr. Bennett on section 4 regarding the sharing of water shortages, Mr. Chairman, I have discussed that with Mr. Keeler, and as Mr. Bennett has presented, the method of sharing water is all that was in the agreement we had formerly, and it is just a new method of handling it where there are

shortages, as provided in Mr. Bennett's statement, to which I, as chairman of the Navaho Tribal Council, would agree.

Senator ANDERSON. Thank you very much.

Mr. JONES. This bill we are talking about would authorize construction of the Navaho Indian irrigation project and the initial stage of the San Juan-Chama project in New Mexico. The Navajo Tribal Council, the New Mexico Interstate Stream Commission, and the Department of the Interior all support this proposed legislation.

S. 3648 would authorize the Navaho Indian irrigation project, consisting of a net area of 110,630 acres of irrigated land solely for Navaho Indian use; the initial phase of the San Juan-Chama project, which would divert a supplemental water supply of 110,000 acre-feet of water annually from the San Juan River to the upper Rio Grande Basin; and, by section 4, would authorize the Secretary of the Interior to provide, in planning the works of the Navajo Indian irrigation project, for capacity for water deliveries for industrial, municipal, and miscellaneous uses in northwestern New Mexico, over and above the capacity necessary for the diversion requirements of the irrigation project.

While I intend to discuss only the Navaho Indian irrigation project in detail, I wish to state for the record that the Navaho Tribal Council also supports the initial stage of the San Juan-Chama project, which will provide a much-needed supplemental water supply for the upper Rio Grande Basin in New Mexico, including the Pueblo Indians on the upper Rio Grande.

The provision for industrial, municipal, and miscellaneous water supplies in section 4 of S. 3648 is almost as important to the Navaho people as the Navaho Indian irrigation project itself, for these water supplies will make feasible large-scale industrial development in northwestern New Mexico which, we hope, in conjunction with the irrigation project and private and tribal projects elsewhere on the Navaho Reservation, will permanently solve the Navaho unemployment problem.

The Navaho project as originally planned consisted of an irrigated area of 110,630 acres of the Navaho Indian reservation for exclusive Indian use and an irrigated area of 26,620 acres off the reservation for white use. S. 3648, however, contemplates a modified plan, which was proposed by the Governor of New Mexico and is supported by the Navaho Tribe and the State. Under the present plan 110,630 irrigated acres for Indian use are retained, but the 26,620 acres for white use are eliminated. The 110,630 acres for Indian use will not be entirely on the present Navaho Reservation, but will include the lands both on and off the present reservation that can be most economically irrigated. Nineteen thousand, six hundred and forty acres of land now off the reservation will be included in the project and will be placed in trust by the United States for the Navaho Tribe, so that they can be reserved exclusively for Navaho Indian use. Costs of this land acquisition, under section 3 of S. 3648, will be paid by the Navaho Tribe. Even the Federal Government will be paid full value by the tribe for public lands included in the project. Oil rights of the former owners of the land, including the Federal Government, will not be affected by the transfer to trust status.

By reducing the area of the project, consolidating the irrigated area and eliminating long ditches [illegible] on the reservation [illegible]

Navaho Dam, as is provided by the bill now before you, the total cost of the Navaho project has been reduced by almost 16 percent.

The other people here today will discuss and have discussed the San Juan-Chama project and have given technical information on the Navaho project, which they can do bettter than I. All I plan to cover is how a pressing need for the immedaite construction of the Navaho Indian irrigation project continues to exist notwithstanding the large oil income the Navaho Tribe has enjoyed in the past 4 years.

The heart of the Navaho problem is that there are too many of us on our reservation to earn a livelihood by our customary methods of stock raising and dry farming. We now number about 90,000 and increase at the rate of 2¼ percent a year.

The total carrying capacity of our reservation is 512,922 sheep units year long. The reservation is currently about 4 percent overstocked. The maximum number of sheep any Navaho is allowed to graze on the reservation is 350, which is less than the minimum necessary for a decent living. Only 8,077 Navaho Indians, less than 10 percent of our population, have reservation grazing permits at all. Of these, 90 percent have permits for less than 151 sheep. Sheep raising is a frozen and dying industry among the Navaho people.

In 1868, the Government by treaty promised 160 acres to any Navaho Indian head of a family, and 80 acres to any other Navaho Indian over 18 years, who should desire to commence farming on the Navaho Reservation. At that time there were only about 10,000 Navahos. Even then, however, there was not nearly enough land capable of being dry-farmed to support all our people. Our reservation has been enlarged to about four times the original area provided in 1868, yet even today it contains only 21,500 acres of dry-farming land. Obviously, if the treaty promise was meant in good faith, it contemplated irrigation.

The average annual income of a Navaho Indian from reservation sources is only $115. Off-reservation earnings and relief payments raise this figure to an average of $450, still less than one-fourth the national average of $1,940. Tribal oil income, of which I will peak at length later, is not included in individual income figures, because it is not distributed per capita, but retained by the tribal government in lieu of taxes, to be spent for public purposes.

Possibly that needs a little explanation. I mean that if we were collecting taxes from various sources we would not be retaining—that is the way the money would be used that we are retaining from our income from various sources, particularly from oil and gas development in the area. So we are retaining that for public services to our people.

There are only four alternative ways to solve the problem of too many people on land incapable of supporting them. The first, which is to let them starve, would never be considered in America. The second is to keep them alive by relief payments. The third is to relocate the people, and the fourth is to increase the productivity of the land.

The Federal Government and the Navaho Nation are currently practicing all the alternatives except starvation. Relief is probably the most expensive of these three methods and surely the most demoralizing. This is one of the chief reasons we Navahos do not distribute oil money per capita. We do not want to make bums out of our people.

The Bureau of Indian Affairs has a relocation program. Through fiscal year 1957, 878 Navaho Indians were relocated off reservation. Experience indicates 37 percent of this number will return to the reservation. The cost is about $500 per person. However, about 80 percent of our adult population is illiterate, non-English speaking, completely uneducated, and completely lacking in the skills necessary for permanent off-reservation employment. Even if all our people wanted to be relocated and if sufficient funds were available, adequate and successful relocation would still be impossible.

Actually, most of us do not want to leave our homes. We love our Navaho country just as you Senators love your States. The solution we want for our economic problem is the same solution you want when depression strikes your constituencies. We want more opportunities to earn a living in our own country.

Senator ANDERSON. Off the record.

(Discussion off the record.)

Mr. JONES. This is why the Navaho Indian irrigation project is so immensely important. It will provide 1,120 family farms for Navaho Indians. It will give a livelihood in related service activities to another 2,240 families, thus providing a decent living for at least 17,000 Navaho Indians. It will actually benefit far more Navahos. By drawing population off the sheep ranges it will enable the stockmen remaining behind to increase their herds and raise their standard of living. It will lower the cost of food, animal feed, and dairy products in the whole Navaho country. It will concentrate the population of schoolchildren and reduce the need for boarding school facilities.

Now let us go into the subject of oil money.

So many people, particularly out in this part of the country, when there is an appropriation mentioned for Navaho Indians, forget that we are the largest tribe in the United States, and always object that we have so much money coming from oil and gas. But they never figure the number of Navahos, number of mouths to feed, so that that money does not begin to make too big an impression.

I hope that the committee will understand as far as this is concerned, to the advantage of our Navaho people. As I said, already, there are just too many of us, and the income that we get from oil does not begin to make much headway in supporting all of the Navaho population.

The total cost of the Navaho Indian irrigation project will be $134,359,100.

As of June 30 of this year the Navaho Tribe had a cash balance of approximately $65,000,000. You can immediately see that this is not even half the estimated cost of the Navaho Indian irrigation project.

If we were to divide our whole cash balance per capita among our 90,000 population, each Navaho would receive $719.40, certainly not enough for a decent living for even 1 year. Actually, we have no intention of distributing our cash balance per capita; and in fact we cannot. The Navaho Tribe is a self-governing commonwealth that supplies its members with many of the same services State and local governments supply to white and colored American citizens.

I refer particularly to police protection, courts, welfare, work relief, and higher education.

Our budget for the 1959 fiscal year calls for expenditure of the following categories; 1958 figures are also given for comparison:

I will not take the trouble of reading this table except to read the total for 1958 and 1959. The 1958 total was $14,950,918; for 1959, $12,649,531.

(The table is as follows:)

Navajo tribal budget, fiscal year 1959—Recapitulation, all divisions

Division		Obligations	
		Year 1958	Year 1959
501	Administration	$163,877	$529,010
502	Legal and judiciary	206,502	236,676
503	Community services	1,005,045	2,288,849
504	Industrial and business operations	939,469	478,581
505	Minerals management	97,795	110,953
506	Farm and range management	1,319,559	1,751,868
507	Land use and surveys	122,230	208,595
508	Financial management	125,950	207,299
509	Capital investments	9,077,500	6,767,700
	Total	14,950,918	12,649,531

We are spending $108,630 this year alone to maintain a school to train our people in irrigated farming with a view to equipping them to make maximum use of the Navaho Indian irrigation project when it is completed.

What our future tribal income may be is problematical. It varies widely from year to year. In fiscal year 1958 it was $25,518,000. In fiscal year 1956 it was only $5,988,562.74. We must retain a large reserve to guarantee continuance of essential services to our members.

Also, as I have said, the Navaho Indian irrigation project alone is not enough to provide a decent standard of living to all our people. Large private investment on our reservation, like the Utah Construction Co. project to make electricity from coal, will help. But we ourselves plan to invest $12 million in a forest industries enterprise, a sawmill and waste plant, to give additional permanent employment to our population. We are aiming for a local economy balanced between agriculture and industry, like the very successful economy of the Phoenix area. All of this, of course, is dependent on intensive water development.

Only with the federally financed Navaho Dam, Navaho Indian irrigation project, large private industrial projects, and large tribal capital investment can enough jobs be provided for all the Navaho people to enjoy the American standard of living.

What we are aiming at is that all our people will be self-supporting, so that Federal grants, relief payments, and special education payments can come to an end, and that the Navaho Nation will no longer be an undeveloped, chronic problem area, but a prosperous community contributing its proportionate share to the wealth of America.

I urge you to pass S. 3645 authorizing the Navaho Indian irrigation project, as the greatest step ever taken by Congress toward permanent solution of the Navaho problem.

May I add to that this brief comment: That we have the Navaho Reservoir, dam authorized, and the construction has just begun. We just do not want that to stand idly by for fishing or recreational purposes. We need that water to spread over the reservation for income purposes for our Navaho Nation.

Thank you.

Here is a prepared statement also by one of our members. If the chairman wishes, I could read it into the record.

STATEMENT OF HOWARD W. GORMAN, MEMBER, RESOURCES COMMITTEE OF THE NAVAHO TRIBAL COUNCIL, WINDOW ROCK, ARIZ. (AS PRESENTED BY PAUL JONES)

Mr. JONES. Honorable members of the committee, the purpose of this statement is to inform the committee of the farm-training program which the Navaho Tribe has underway at Shiprock, N. Mex., to prepare its people to become successful farmers on the Navaho Indian irrigation project.

We realize that irrigated farming is a difficult business, which requires both great skill and considerable capital to be done successfully. We are informed that 2 out of very 3 white farmers who go on a Bureau of Reclamation project fail, and have to be replaced. On Indian irrigation projects the rate of failure may have been even higher. One of the greatest causes of failures on Indian irrigation projects heretofore has been the extreme small size of the farm units—40-acre, 10-acre, 5-, and even 2½-acre plots have been assigned to Indian families on Bureau of Indian Affairs irrigation projects. Of course, none of these areas is large enough to support a family. The Indian who has such a tiny plot of irrigated land must get a job elsewhere to make a living, and then he has the choice of either keeping his small plot as a home, or abandoning it altogether. The small plots that are successful on our reservation are operated by their Indian owners as country homes, rather than as a means of livelihood.

Among both the whites and Indians another cause of wholesale failure of new farmers on irrigation projects has been lack of training in irrigated farming, including crop rotation, and the economics of farming.

A third cause of failures on irrigated farms, which applies to both whites and Indians is the lack of adequate capital. For example, on our land in the Shiprock area, the first year's crop should be plowed into the soil to make humus, which is very deficient in the soils at the present time. If this is done the productivity of the land will be greatly increased; but, the average farmer who is trying to feed his children is in no position to plow under a whole year's crop. For the maximum success in irrigated farming a large supply of initial capital must be available.

We of the Navaho Tribe realize that we cannot just take our people off the sheep ranges and put them down on the Navaho Indian irrigation project, hand them a shovel, and then forget about them. The Bureau of Indian Affairs took some of our Navaho people off the sheep ranges to 80-acre assignments on the Colorado River Indian Reservation at Parker. The Bureau planted alfalfa on these assignments, and our people had nothing to do but cut it. They did this the

first year, the second year, and the third year, each year getting a smaller crop. The fourth year the alfalfa did not come up, and our people who had been sheepherders all their lives did not know what to do. Most of them came back to the sheep ranges.

This is not going to happen on the Navaho Indian irrigation project. Realizing that an inexperienced person cannot succeed as an irrigation farmer, the Navaho Tribe on May 25, 1956, established a farm-training school on 1,200 acres of recently developed irrigated land near Shiprock, N. Mex. We hired an outstanding farm manager, Clifford Hansen, as the manager of our school farm. We put all the necessary buildings and bought all the necessary equipment for this farm. We also erected 16 homes for married trainees, consisting of 2 bedrooms, living room, kitchen, and bathroom. We also have a dormitory for unmarried trainees.

Our training farm started off with 12 men in a 2-year course. We now have a total of 24 men in training; the first 6 will graduate in February of 1959, and will be immediately assigned to 120-acre farms recently developed under the Hogback project below Fruitland, N. Mex. We hope to have farms for every graduate of this school immediately after his graduation. Existing projects will take care of the first few graduates, and after that we hope irrigated land will be in the course of development under the Navaho Indian irrigation project.

The course of training at our farm training school takes 2 years. It costs about $5,000 per student, all of which is paid by the Navaho Tribe.

Each trainee is paid a salary of $180 per month plus $5 for each child during his training period; $25 a month, in addition, is put into a savings account for each trainee and is paid to the trainee in a lump sum when he graduates.

The Shiprock Farm Training School started out with a $150,000 appropriation from the tribal council. This year, the tribal appropriation necessary to run the farm is down to $108,000. We believe that in approximately 7 years the training farm will be self-sustaining.

In 10 years' time we believe we will have about 200 graduates from our training farm. According to the construction schedule of the Navaho Indian irrigation project given in the feasibility report of January 1955, the first laterals of the irrigation project will not be constructed until the end of 4 years from the date of commencement of construction of the project. The lateral system will be finished 11 years after commencement of construction and the drainage system 12 years after. Thus, farms will be opening up on the Navaho Indian irrigation project over a period of 8 years, starting 4 or 5 years from now, if the project is authorized at this session of Congress. In order to have trained farmers ready for the project as the lands open up, we plan to expand our farm-training program at Shiprock and increase the number of persons in training. We also hope that our trained farmers will serve as teachers and examples for others of our Navaho people who have not had the full training course.

In this connection we provide night courses at the farm-training school for those people who are not in full-time attendance.

In addition to our courses on farming at the farm-training school, which are given in English and translated into Navaho, so that the training is available for those who do not speak English, we have special adult education to teach English to the farmers and their wives who do not know it. These classes also are open to persons who are not in regular attendance at the farm-training school.

We also have a home economist on our payroll at the farm-training school to teach housekeeping, sanitation, child care, gardening, canning, nursing, first aid, and budgeting to the farmers' wives. Some of these ladies who come from hogans on the sheep ranges very badly need training in how to take care of modern housing and how to make the best use of modern conveniences in their homes, how to budget their money, and how to be successful economic partners of successful farmers. They are getting this training.

The resources committee of the Navaho Tribal Council, of which I am, you might say, the senior member for the minority party—I used to be the chairman prior to the last tribal election—is the board of directors of the Navaho Farm Training School. Certain personnel from the Bureau of Indian Affairs sit with the committee as advisers, but do not have a vote in the decisions of the committee.

We choose Navahos for farm training among those who apply for it as follows: From each 10 or 15 applicants a screening committee consisting of Mr. Hansen, the farm manager; Grey Valeninte, a resources committee member; and myself, choose 3 or 4 men. Then we submit our recommendations to the resources committee, that is the board of directors, which interviews each recommended applicant personally and makes the final selection.

The Shiprock farm training program is financed entirely from Navaho tribal funds, and not in any part by Federal or State funds. While the Bureau of Indian Affairs advises us on the management of this farm, the final decisions on all policies of the farm are made by the Navaho Tribe without Bureau intervention.

We believe that because of our farm training program the success of Indian farmers on the Navaho Indian irrigation project will be better than any ever before attained on any Indian irrigation project.

The Navaho Tribe has also recognized the need for capital for irrigation farmers to get started, and on January 14, 1955, by resolution signified its willingness to set up an adequate revolving credit fund to help such Navaho farmers as could not get credit from regular commercial sources. We have not yet worked out our program in detail because the project is not authorized and it would be premature at this time, but our cash position is now greatly better than it was in 1955, and I am sure that our revolving credit program will be adequate and businesslike.

Gentlemen, we know that no people were ever rehabilitated without an effort on their own part. We are making our effort, and we ask you to help us to the extent that is beyond our own capabilities. If you put your trust in us you will not be disappointed.

Mr. LINEWEAVER. Thank you Mr. Jones.

Mr. Engel, do you want to wait until Senator Anderson comes back or do you want to go ahead?

Mr. ENGEL. No, I can go ahead.

Mr. LINEWEAVER. Edmund Engel, city manager of the city of Albuquerque.

STATEMENT OF EDMUND L. ENGEL, CITY MANAGER OF THE CITY OF ALBUQUERQUE, N. MEX.

Mr. ENGEL. Mr. Chairman and members of the committee, my name is Edmund L. Engel, and I am city manager of the city of Albuquerque, N. Mex. I have been authorized by the Albuquerque City Commission to appear on behalf of the citizens of Albuquerque and present their views in support of the San Juan-Chama transmountain diversion project, which would authorize the diversion of San Juan River water into the Rio Grande River for use of residents of the Rio Grande Valley.

The importance of water resources and their development is of major significance to urban areas. This is especially true of cities located in arid regions such as the upper Rio Grande Valley. Deficiency of water supply in these regions can seriously alter or inhibit the growth pattern of cities.

Albuquerque depends upon the underground reservoir of the Rio Grande depression as its chief source of water supply. Rapid population growth has made it necessary for the Albuquerque City Commission to develop this source to a high degree. Slowly dropping water tables in this area, however, indicate that the underground water supply is definitely limited. The city commission, for years, has searched for a supplemental water supply. The proposed San Juan-Chama diversion project is the most feasible solution to the problem yet found. Development of this water resource is contingent on decisions of the National Government.

This statement gives an estimation of future water needs and the implications of the Federal Government expenditures within the Albuquerque standard metropolitan area.

FUTURE WATER NEEDS

The year 1956 has been selected as the base year on which estimates of future water consumption are projected. Population served by water systems of the Albuquerque standard metropolitan area in 1956 was estimated by the city planning department to be 210,000 people. These persons utilized 56,100 acre-feet of water for nonagricultural purposes, or an average per capita consumption of 195 gallons per day. This figure includes industrial, commercial, and public uses of water. The capacity of the present city water system is 67.3 million gallons per day.

Future water needs are contingent on the size of the population to be served (domestic, commercial, industrial, and public users) and the consumptive pattern of the population. Estimates of future population, based on current growth trends and approximations of employment opportunities within the area in terms of basic and nonbasic employment, indicate that by 1975 the area will have between 475,000 and 562,000 persons.

Population studies used in determining these figures are those by Daniel A. Evatt and Gordon Herkenhoff, Technical Financial Report on the Water and Sewer Systems of the City of Albuquerque, N. Mex., September 1956. Ralph L. Edgel, Projection of the Population of Metropolitan Albuquerque to the year 2000 A. D., dittoed pages with tables, May 17, 1956. Ralph L. Edgel, Projection of Population for

New Mexico Counties to 1965, Business Information Series, No. 3 June 1957.

The curve of population growth is estimated to remain constan or perhaps to increase in steepness of slope during this period.

For cities in arid regions, the average annual rate of increase in pe capita water use is 4 gallons per capita per day.

These data are by Leon W. Jackson, Municipal and Industrial Wate Requirements and Problems, A Symposium on Problems of the Uppe Rio Grande: An Arid Zone River, United States Commission for Ari Resource Improvement and Development, Publication No. 1, 1957 page 17.

This increase results from new developments in sanitary technology new household appliances, air conditioning and refrigeration, an changes in water use habits.

Mr. ENGEL. Albuquerque has been growing at a remarkably rapi rate. This rapid growth will result in a water demand for publi uses, such as parks and recreation facilities of 2.7 times the amoun of water currently used for these purposes. The present trend o consumption for all purposes but agriculture in the Albuquerque area shows an average annual rate of increase in per capita use of 4.1 gallons per day. If this rate is projected to 1975, the rate of wate use will be 275 gallons per capita per day. The per capita wate figures, when adjusted to the population estimate for 1975, indicat a demand for 146,000 to 172,000 acre-feet of water during that yea These figures are summarized in table I.

TABLE I.—*Estimated water use and population, Albuquerque standard metropolitan area, 1956–75*

	1956	1975
Population	210,000	475,000–562,0
Water needs:		
Per capita (gallons per day)	195	2
Total demand (acre-feet)	56,100	146,000–172,0

EMPLOYMENT AND INCOME ANALYSIS

Albuquerque's employment is heavily dependent on Governmen expenditure. In 1956, 22,050 of 71,050 employed persons in the Albu querque standard metropolitan area were employed by units of Gov ernment.

(See Andrew W. Wilson, the Economic Supports of Albuquerqu N. Mex., city of Albuquerque, planning department, unpublishe report.)

Of these, 16,675 were employed by the United States Governmen Income from Government employment accounted for 23.4 percent o all income payments in 1956.

In addition to the direct Government employment mentioned abov Government expenditures for defense purposes contributed indirectl to other employment, principally manufacturing, in the Albuquerqu area. Direct and indirect Government employment accounted fo 33.1 percent of all employment in 1956. When basic employment considered, the percentage is higher. Basic employment is concerne with goods, services, and capital for export to consumers outside th

Albuquerque standard metropolitan area. The National Government alone contributed directly and indirectly 60 percent of basic employment. Direct and indirect income payments by governmental agencies yielded 51.6 percent of total income payments, 33.8 percent direct and 18 percent indirect.

Federal employment has important implications upon water consumption in the Albuquerque area. If the total number of persons employed in 1956 is divided into total population of the Albuquerque area, the resulting ratio is 1 employee to each 2.96 of the total population. By applying this ratio to the number of National Government employees it can be estimated that direct and indirect National Government payroll expenditures provided support for approximately 126,000 persons in 1950. These 126,000 persons used approximately 27,740 acre-feet of water, or 49 percent of the total water used in the Albuquerque standard metropolitan area.

In summary, I would like to emphasize again the importance of Federal Government employment on water consumption in Albuquerque at the present time. But this is not to assume that Albuquerque's future growth will be conditioned by corresponding expansion of Government services. Permits for commercial and residential construction issued during the first 6 months of 1958 totaled $32,250,907, campared with total building costs of $36,327,748 in 1957.

Senator ANDERSON. Does that mean the whole year of 1957?

Mr. ENGEL. Yes.

Senator ANDERSON. So that for the first 6 months it was approximately as much as a whole year, then?

Mr. ENGEL. Yes.

During May 1958, building permits totaling $7,690,826 were issued. When compared with the $2,935,180.40 permits issued in the same month of 1957, this demonstrates a remarkable growth in Albuquerque's economy; and this occurred in a year in which Government operations were not expanded in Albuquerque and the rest of the country was experiencing a recession.

To maintain this rate of growth, water supplies in Albuquerque must be greatly expanded. The city commission has a master plan requiring expenditure of $11 million during the next 5 years for expansion of city water facilities. The gradually falling level of groundwater in the Rio Grande Basin, however, indicates that this source of water is in danger of depletion. Only by obtaining its proposed share of San Juan River water can Albuquerque cope with its greatly expanding needs.

Thus, on behalf of the citizens of Albuquerque, whom I represent, we urgently request this committee to weigh the evidence and remember that your action today will have tremendous significance for the growth and prosperity of Albuquerque and New Mexico tomorrow. We need your help now.

I thank you for the privilege of appearing before you today and the opportunity which was mine, to plead the cause of some 200,000 people in Albuqueque, who speak not only for themselves but for those other persons to the north and south of us who urgently need the water from the San Juan-Chama project. Again, I thank you.

Senator ANDERSON. Mr. Engel, on the basis of the present costs of pumping in Albuquerque and the increased costs when you have

to go deeper, do you think it will be commercially attractive to the city of Albuquerque to acquire this San Juan-Chama water?

Mr. ENGEL. I think it will, our present cost is 17 cents, and 7.7 cents I understand is the cost of the river water. Of course, to that would have to be added some additional costs to the city, either in treating or pumping the water.

Senator ANDERSON. But if it was to be brought in by gravity you would just as well bring it in along the mountains and not have the extreme pumping costs in raising water from the river clear up into the extreme highland area?

Mr. ENGEL. I would hope we could bring it to the elevations and use it by gravity rather than by pumping as we do now.

Senator ANDERSON. There is a possibility of that.

Mr. ENGEL. Yes.

Senator ANDERSON. I do not say it is sure, but it is a possibility.

But in any event, the water would not be priced out of the market, would it?

Mr. ENGEL. I do not think so.

Senator ANDERSON. I know it is hard to prove the handicaps of a city by not having adequate water supply, but recently we have been in an argument with a large industrial concern as to why they did not consider Albuquerque when they established a plant awhile ago. The answer was, "Well, first of all, you did not have that, you did not have this," and one of the things they mentioned was that they were not sure about the water supply, that they knew they could go down and buy some water in the valley and drill some wells and maybe get some water supply that way, if they bought the land and bought the water right and extinguished. But they said, "We do not want to be bothered with that, do not want to litigate. We want to put in a plant and know we have the water."

I assume you feel that having an adequate supply of water would not only be a good guaranty but would be an asset to the community when it attempts to develop industrially and not be dependent upon Federal employment?

Mr. ENGEL. Very much so. With our estimate of 146,000 acre-feet to 175,000 acre-feet, it may be necessary for the coastal States to develop sea water for potable use so that the interior States can have interior water.

Senator ANDERSON. I am not disappointed when you mention that, because I have a saline-water bill that has passed the Senate and one over to the House, that I still hope is going to be passed, which provides for the construction of plants up to a million gallons a day capacity, 4 of them to be that size, 1 a little smaller, so that with those units, you probably would be able to predict the cost of changing sea water into potable water.

I think that one thing alone would contribute greatly to conditions in California, where they now face the possibility of a very expensive water plant in order to take care of their remarkably growing population.

I reminded a man the other day, when he was talking about this, that Los Angeles adds a city the size of Albuquerque every year. It is a little hard to appreciate that that sort of thing is going on, but it goes on.

Mr. ENGEL. Senator, could I present to you a letter from the Albuquerque Chamber of Commerce which I received yesterday? The letter, in effect, asks for favorable consideration of the bill.

Senator ANDERSON. It will be put in the record following your remarks.

LETTER FROM ALBUQUERQUE CHAMBER OF COMMERCE

EXECUTIVE OFFICE,
CHAMBER OF COMMERCE,
Albuquerque, N. Mex., July 7, 1958.

EDMUND L. ENGEL,
City Manager, City Hall,
Albuquerque, N. Mex.

DEAR ED: Ralph Jones, chairman of the Chamber Water Resources Committee, attended a recent special meeting of the board of directors and reported to the session on the forthcoming Senate subcommittee hearings relative to the San Juan transmountain water-diversion project.

He advised the directors that you would present testimony at the hearings in behalf of the city of Albuquerque and as a representative of the area. The board devoted considerable discussion to the matter and concluded with an expression of unanimous and enthusiastic approval of your proposed presentation.

You may be assured that the Albuquerque Chamber of Commerce wholeheartedly endorses your position with regard to these water needs so vital to the future growth of Albuquerque and the continuing progress of the State.

With kindest personal wishes for a successful meeting in Washington, I am,

Sincerely yours,

J. R. KING.

Senator ANDERSON. We will now go to some representatives of the city of Gallup. Mr. John G. O'Connor; Mr. J. T. Banner; Mr. Albert O. Lebeck, Jr.; Mr. Edward Junker; and Mr. Robert C. Noe.

STATEMENT OF JOHN G. O'CONNOR, CHAIRMAN, WATER RESOURCES COMMITTEE OF THE TOWN OF GALLUP, N. MEX.

Mr. O'CONNOR. Mr. Chairman, a few of the members had business at the Department of Interior and are not here. This is Mr. Banner, and this is Mr. Noe, of the city council.

I have submitted for the record a rather comprehensive report and a feasibility report on engineering. At this time I will make a much briefer digest of the statements in there, for the sake of brevity.

Senator ANDERSON. Mr. O'Connor, we will take this report on water supplies for the town of Gallup as submitted to the board of trustees and make it a part of the files of the committee, so that it is available to us when we want to refer to it in connection with the development of Gallup's need for additional water.

(The report is on file with the committee for reference purposes.)

Mr. O'CONNOR. I will only refer to the larger report once.

I am John G. O'Connor, chairman of the water resources committee of the town of Gallup.

I would like to take this opportunity to present the other members of the delegation:

Mr. Albert O. Lebeck, Jr., city attorney; Mr. Robert Noe, member, board of trustees, town of Gallup; Mr. Edward Junker, member, water-resources committee; and Mr. J. T. Banner, of J. T. Banner & Associates, who has been employed by the town of Gallup to develop the plan for the utilization of the water requested at this hearing.

We are here on a multifold mission. We wish to support the bill known as S. 3648. Specifically, we wish to support that s of the bill relating to the Navaho Indian irrigation project and portion relating to the San Juan-Chama project and, most particu section 4 of the bill which provides for municipal and indu water users.

In reference to the first item, we would like to state that in ad to the evidence already on the record in support of the Navaho I irrigation project, we would like to add the fact that we firmly b that this project should be authorized and, in support of this po I would like to quote two recent leaders of the Navaho Tribe of In

A few years ago, Sam Ahkeah, then chairman of the Navaho T Council, said, and I quote:

> This will enable us to help support ourselves with the dignity and satisfaction to which every citizen is entitled—

and, Mr. Paul Jones, present chairman of the Navaho Tribal Co who said in March of 1957, at the Arizona Industrial Workshop again I quote:

> I should like to present some figures pertaining to my own tribe, the Na During 1955, we enjoyed a per capita income of $450, while the avera capita income for the Nation as a whole was $1,950. Frankly, ladie gentlemen, those figures tell the whole story as to why we Indians are inte in economic development.

Without overburdening the record, we feel that these two state by two responsible Navaho tribal leaders tell the entire story an the people of Gallup, N. Mex., concur. We believe that these p have the capacity for development if they are provided wit same basic tools as the rest of the Nation. One of these tools is The passage of this bill will assure that these first Americans w provided with this tool.

I would like to refer here briefly to the major report to say th as a nation have a dual role here: first, a responsibility to the ge taxpayer to provide programs for these people that will give the same economic advantage that the rest of the Nation enjoys and doing relieve the general public of the great, dollar-consuming grams that are required because these people, due primarily to of water, are unable to compete in the market place. Secondl have a moral obligation to these first Americans to help them to themselves, which is the basic principle of our American economi tem, to compete for jobs and to produce goods, both agricultura industrial, which will find their way into the great American ma

We in Gallup who deal with the general public in the cou daily activity constantly come in touch with foreign visitors an aware of a third and possibly more important reason for prov these opportunities. The reason is that the entire world is wat what we do here today. Constantly, representatives from prosp as well as those nations not so fortunate come to Gallup, and visitors express amazement that in a nation of such great prosp a segment of our population should live under the conditions ev among our Indian people.

When we, as a nation, make overtures to others to accept ou tion's philosophy, they look over our shoulder to see what we a

ing to help our own people who are not fortunate enough to share in the obvious wealth of our Nation.

The passage of this bill will give us the opportunity to extend our hand in aid to develop an economic base for nearly 90,000 Americans, and ultimately it is what we do at home, for our own people, that will reflect in respect from the rest of the world and give lifeblood to our national strength.

Our second mission is in support of the San Juan-Chama project in its initial phase. We believe that this project is vitally important to the overall, total economic development of the great State of New Mexico. The economy of all of the communities of New Mexico, including Gallup, is interdependent, and it is the considered opinion of all farsighted people in the area that the really lasting prosperity of this section will be determined by a joining of hands, even extending across the borders of the four States of New Mexico, Colorado, Utah, and Arizona in a concerted effort for complete area development. The authorization of the San Juan-Chama project as a part of this bill is fundamental to the creation of this area's development concept. We, therefore, urge authorization for the San Juan-Chama project.

In developing the Navaho Indian irrigation project, the Secretary of Interior is authorized to provide capacity for municipal and industrial water supplies or miscellaneous purposes over and above the diversion requirements for irrigation.

We are here concerned in developing the concept of Gallup, N. Mex.'s need for an adequate supply of municipal and industrial water from the Navaho Dam project of the upper Colorado River storage project, specifically at least 15,000 acre-feet. It will establish the inadequacy and limitation of the present system and submit feasibility and cost of the establishment of this new source of supply.

Gallup, a city of betwen 12,500 and 14,000 population, is the county seat of McKinley County, N. Mex. It is located in the northwest quarter of New Mexico at the junction of U. S. 66 and U. S. 666, approximately 20 miles east of the New Mexico-Arizona State boundary, and 25 miles west of the Continental Divide at an elevation of 6,500 feet above sea level.

Gallup is the trading center for west-central New Mexico and east-central Arizona, including the major portion of the great Navaho Indian Reservation. Gallup serves a primary trade area of 9,258 square miles and is commonly referred to as the Indian Capital because the vast trade area is predominantly populated by Indian people.

Gallup economy was originally built upon the coal and railroad industries. Although these two factors continue to exist, they represent a lesser part of the total industrial economy. With the advent of an adequate supply of water at reasonable cost, research will show that the coal industry could be revitalized.

Other principal industries and factors that represent substantial contributions to Gallup's present economic condition include: (1) wholesale and retail mercantile; (2) Indian arts and crafts; (3) tourist facilities; (4) oil, gas and uranium development; (5) Government installations.

All of these environmental factors and conditions are indicative of a prosperous, expanding economy for the future, with an adequate, long-term water supply.

Past records of population from United States Census rec
their percentage of growth increases are basic records upon w
future may be reasonably estimated.

This estimated population trend for Gallup is considered
ble and is presented as a guide for timing future water needs.
the city grow at a more rapid rate than indicated, adequate w
be required at an earlier date.

The future population predictions for Gallup include:

1958	12,500	1965	
1960	15,000	1970	

Population increase 1940–55—4,459 equals 63.5 percent.

Population increase 1955–70—12,500 equals 108.5 percent.

Gallup has a trade area population of 70,180. Gallup is
community of any consequential size in this area.

The greatest percent of this population is comprised of Na
Zuni Indians with an extremely low per capita income, prob
lowest of any large ethnic group in the United States. The
mand for economic development for this large group of Ame
reinforced by the fact that this group is growing in numbe
alarming rate. The Navaho Indians numbered some 45,0
than 15 years ago. Today they number 90,000. By 1980, s
information indicates that the Navahos will number 170
Bureau of Indian Affairs population projections provide th
year 2000 this group of Americans will number 300,000 inc

It is a well-known fact that under present conditions the 1
lion acre Navaho Reservation can barely provide a living fo
50,000 people, and this a meager existence. Water for irriga
increase the maximum potential for the reservation in term
nomic opportunities, but the real future rests with diversifi
industrial plant development.

Much of the responsibility for providing these light indus
portunities will rest with the towns commonly referred to
pheral to the reservation. Gallup is classed in this group.

Studies show that the factors considered for industrial pl
tion are: (1) market; (2) raw materials; (3) labor pool:
ties—fuel, power, water; (5) transportation; (6) taxes; (7
(physical); (8) climate (industrial, desire to develop by com

Of these 8 factors we will find that the greatest hindran
dustrial development in Gallup, N. Mex., is the lack of a gu
water surplus that can be channeled into industrial use.

Water is the greatest drawback at the present time. T
neering reports submitted as a part of this statement show
gerous situation that exists and dramatically points to one
fact is that there is no water reserve that can be allocated to i
users from present sources, and the domestic supply is dan
low. The only salvation to the future development of this
area rests with the authorization of this project as a whol
particular the provisions of section 4 of S. 3648 which prov
the Secretary of Interior be authorized to enter into co
agreements with municipalities to provide from the Nava
water supply to municipal and industrial users.

The town of Gallup, N. Mex., is aware of the desperate
that exists in regard to its water supply and the seriousne

future consequences unless relief is provided from some source other than underground. The only other known source is from the Navaho Dam as a part of the upper Colorado River storage project.

Knowing this, the town of Gallup has filed with the State engineer's office of the State of New Mexico for an allocation of 15,000 acre-feet of water for municipal and industrial use.

We are convinced that on a 50-year program it will be more economical to enter into this program than to continue to exploit our present underground sources to the point of eventual depletion.

On the basis of the foregoing statement, the town of Gallup recommends your favorable consideration of the projects and provisions of S. 3648.

Senator ANDERSON. Thank you, Mr. O'Connor.

Did I understand you believe that a certain amount of water in these projects can be and should be reserved for use by the town of Gallup?

Mr. O'Connor. Yes, sir.

Senator ANDERSON. And do you think the town of Gallup would be able to contract for it on a firm basis so that that would contribute to the economic feasibility of the general project?

Mr. O'CONNOR. Yes, sir. We believe we can pay for this project out of revenues derived from the sale of the water, and we have been faced in the past with numerous opportunities for industrial activity and due to the lack of water have had to turn them down.

Senator ANDERSON. You feel reasonably sure that the Navaho people will themselves tremendously benefit by this development?

Mr. O'CONNOR. Yes, I do.

Senator ANDERSON. And that the tribe will continue to grow and therefore need more than ever the benefits that will come from the Navaho project itself?

Mr. O'CONNOR. I believe so.

Senator ANDERSON. Mr. Banner, do you have a statement?

STATEMENT OF J. T. BANNER, CONSULTING ENGINEER FOR THE CITY OF GALLUP, N. MEX.

Mr. BANNER. I have a short statement, Senator.

Mr. Chairman and members of the subcommittee, I am J. T. Banner, consulting engineer of Laramie, Wyo. I have been retained by the town of Gallup during the last 2½ years in connection with their municipal water supply.

At the present time, Gallup obtains their water supply from two well fields, immediately adjacent to the town on the east and west. Although it is evident that there has been some overdraft in the past on the east-well field, it is estimated that the sole longtime water yield that can be obtained from the town's two well fields is not less than 2½ million gallons per day, and may be as much as 3½ million gallons per day. The quality of the water obtained from the present sources of supply is generally satisfactory; however, the water from the east-well field is considerably harder than is desirable for a satisfactory municipal water supply.

Gallup's present population is about 12,500. Estimated future Gallup populations are:

1960	13,500	1970	20,100
1965	16,100	1975	25,100

The present and future water needs of Gallup are:

	Gallons per day		*Gallons per day*
Present	2,200,000	1965	3,720,000
1960	2,400,000	1975	5,500,000

From comparison of the 3½ million gallons per day maximum that is available from the town's present well sources, with the town's future water needs, it appears that the town will have to go to a new source of water supply sometime between 1965 and 1970.

Studies over the last 3 years indicate that the San Juan River is the most reliable permanent source of supply that is available to the town of Gallup. Although the San Juan River is some 100 miles from Gallup, water from the San Juan River will be delivered through the Navaho irrigation project to a point about 55 miles north of Gallup.

It is contemplated that the town of Gallup will obtain storage capacity in the Navaho Reservoir on the San Juan River. The water will be carried from this reservoir through the Navaho irrigation project canal system to a storage reservoir in the Newcomb area. This storage reservoir would be constructed by the town. With the storage in the Newcomb area, the town's water could be carried through the project canal system without increasing the capacities over those required for irrigation needs.

Water would be delivered from the storage reservoir in the Newcomb area to Gallup by pumping through a 56-mile 18-inch-diameter pipe. The facilities would include five pumping stations. Treatment-plan facilities would be provided at Gallup.

It is contemplated that the storage reservoir in the Newcomb area will have a capacity of about 8,800 acre-feet. It would be possible to provide untreated water to Navaho communities and schools near the proposed facilities.

The estimated cost of the storage facility at the Newcomb area, the pipeline and pumping facilities, and the treatment plant is about $5,600,000. This cost does not include the cost of storage capacity at Navaho Reservoir or any of the cost of conveyance through the Navaho project canal system. These facilities are to be paid for from revenues derived from the sale of water to Gallup users. On the basis of the above-estimated construction cost, the cost of water to Gallup water users would be between $0.25 and $0.35 per 1,000 gallons.

The fact that this proposed supply system for the town of Gallup is entirely dependent upon the construction of the Navaho Dam and the Navaho project and that much of the industrial expansion in Gallup will provide employment for the Navaho people, strongly indicates that the Gallup supply system should be considered as a supplement to the Navaho project.

The town of Gallup has consistently maintained a position of reserving a minimum of 15,000 acre-feet as part of the 224,000 acre-feet proposed to be developed for municipal and industrial purposes in addition to the San Juan-Chama diversion and the Navaho project proper.

We therefore respectfully request that the requirements for the town of Gallup be included for diversion at the Navaho Dam through the Navaho project canal system; and that the delivery of the amount of water required by Gallup be made to a point near Newcomb as a part of, or supplement to, the Navaho Dam and the Navaho project proper.

We wish to offer our concurrence in the provisions of S. 3648 dated April 21, 1958, and to urge the favorable consideration of this bill.

Senator ANDERSON. Thank you.

Mr. Lineweaver, would we have to ask the Bureau of the Reclamation to give us some comments on this proper policy?

Mr. LINEWEAVER. Yes.

Senator ANDERSON. And if they look at it with favor, to suggest any language of the report, or anything of that nature that might give these people some encouragement?

Mr. LINEWEAVER. Yes.

Senator ANDERSON. As I understand, you do not propose that the Navaho Reservoir be increased any to take care of the town of Gallup?

Mr. BANNER. No.

Senator ANDERSON. And you do not propose the dam be increased any?

Mr. BANNER. That is correct.

Senator ANDERSON. Therefore, without any additional expenditure to the point of actual diversion down close to the Newcomb storage plant, you will not require any change whatsoever in the Navaho Dam project or in the Navaho irrigation project?

Mr. BANNER. That is correct.

Senator ANDERSON. You would then construct these other facilities at your cost and bring the 15,000 acre-feet of water into Gallup?

Mr. BANNER. That is right.

Senator ANDERSON. It appeared to be a reasonable proposal, and Mr. Lineweaver arranged to have the Bureau of Reclamation or the Irrigation Service give us a comment on it. It will help us when we get to it.

Now Mr. O'Connor, did you have additional statements?

Mr. O'CONNOR. I have three additional statements: from Mr. Lebeck, the city attorney; Mr. Junker, of the water commission; and Mr. Noe, of the board of trustees.

Senator ANDERSON. Very well. Mr. Lebeck.

STATEMENT OF ALBERT O. LEBECK, JR., ATTORNEY FOR THE TOWN OF GALLUP, N. MEX.

Mr. LEBECK. Mr. Chairman and members of the subcommittee, as the present town attorney of Gallup, N. Mex., my purpose in accompanying this delegation to Washington is to learn firsthand the probable requirements of the Government in obtaining water for municipal and industrial purposes for the town of Gallup in the event the legislation pending before this committee is enacted and to try and establish Gallup's right to such water.

The town of Gallup, in the past, has made every effort to obtain some priority or right in the water to come from Navaho Dam; it has obtained tentative understandings with the Navaho Tribe for rights-of-way for transmitting such water; it has employed engineers to make exhaustive studies of the feasibility of such a program; it has repeatedly made application with the State engineer for such water—all as shown by the various reports submitted to this subcommittee by this delegation. However, to date the town of Gallup has been unable to obtain or establish any real priority that would enable it to proceed with its plans for receiving water from such a project and know that upon completion of their plans the water would be available. Granted that the present bill authorizes the Secretary of the Interior to enter into contracts for the sale of water to municipalities, it would be my request that Gallup's municipal water be provided in the present legislation in the amount of not less than 15,000 acre-feet subject, of course, to the town complying with such regulations and requirements of the Department of the Interior as the Congress may provide.

Senator ANDERSON. Thank you, Mr. Lebeck.

Mr. Junker.

STATEMENT OF EDWARD JUNKER, INDIAN TRADER, MEMBER OF THE WATER COMMISSION, AND MEMBER OF THE PLANNING COMMISSION OF GALLUP, N. MEX.

Mr. JUNKER. Mr. Chairman and members of the subcommittee, I am appearing here today to ask the committee to give every consideration to the request from Gallup, N. Mex., for water for municipal and industrial purposes from the Navaho Dam. It is very important that Gallup receive a permanent and adequate supply of water so that it may expand normally. Every major industry that has inquired as to the feasibility of being located in or around Gallup, requires a definite, adequate, and permanent supply of water.

We have adequate shipping facilities, plenty of room for expansion and a very large Indian labor supply who are badly in need of work of a permanent nature. The Federal Government would eventually save large amounts of money that are now being expended on Indians in the Gallup area if the Indians could be placed in permanent jobs. Until we in Gallup have an adequate and permanent source of water so that industry can be located in and around Gallup, and supply work for the large Indian population, the problems and obligations of the Federal Government will increase yearly.

Any consideration that you may give us in this necessary and highly important matter would certainly be appreciated by the population of the entire area.

Senator ANDERSON. Thank you, Mr. Junker, for your statement.

Mr. Noe?

STATEMENT OF ROBERT C. NOE, MEMBER, BOARD OF TRUSTEES OF THE TOWN OF GALLUP, N. MEX.

Mr. NOE. Mr. Chairman and members of the subcommittee, as a member of the board of trustees of the town of Gallup, my statement is in regard to our town on a local basis. The entire community is aware of our current need for more water for domestic, economic and industrial expansion. To verify this fact, I am authorized at the present time by resolution of the board of trustees of the town of Gallup, duly executed by the mayor to represent the town here in any contractual agreements between the town and pertinent parties relative to obtaining a water supply from the Navaho Dam.

From the foregoing engineering data presented and the current requirements of our town, we will need to obtain our water supply from a source other than our present well field during the coming 5- to 10-year period. For example, there are periods when paving contractors are not permitted to purchase water for construction purposes due to the present requirements for domestic needs. It is, therefore, our considered opinion that even though we have lately been limited in respect to economical and industrial expansion, and we propose new wells each year, we do not have a sufficient water supply source for future domestic growth. As an official delegation from the town of Gallup we sincerely request your careful consideration of the legislation now pending before this committee, and pledge our wholehearted support to all municipalities of New Mexico who are in dire need of an adequate water supply for future development.

Senator ANDERSON. Thank you, Mr. Noe.

Mr. O'CONNOR. That completes our presentation, Mr. Chairman.

Senator ANDERSON. Thank you; that was a good presentation. I am happy you were in here, and I do hope that this project may be carried out, because I think, like you, that with the development of the Four Corners area and with the development of the uranium grants, realizing now that 70 percent of all the known deposits of uranium in the United States are only a short distance from Gallup, that these calculations of yours were not bad calculations at all, but good ones. They may be a little conservative when you get through with them.

Mr. O'CONNOR. We would like to express our appreciation to the committee for your indulgence.

Senator ANDERSON. Now we go to the New Mexico water users. Mr. Cater.

STATEMENT OF W. P. CATER, CERRO, N. MEX.

Mr. CATER. Mr. Chairman and members of the committee, I am W. P. Cater, of Cerro, Taos County, N. Mex., where I have lived and have been engaged in the farming and ranching business for more than 30 years.

I am a member of the board of directors of the Llano Irrigation Co. of Cerro, N. Mex., and am here today as their duly selected representative, to present to you their wholehearted approval of the bill under consideration, and, on their behalf, to urge its enactment.

I am also a member of the State soil conservation committee. I am chairman of the Taos Soil Conservation District, a former member of the New Mexico Senate, and chairman of the Taos County Economic Development Committee. I mention these past and present connections as evidence that my knowledge of the irrigation situation, and of the economic conditions of Taos County, is gained from personal participation in many activities in the past, in an attempt to better the economic condition and raise the standard of living of our people.

My brother and I operate a 7,500-acre ranch of which we irrigate about 500 acres from surface water rights and from wells. We raise cattle, hogs, and grain and hay to feed livestock. We are faced with the same problems as are our neighbors with smaller acreages.

Taos County contains about a million and a half acres, has a population of over 17,000, and lies in a mountainous region with the altitude

ranging from 6,800 feet to 13,000 feet. The irrigated area averages about 7,000 feet in elevation. The growing season is about 100 days, and the average precipitation is 14 inches. The irrigated farms are small, ranging in size from 2 acres to about 50 acres, but there are a few farms with irrigated acreage up to 320.

In my area around Cerro in the northern part of the county, there are three irrigation companies, which are really community ditches owned and operated by the water users and landowners themselves. There are, in these systems, 250 water users who irrigate about 5,000 acres. The population of the area is about 1,800. The quality of the soil is good for the most part and is very productive if given sufficient water. The crops now being raised are mostly grain and hay which is fed to livestock that are grazed in the adjoining mountains in the summer.

The source of water for irrigation of the area is from direct flow rights on the small streams that come down from the nearby mountains. The only storage water is 700 acre-feet in Cabresto Lake, owned jointly by the Llano Irrigation Co. and the Cabresto Lake Irrigation Co., of Questa. Many of these rights date back to the early Spanish settlement of the area. But due to financial inability to construct storage, the surplus floodwaters have been filed on by water users lower down in the Rio Grande Valley, and it is now impossible to impound the water that is needed in the area for late irrigation.

There is always an oversupply of water in the streams in the spring, and usually a severe shortage in the latter part of the growing season. As a consequence, the farmers are forced to raise those crops that will mature early, and this type of crop usually does not have a high cash value. So it is necessary in many instances for the head of the family, and often the oldest son and daughter, to leave their farm for the mother and smaller children to operate, while they seek employment to add to the meager family income in order that they may continue to exist at their present very low standard of living.

The per capita average income for our county is about $650, while for the State as a whole it is about $1,600 against a national average per capita income of $1,920.

You can see that the situation in the area is bad. We believe, therefore, that the San Juan-Chama transmountain diversion, and in our case the Cerro unit of the project proposed by the bill will provide a way to greatly improve the economic condition of our people.

This act would permit construction of storage in our streams so that we could hold back the heavy spring runoff and use it for irrigation in the late part of our growing season. The water so stored would be replaced in the Rio Grande for existing rights lower down by water brought over from the Colorado River through the Chama River. This increased storage of water in our area would permit our people to grow commercial vegetables and similar crops having a high cash value and thereby greatly relieve the present economic distress. This type of farming also requires a considerable amount of hand labor, and would furnish employment locally so that the people would not need to go away from the area to seek employment elsewhere.

We also believe that the construction of this project as set out under the present bill would, by rebuilding the present irrigation

system with good structures and better ditch grades, provide for a much more efficient use of the water, and a much greater degree of conservation of both soil and water.

I believe that the construction of the San Juan-Chama transmountain diversion project and the Cerro unit would permit storage of water in our area during the heavy spring runoff and assure us of sufficient water to properly irrigate the present acreage throughout the entire growing season. And that it would, through additional storage and more efficient management of the water, permit putting into production from 7,000 to 8,000 acres of new land that is now in sagebrush.

The assurance of sufficient water throughout the growing season would stop the present practice of excessive application of water early in the season, with the resultant leaching and loss of soil fertility. This would mean higher yields and better quality and thereby increase the farmer's income.

A more diversified type of farming would be possible under this project than is possible under existing conditions. Our area, because of the fact that we have practically no commercial industries, is economically in a very bad way, and we believe that the project provided for by this bill would be a big "shot in the arm" in our area. And so, I urge your favorable consideration for the measure you have before you, which provides for the San Juan-Chama transmountain diversion.

I thank you for your courtesy and the opportunity to appear before you in behalf of this bill.

Senator ANDERSON. Now, Mr. Cater, this area in Taos County is one where a great many people are receiving relief of various kinds, is it not?

Mr. CATER. That is right, sir.

Senator ANDERSON. Do you believe that the amount of water that you have provided to be diverted under the Cerro project would permit these folks to have decently productive farms?

Mr. CATER. That is right. It would allow farms to resume production, more employment for the local people, and also raise their standard of living and improve their diet immensely.

Senator ANDERSON. This is not a new area as far as irrigation is concerned, is it?

Mr. CATER. No, sir. It is a very old area.

Senator ANDERSON. It had been irrigated for at least 200 years?

Mr. CATER. That is right. It is one of the early Spanish settlements.

Senator ANDERSON. Thank you very much.

Now, Mr. Martinez.

STATEMENT OF ANDRES A. MARTINEZ, TAOS COUNTY, N. MEX.

Mr. MARTINEZ. Mr. Chairman and members of the committee, my name is Andres A. Martinez. I own and operate a small 70-acre irrigated dairy farm in the Taos Valley of Taos County, N. Mex. I was selected by the water users of this area to represent them on behalf of the San Juan-Chama transmountain diversion project. I am here to present, on their behalf, their support of the bill being considered here today and to urge your favorable consideration.

If you will permit me a personal reference, I will state that I am a water user under the Acequia del Monte, a small community ditch system near Taos. I am also a member of the county agricultural stabilization committee, a member of the board of directors of the County Farm and Livestock Bureau, and a cooperator of the Taos Soil Conservation District and also of the agriculture college and the county extension services.

I make my living entirely from my farming operations.

I mention these activities to show, in a measure, that I am acquainted with the agricultural and irrigation conditions of the area I represent.

To assist you in considering this bill, I wish to present the following information:

Taos County is situated in the north-central part of New Mexico. It has a population of 17,146 according to the 1950 census. It covers an area roughly 78 miles long and 38 miles wide containing 1,443,840 acres. Of this acreage, about one-half is privately owned land and most of the other half is owned by the Federal Government.

Of the privately owned land, approximately, 40,000 acres are under irrigation. There are 1,200 irrigated farms ranging from 2 to 50 acres, but a few farms with acreages up to 320. Irrigation is by direct diversion from the numerous streams that flow into the Rio Grande from the Sangre de Cristo Mountains.

The climate is typical of big Southwest: low annual precipitation, high evaporation, with a short growing season. Elevations in the district vary from 6,800 to 13,000 feet, with the average of the cultivated areas around 7,000 feet. Precipitation in the irrigated areas averages between 13 and 16 inches. Most of the summer rains come in July and August.

The soils in the irrigated areas are chiefly alluvial soils and highly productive with irrigation.

The area that I represent is in the central part of Taos County. It is one of the oldest settled regions of the United States. In this area there are approximately 14,000 acres under cultivation served by 62 community ditch systems. These ditches divert irrigation water from the numerous streams that flow into the Rio Grande from the Sangre de Cristo Mountains.

Water rights in this area date back to 1740, when the first agreement was reached with regard to the use of water between the Pueblo de Taos Indians and the Spanish Colony of Taos. Various water rights were filed after that date, and all water use prior to 1907 was adjudicated under the Rio Grande compact prior to the construction of the Elephant Butte Dam. And this was when our water troubles started.

Studies made indicate that enough water would be available to properly irrigate around 20,000 acres in this area. At present there is not enough water to properly irrigate the present acreage of 14,000 now under cultivation. This is because under provisions of the Rio Grande compact we cannot build storage reservoirs but must deliver it to our neighbors from the lower Rio Grande of New Mexico and Texas.

We have an oversupply of water in the spring but the supply is short during the critical part of the growing season, June-July. This has led to a practice of applying large amounts of irrigation water in

the early part of the season, resulting not only in injury to the land and crops but also inefficient use of water resources.

Under present conditions, heads of farm families depend almost entirely on outside work for living. However, if all these communities had sufficient irrigation water, the farm families could raise garden crops to can and freeze. We could even sell to local merchants who now ship fresh vegetables from Arizona and California. With plenty of irrigation water, there would be worlds of opportunities for all these people to stay in their lovely valley instead of having to go, sometimes with their entire families, to obtain seasonal labor in other areas. Water is needed. We have the land, but where is the water?

We could raise other crops such as beets, potatoes, onions, strawberries, apples, and numerous others in addition to our irrigated pastures, alfalfas, and small grains.

I know what can be done. On one farm north of Taos Valley where there is a continuous supply of water they raise plenty of food for a large family. They have a freezer overflowing with meats, green beans, asparagus, strawberries, raspberries and more. This family eats well—and why? Because they have water. Why does this family live in plenty, with a well-rationed diet, and others live on dry pinto beans, powdered chili, and potatoes which they buy in the stores? Water is the answer.

The portion of the waters of the San Juan which would be diverted into the Rio Grande would accomplish the following in my area:

1. Permit the storing of irrigation water during the spring flood season.

2. We would be assured of enough water to properly irrigate, throughout the growing season, the acreage now under cultivation.

3. It would reclaim 7,000 acres of potentially productive land now in low-producing sagebrush rangeland.

4. In allowing for storage of water for future use, it would prevent the overuse of early surplus water.

5. It would encourage market gardening, and so, in increasing salable output from the farm, the income of the farmer would be increased by a considerable amount.

Mr. Chairman and members of the committee, I wish to thank you for the opportunity to appear before you and urge that you give this bill your favorable consideration.

Thank you.

Senator ANDERSON. Thank you, Mr. Martinez, for a fine statement. Mr. Maestas.

STATEMENT OF FILIBERTO MAESTAS, ESPANOLA, N. MEX.

Mr. MAESTAS. Mr. Chairman and members of the committee, I am Filiberto Maestas. My hometown is Espanola, N. Mex. I am manager of the Santa Cruz Irrigation District. The people from my home area sent me here to plead for Government assistance in order to obtain supplemental waters so that we may be able to make a living on our small farms.

Realizing that there is no other source from where we can obtain supplemental water other than that to which we are entitled under the terms of the Colorado and upper Colorado River Basin compacts, we naturally are vitally interested in the San Juan-Chama diversion project.

1. DESCRIPTION OF THE AREA

The topography of our area is rough and varied. The range in elevation is from 5,500 feet on the shores of the Rio Grande to 13,700 feet at the eastern boundary which is formed by the Sangre de Cristo Mountains.

The drainage system of the Santa Cruz stream covers an area approximately 150 square miles. The principal tributaries of the river are the Rio Medio and the Rio Frijoles. The headwaters of the branches are on the steep western slope of the Sangre de Cristo Mountains and are perennial streams. The Rio Santa Cruz discharges into the Rio Grande 10 miles to the east at the town of Espanola.

The valley proper is a stretch of irrigated bottom land a half mile wide at its eastern portion and about 10 miles long on the eastern borders of the Rio Grande. It is that portion that lies east of the Rio Grande that would tremendously improve if we were to obtain supplemental water.

2. RESOURCES OF THE AREA

(a) Land

At present the total tilled acreage in the valley is about 4,500 acres, the cash crops being fruits, alfalfa, and truck farming. Fully 75 percent of the land is utilized in the production of these crops. Inasmuch as there is little grazing land available to the population, corn and alfalfa are important sustenance for domestic livestock.

(b) Livestock

Stockraising for commercial purposes is negligible in the area. Practically all livestock is used domestically.

(c) Craft

There are approximately 100 weavers in the entire valley. The weaving of Chimayo blankets is one industry which brings outside income. The bulk of the weaving is done during the winter months when the farmland is idle. The finished products are sold to tourists, and some are shipped to Arizona, Colorado, and other States.

(d) Wage work

Due to the uncertainty of our water supply, hundreds of local people leave home and go to other States to work in mining camps, beetfields, potato fields, and other lines of work.

Most of this labor migrates to the States of Colorado, Wyoming, Montana, California, and Utah. Industrial stagnation in these labor markets and State restrictions on migratory labor have reduced this resource in the last few months. Mr. M. D. Garcia, director of the department of employment, advises that his office this year has sent about 200 men to other States to be employed, and that fully 75 percent of these men could remain at home and farm if only they had the security of a water supply.

3. GOVERNMENT ASSISTANCE

(a) Welfare department

The director for the welfare department for Rio Arriba County informs me that his office handles 1,671 cases of direct relief at an approximate cost of $101,758 per month to the Government, and that a

good portion of these people could become self-sustaining if their water supply was augmented in some way. This fact itself would convert the San Juan-Chama diversion project into a self-liquidating enterprise.

(b) *Agriculture conservation program and Farmers' Home Administration*

Mr. Clair Seeley, Director for Farmers' Home Administration, and Mr. Phil Maestras, Jr., manager, agriculture conservation program for Rio Arriba County, advise as follows:

Out of 77 loans extended by Farmers' Home Administration, 22 or about 28 percent are delinquent in their payments due to the fact that perennial streams which sometimes furnish the water to raise the winter feed run dry, thereby leaving only the summer range to be utilized in the northern part of the county.

The office of the agriculture conservation program in the year 1956, which was one of the driest years on record, liquidated eight cases of crop failures due to complete lack of water or the drought.

4. INDIAN LAND

When the San Juan-Chama project materializes, at least about 2,000 acres belonging to the Indians of San Juan pueblo can be utilized to produce vegetables, fruits, and other farm products that certainly some day will raise the living standards of the Indians.

5. NEEDS OF THE AREA

(a) *Adequate water supply*

As I previouslystated in part two of my statement concerning land, we are trying to farm about 4,500 acres of land with a small reservoir that has a capacity of about 4,000 acre-feet, and it takes on an average of about 3 acre-feet of water to produce a crop in our area. The Santa Cruz Irrigation District has a standing permit from the State engineer's office for New Mexico to impound 10,000 acre-feet of water, but due to economical reasons the dam has not been built to impound the said amount. In the year 1956, when the farmers of our valley started planting their crops, we had 2,050 acre-feet in storage, and the inflow during the year was 6,780 acre-feet, making a total of 8,830 acre-feet. Considering that we lose at least 20 percent through seepage and evaporation, it left only 1.57 acre-feet available for constructive use, which resulted in a serious loss to the inhabitants of our valley.

In essence, the people of Llano and the area east of Espanola strongly and respectfully request the Congress of the United States to authorize the San Juan-Chama diversion project, and that once the San Juan-Chama project becomes a reality, as we hope it will be, a high line canal be constructed starting at a point about 15 miles northeast of the town of Espanola on the east bank of the Rio Grande which will convey water to about 2,000 acres of Indian land and about 2,800 acres of the east end of the Santa Cruz Irrigation District.

In conclusion I wish to express my gratitude for this opportunity to appear on behalf of the people of the Espanola area and to urge your early and favorable action on Senate bill 3648.

Senator ANDERSON. Mr. Maestas, you have been concerned with irrigation and reclamation for a good many years, have you not?

Mr. MAESTAS. Many years, Senator, yes.

Senator ANDERSON. You have been very much interested in the development of the Rio Grande area?

Mr. MAESTAS. I always have, Senator. I am always watching for the bills which are introduced here.

Senator ANDERSON. I am very happy to have you come in here and testify.

Mr. MAESTAS. Thank you, Senator.

Senator ANDERSON. Mr. Williams and Pablo Roybal.

STATEMENT OF W. A. WILLIAMS, JR., TESUQUE, N. MEX.

Mr. WILLIAMS. Mr. Chairman and members of the committee, my name is W. A. Williams, Jr. I am a farmer, born, reared and still living in Tesuque, which is located in the Pojoaque watershed of New Mexico. I am chairman of the Pojoaque Soil Conservation District, chairman of the New Mexico State Soil Conservation District, and serve on numerous local committees. Please feel free at any time to stop and question me. I have and will continue to voluntarily contribute a large portion of my time in helping to solve a problem in which you gentlemen can be of material assistance. Authorize the construction of the San Juan-Chama transmountain diversion project.

The valley of and the tributary valleys of the upper Rio Grande in New Mexico, which will receive supplementary irrigation water from the diversion we are speaking of, is the oldest continually inhabited portion of the United States. It is a beautiful land of high mountains, steep foothills, and narrow, fertile, irrigated valleys. We have an excess of spring runoff water, not enough irrigation water during the vital late spring and early summer months. Providing the storage called for in this authorization is a vital contingent to the continued existence and expansion of this entire area.

The phenomenal population growth of north central New Mexico has intensified the critical need for additional water for farm, urban, and industrial use. The lack of water during the growing season in the tributary irrigation units, as well as the Middle Rio Grande Conservancy District, has made the situation most acute economically. Two problems with which you are vitally concerned are relief rolls and unemployment. These serious problems are brought about in this area, to a great extent, by the lack of authority to store excess water to be used when it is needed during the growing season.

To my knowledge, owners of small farms, some with as little as $100 a year agricultural income per family, hired out as farm laborers for as little as $1 and $2 a day up until World War II. Today it is still possible to hire these small farmers and their grown sons for $4 a day. In few cases do they receive more than $6 a day for 10 and 12 hours' work.

Gentlemen, you are aware that this condition exists in other parts of the world. The area under discussion is recognized as an economically depressed area of the United States. We cannot afford to overlook this situation. The San Juan-Chama diversion will materially assist in correcting this unspeakable evil and will allow future urban, military, and industrial growth.

The Rio Grande compact prohibits the construction of new facilities for storage of runoff water, for use in the tributary irrigation units. This compact will not allow supplemental water for the Middle Rio Grande Conservancy District, who also lose a substantial part of their crops for lack of summer irrigation water. The San Juan-Chama project would make additional water available to the Rio Grande, so that through exchange agreements water could be stored and replaced to the compact.

This area is classed by the State employment security commission as a labor depressed area. This area is included in the group of low rural income counties, singled out by the Department of Agriculture for its special rural development program designed to aid low-income groups.

The climatic conditions and capability of the soil makes this an area potentially high in the production of fruit and vegetables. Some of the soils have been classified by the Soil Conservation Service soil surveys as some of the best in the Nation. We cannot continue to make these people dependent upon Government agencies for existence.

The rural population, Indian, Spanish American, and Anglo, are all citizens of the United States, and deserve the right to the American way of life. These people should not be relegated to that of second-class citizens. Soil conservation district's motto is "Conservation, development, and self-government." We also stress the use of each acre for maximum sustained production. This is not possible in northern New Mexico without legislation to give us the authority and ability to achieve this goal by being able to store and use surplus water in the critical growing season. A dependable supply of water will allow us to grow more lucrative crops. Watershed protection projects provided for in Public Law 566 will allow us to stabilize our watersheds. We are willing and agreeable to repay our share of the cost.

Percentagewise, we are the fastest growing area of the United States. I and many people from every corner of our Nation believe north central New Mexico offers opportunities unmatched, as a place to live and enjoy life, work, prosper, and advance. The surging metropolis of Albuquerque must have additional water for her people, expanding industries, and military and atomic energy installations. Albuquerque has agreed to pay for her water, her lifeblood, 100 percent. We little people will pay to the limit of our ability. Keep us off the relief rolls. Help us hold our heads up and be first-class citizens. We want to help ourselves. Please give us a chance. Approve the San Juan-Chama transmountain diversion project.

Thank you, gentlemen.

Senator ANDERSON. Mr. Williams, you are connected with the soil-conservation project in your own area?

Mr. WILLIAMS. That is right.

Senator ANDERSON. And have been chairman of the New Mexico State Conservation Committee, and are not unfamiliar with conservation problems?

Mr. WILLIAMS. I hope not.

Senator ANDERSON. And from that standpoint, you think this is a fine thing to do?

Mr. WILLIAMS. It is the only thing. We have to have it in northern New Mexico, and I am certain that that is also true in the San Juan Basin.

Senator ANDERSON. I think that is right, too.

Thank you very much.

Mr. Roybal, do I understand you have a statement of your own?

Mr. ROYBAL. Yes; I have a statement of my own.

Senator ANDERSON. Do you wish to put Mrs. Shipman's statement in the record?

Mr. ROYBAL. Yes, if you please.

Senator ANDERSON. Very well.

STATEMENT OF MRS. FRANCES R. SHIPMAN, AS PRESENTED BY PABLO ROYBAL, OF NAMBE, N. MEX.

Mr. ROYBAL. The Pojoaque area where I live is one of the numerous examples of what lack of water has done in New Mexico.

This area is populated by Indians and eager farmers trying to make a living off their small farms. Since all of these farms are located on both sides of the Nambe and Tesuque Rivers, both of which have flat shallow riverbeds, with the irrigation ditches coming directly off of these rivers, year after year we hopefully plant in the spring and struggle to keep our crops alive with the small amount of water, and year after year flash floods have raged down these rivers completely destroying the main heads of the irrigation ditches and depositing anywhere from 6 to 14 inches of silt on the various crops. Much fine farmland has been ruined by this deposit of silt. During the farming season there is so little water in these rivers that one drives across them. Because of the sparsity of water this has been a marginal farming area capable of supporting a limited number of people and the proposed plan should assure adequate crops and permit a large number of people to live here with reasonable comfort and dignity.

During the winter months these rivers run constantly in a heavy stream from the melting snows off the mountains. This is lost water to the State. The authorization of this project would store this water so that it could be released when needed, whereby not only our area would benefit but New Mexico's obligations to the lower part of the State, Texas and Mexico could easily be met without denying anyone of water.

It is my impression that the national per capita farm income is around $4,100, while New Mexico's is $500. I ask you gentlemen, Is this 1958 America? Alaska has gained statehood in 1958. Let's give New Mexico water in 1959.

STATEMENT OF PABLO ROYBAL, NAMBE, N. MEX.

Mr. ROYBAL. I want to say I speak on behalf of the people of the Pojoaque Valley.

Mr. Chairman and members of the committee, I am Pablo Roybal, from Nambe, N. Mex. Nambe is a farming community 18 miles north of Santa Fe. I was born and raised in the Pojoaque Valley, Pojoaque being the lower Nambe Valley. We refer to it as either Pojoaque or Nambe. The Nambe River, being a tributary to the Rio Grande, begins its course at the Sangre de Cristo Range, flowing west to the Rio Grande. The valley is a narrow strip of cultivated land about 2 miles wide and 12 miles long. There are approximately 300 farms with a

total of 2,500 acres of land under irrigation, or rather that have been irrigated at one time or another. There are 22 Asequias from which to irrigate these farms, small but very productive. We have very deep fertile soils; I daresay, the best soils in the State. The very few years that we have had an ample water supply for irrigation we have made heavy yields of many types of crops.

The Nambe Valley is one of the oldest farming communities in the country. Archeologists have traced it back 700 years. The Indians were farming and using water for irrigation at that time. The Spaniards came into this valley over 300 years ago, and there are farms that have been in the same family for many, many years. Up until the last 10 to 15 years the people in this valley depended entirely on their farm for a living.

You may wonder how people can live off such small farms. The fact that families have lived on these farms for hundreds of years is sufficient proof. Now the average farm income in this area is less than $400 a year. Every day it is getting harder and harder to live off that low income. Times have changed so that you and I can agree that it is impossible to make a living from such an income. Yes; we need to increase our production, and to do so we need a more dependable water supply. Our lands are very fertile and capable of producing at least four times as much if we had the right amount of water at the right time. We have farmers who have produced more than $2,000 per acre on specialized crops.

I am 42 years old, and as far back as I can remember I have heard my parents, my neighbors, and all the people in the valley talk about the need for more water for irrigation. Ever since I was 12 years old and to the present I have had to run up and down the creek chasing water, dividing water with other ditches and, in most cases, getting very little irrigating done.

In my 30 years of casing water we have had good and bad years, but I do not believe we have had 5 percent of the time when we had a completely adequate supply during the summer. We have always had unused water in the winter. To my knowledge we have had only 1 year, 1956, when we did not have surplus water in the spring. During this period of extra spring water, farmers are busy wasting it, giving their crops more water than they actually need, thinking that it might help later. In desperation they load their ditches over their capacity, causing breaks and damage to property and more waste of water.

Water usually lasts to the 1st of July. Then it gets so low we barely have enough for our gardens. Right now, I have 27 acres planted to new alfalfa and unless it rains within 2 weeks I will lose my entire stand. A cash loss of over $1,000, and another year or more behind on my planting. We get a few rains about this time of the year and again we see our water supply go by in big quantities in the form of floods, tearing down the banks and fences, carrying silt to cause damage further down the stream and causing much damage to the Rio Grande.

Yes; our irrigation water supply needs are not great if measured in acre-feet. Actually, all we need is a little supplement. The shortage comes at such time that with most crops it means a complete loss at a time when it is about ready for harvest. Other crops may produce half their possible yield.

Members of the committee, our only solution to the problem is a dam. The proposed San Juan-Chama diversion so that these other dams can be possible is the answer. We need not fear that this Nambe Dam will be taking somebody else's water. Actually, we would well call this a control dam. What we actually need is some way of regulating or distributing the amount of water we use.

The economy of the people in this valley depends on this little extra water. At present we have a good number of people on the relief rolls costing the State of New Mexico and the Nation millions of dollars. Most of this cost could be eliminated if a dependable water supply could be provided.

If we recall, in 1954, our President sent a message to Congress to act on legislation; and that could very well be applied in this very particular case. I refer to the message from which the rural development program came into effect. As you well know, this program was designed for the purpose of helping farmers in low-income areas. As you also know, our county is 1 of the 2 pilot counties in New Mexico where this program is to be tried out. One of the main problems selected in our county under the rural development program is soil and water conservation. I ask you now, don't you think that this is a good test case for this very important program? Certainly in this area the greatest help these low-income farmers can get is a means of conserving water to be used when needed, therefore resulting in increased production from these small farms and ultimately a higher income, meaning also a higher standard of living which, as I have seen is the main objective of the rural development program.

As I have mentioned before, we already have a great number of our people on relief rolls, and unless we do something to help them I am afraid we will have more, and certainly that is not what we want. We should like to see them self-supporting, and in that way be an asset to the community instead of becoming a liability.

We are anxious to pay our part of the cost. Please help us help ourselves become more substantial citizens. We will then be able to help build America stronger with our improved economy and tax base.

Thank you for this opportunity, Senator.

Senator ANDERSON. You said this area had been irrigated 700 years ago.

Mr. ROYBAL. That is right, yes.

Senator ANDERSON. I think that is absolutely correct. And also we know that it was irrigated 200 years ago, or more, nearly 300 years ago, from early records. Many people have contended that the best way to establish a water right is by putting the water to beneficial use first. If this has been used for 700 years, there aren't any sections of the United States that have been irrigated any longer than that. So surely you ought to have some rights to water.

Thank you for being here. It is a very, very beautiful little valley you have around there.

Mr. ROYBAL. Senator, the only right we do not have is the right to store it when we need it.

Senator ANDERSON. We hope to get you something that will permit you to use this water.

Did you not have, Mr. Roybal, a number of wells that went dry in the last few years for the first time in generations?

Mr. ROYBAL. That is right. There have been a number of home wells.

Senator ANDERSON. Yes.

Mr. ROYBAL. I didn't want you to think they were irrigation wells.

Senator ANDERSON. No, but these small wells.

Mr. ROYBAL. Thank you.

Senator ANDERSON. Now we come to the Rio Grande Conservancy District. John Patrick Murphy and Hubert Ball.

STATEMENT OF JOHN PATRICK MURPHY, EXECUTIVE SECRETARY, MIDDLE RIO GRANDE FLOOD-CONTROL ASSOCIATION

Mr. MURPHY. Mr. Chairman and members of the committee, first of all, I want to express to the committee our appreciation, and the appreciation of all the people whom I represent, for the fine treatment we were accorded by this committee when we appeared before you in 1954 on the upper Colorado River storage project.

My name is John Patrick Murphy and I am executive secretary of the Middle Rio Grande Flood Control Association. I have been authorized by the people whom I represent to appear on their behalf and present their views in support of S. 3648, to authorize the Secretary of the Interior to construct, operate, and maintain the Navaho Indian irrigation project and the initial stage of the San Juan-Chama project as participating projects of the Colorado River storage project, and for other purposes.

The organization I represent is made up of a voluntary, grassroots group of farmers, business and professional men, housewives, school teachers, office employees, and other persons who have united in this manner to support the urgently needed San Juan-Chama project. We have over 2,000 members which includes every chamber of commerce in the middle Rio Grande Valley from Elephant Butte Reservoir on the south to the Colorado State line on the north. This area includes the counties of Sierra, Socorro, Valencia, Bernalillo, Sandoval, Santa Fe, Los Alamos, Rio Arriba, and Taos. The recent population estimate is 500,000 people.

Numerous large meetings were hold over the past several years in the principal cities and county seats of each and every one of these counties, and I attended them all.

In every instance the pleas for supplemental water for irrigation purposes were actually pitiful. The plight of these farmers is serious and in most cases desperate. It is difficult to imagine anyone in a more discouraging situation than a farmer attempting to make a living from an irrigated farm with only a partial supply of water.

Ofttimes he cannot raise the crops for which the land is particularly adapted and for which there is a ready market at a fair profit. On the contrary, he is forced to raise only those crops which can be matured with a limited water supply regardless of the need or market value for such crops. He cannot plan rotation of crops which is universally recognized as the essence of good farming.

He watches his cost of operations mount steadily, but his income is held down by an inadequate water supply. In short, he finds himself facing an almost impossible situation.

The two northern counties, Taos and Rio Arriba, where we are pleading for supplemental water in the amount of 29,000 acre-feet on an exchange basis for the four small irrigation units referred to as Cerro, Taos, Llano, and Pojoaque, are classified as terribly depressed rural areas whose economic condition could be materially improved by an adequate irrigation water supply. For instance, Taos County, with a per capita income of $635 per year, and Rio Arriba, with one of only $537 per year, illustrates this condition. This is less than half of the State average.

I would like to point out that in a report rendered December 11, 1950, by the President's Water Resources Policy Commission they stated that the Rio Grande Basin was a sick area and importation of water from other basins was essential. In the recommendation of importation of water they were referring to the San Juan River waters recently allocated to New Mexico.

All of the waters in the Rio Grande are completely appropriated. In fact, they are overappropriated. Therefore, it follows that we also have grave water problems developing in our municipalities. Citing one instance, the 1950 Bureau of the Census report declared Albuquerque a metropolitan area with a population of 145,673.

The Albuquerque metropolitan area registered the most rapid population growth of any of the 168 metropolitan areas listed by the Federal Government between 1940 and 1950. The increase was 110.4 percent. The statistical department of the Southern Union Gas Co. has released estimates of expected population for Metropolitan Albuquerque by 1960 to be 250,000. The University of New Mexico estimates 321,600 and by 1965 predicts a population of 434,600.

And then to emphasize our dynamic growth, let me quote population comparisons from 1940 projections of population increases for the counties in the middle Rio Grande Basin by the Bureau of Business Research, University of New Mexico, to the year 1965, just 7 years hence:

	1940	1950	1955	1960	1965
Taos	18,528	17,146	14,800	14,200	14,500
Rio Arriba	25,352	24,997	25,800	29,700	32,000
Los Alamos		16,476	13,000	14,000	14,000
Santa Fe	30,826	38,153	38,900	40,300	48,500
Sandoval	13,898	12,438	12,100	11,500	15,200
Bernalillo	69,391	145,673	205,500	221,600	434,600
Valencia	20,245	22,481	21,900	41,100	50,500
Socorro	11,422	9,670	9,200	8,900	8,800
Sierra	6,962	7,186	5,800	5,100	5,100
Dona Ana	30,411	39,557	44,600	46,400	52,400
Total	227,035	327,777	391,600	532,800	675,600

This shows that the counties within the Middle Rio Grande Basin have, in the decade between 1940 and 1950, gained 100,742 in population. And the 5 years between 1950 and 1955 the gain was 63,823.

There is consequently a tremendous amount of pumping of water for municipal supply in the middle Rio Grande Valley, and the present interpretation of and operations under the Rio Grande compact results in New Mexico being in continuous debt to Texas.

All of the cities and towns in the valley continue to show tremendous growth in population, and it was estimated that in 1956, Metropolitan Albuquerque used over 50,000 acre-feet of water.

According to estimates used by local utility companies for their future planning on expansion of facilities they estimate that by the year 2001, metropolitan Albuquerque will be 730,000 with a water requirement of 204,000 acre-feet per year. This is an ultraconservative estimate because the Bureau of Business Research of the University of New Mexico estimate metropolitan Albuquerque to have a population of 1,500,000 by the year 2001.

We believe, since this water very definitely is subtracted from the water available to the agricultural interests, that every effort should be made to replace Rio Grande water, or to directly supply the various municipalities, which are the major users of water for domestic purposes. The only source available to us for this purpose is the waters of the San Juan River.

INDIANS

There are 6,000 Indians living in 9 pueblos in the Middle Rio Grande Conservancy District. They are Santo Domingo, Isleta, San Felipe, San Juan, Sandia, Cochiti, Santa Clara, Santa Anna, and San Ildefonso. There are also a great many Indians living within the Taos, Llano, and Pojoaque irrigation units.

Agriculture is the principal economy of these Indians, who are now being seriously threatened by a shortage of water, along with their neighbors. These Indians would directly benefit, and be assured of a continuance of their long-established livelihood, with the proposed program of a San Juan-Chama diversion of additional water.

NATIONAL DEFENSE

New Mexico is one of the most vital areas in the national defense program.

We stress the national defense angle of our project, because, extremely important defense establishments have been located in the Middle Valley. Some of these installations include Los Alamos Atomic Laboratories, Sandia Atomic Laboratories, Sandia Armed Forces Special Weapons Project, Kirtland Air Force Base, Holloman Air Force Base-White Sands Missile Range installations near Alamogordo, and others, such as industries related to national defense.

I would like to interpolate just a moment, because I do not think this figure was touched on. Analysis of national defense expenditures in metropolitan Albuquerque accounted for approximately 26 percent of all employment in 1956. These employees helped support 100,500 persons directly and indirectly. These 100,500 persons used approximately 21,900 acre-feet of water in 1956. This 21,900 acre-feet figure was arrived at from 2 different sources: the Bureau of Business Research, University of New Mexico, and the City of Albuquerque Planning Department.

These important installations all consume great quantities of precious water and it is essential to do everything in our power to assure these endeavors of an adequate supply of this water for future expansion in behalf of national defense. Therefore, they, too, are in need of this San Juan-Chama project.

The solution of these water problems is one of the most pressing needs of the State of New Mexico. The only hope for maintaining

the existing economy and providing for a normal, continued growth in these areas is to import additional waters. The San Juan River is the only source available. It truly is our last waterhole.

From here on, New Mexico's future growth will be limited only by its water supply, therefore it is imperative for us to develop this new water to its optimum, beneficial use, and to conserve every drop of this precious resource.

Multiple purpose projects such as the San Juan-Chama project for municipal, industrial, and irrigation water, are not matters to be put off pending a recession or depression. On the contrary, such projects should be constructed as rapidly as possible so as to contribute toward continued prosperity and a high standard of living. New Mexico, in fact, needs this project now to preserve its land and water resources.

New Mexico's economic health and growth are wholly dependent on water. Our usable water supplies, always a grave concern, are today critically short and failing further every day. Droughts always have hit New Mexico hard. They have made our economy "sick" too often, too long. Our people are paying an enormous price for the delay in the apportionment of the use of the waters of the upper Colorado River and its tributaries.

For years and years that much-needed water has been flowing right out of our State. New Mexico is deriving no benefit from it. It is imperative that this waste be stopped as soon as is humanly possible.

Utilization of these now unused waters of the San Juan—of transcendent importance to the middle Rio Grande Valley—has been envisioned for over 20 years.

In conclusion, I sincerely hope that we have convinced this committee that water its the veritable lifeblood of New Mexico and that our potential uses far exceed the present supply, and it is imperative, therefore, that the Federal Government authorize the construction of essential facilities that will enable New Mexico to get and use its rightful share of the waters of the San Juan River and its tributaries.

We join wholeheartedly with the witnesses supporting the Navaho Indian irrigation project, which includes municipal and industrial water for the Farmington and Gallup area. Thus we join in the urgent plea for full approval of S. 3648—

to authorize and maintain the Navaho irrigation project and the initial stage of the San Juan-Chama project as participating projects of the Colorado River storage project, and for other purposes.

The President and the Congress are to be commended for having enacted into law the Colorado River storage project, in which they granted, along with others, conditional authorization to the Navaho Indian irrigation project and the San Juan-Chama project. They also spelled out priority for the completion of our reports.

This wording appears in section 2 of Public Law 485, and reads as follows:

In carrying out further investigations of projects under the Federal reclamation laws in the upper Colorado River Basin, the Secretary shall give priority to completion of planning reports on the Gooseberry, San Juan-Chama, Navaho, Parshall, Troublesome, Rabbit Ear, Eagle Divide, San Miguel, West Divide, Bluestone, Battlement Mesa, Tomichi Creek, East River, Ohio Creek, Fruitland Mesa, Bostwick Park, Grand Mesa, Dallas Creek, Savery-Pot Hook, Dolores, Fruit Growers Extension, Animas-La Plata, Yellow Jacket, and Sublette participating projects. Said reports shall be completed as expeditiously as funds are made available therefor and shall be submitted promptly to the affected

States, which in the case of the San Juan-Chama project shall include the State of Texas, and thereafter to the President and the Congress: *Provided*, That with reference to the plans and specifications for the San Juan-Chama project, the storage for control and regulation of water imported from the San Juan River shall (1) be limited to a single offstream dam and reservoir on a tributary of the Chama River, (2) be used solely for control and regulation and no power facilities shall be established, installed or operated thereat, and (3) be operated at all times by the Bureau of Reclamation of the Department of the Interior in strict compliance with the Rio Grande compact as administered by the Rio Grande Compact Commission. The preparation of detailed designs and specifications for the works proposed to be constructed in connection with the projects shall be carried as far forward as the investigations thereof indicate is reasonable in the circumstances.

All of those specific specifications have been complied with. We have been given to understand that the opponents to these participating projects will bring forth the same type of arguments used in opposing approval of the Colorado River storage project. Thus, we feel sure that Congress, in its wisdom, will again decide to approve these participating projects.

I appreciate the opportunity to appear here today, and, on behalf of the 500,000 anxious people in the middle Rio Grande Valley whom I represent, I wish to say thank you for your kind attention.

Senator ANDERSON. Thank you, Mr. Murphy, for one more fine statement. We have had others in the past from you, and we are always glad to have them.

Mr. Ball.

STATEMENT OF HUBERT BALL, CHIEF ENGINEER, MIDDLE RIO GRANDE CONSERVANCY DISTRICT

Mr. BALL. Mr. Chairman and members of the committee, my name is Hubert Ball. I am chief engineer of the Middle Rio Grande Conservancy District with offices located at 1930 South Second Street, Albuquerque, N. Mex., and I have been instructed to appear here in support of various provisions in the bill now being considered by this committee today. My principal interest is, of course, concerned with benefits that might accrue to the middle Rio Grande area and particularly to the district through the authorization and construction of the San Juan-Chama Transmountain Diversion project. However, I have been directly connected with the various groups that are interested in the control and development of water resources for New Mexico and am extremely interested in any proposal that would benefit any other area of the State. I would, therefore, like first to make a general statement regarding other units proposed in Senate bill 3648.

I am personally familiar with these proposed projects and I am acquainted with many of the people of those areas. I do no know of any proposed development in the Western States where so much progress and benefits would accrue to the local people through the control and distribution of like amounts of water as are involved in this particular bill. The presence of the great uranium deposits, gas fields, and oil supplies available in the San Juan basin lend themselves to a terrific industrial development in the northwestern section of New Mexico, which is, to a large degree, covered by the northeast section of the Navaho Indian lands. These people, with non-Indian inhbitants of the area, are beginning to realize that the local manpower available, plus the adjacent natural resources, gives them an opportunity to develop a great industrial and agricultural section which not only is most desirable locally, but will be demanded by the increasing population of the United States in order to maintain the present standard of living to which we are all accustomed. I have known the people of the area covered in this bill for many years, and I believe that the benefits and development you have been shown by reliable witnesses will result are only the catalyst that is needed to start this great development I believe these people are capable of initiating and carrying out. These communities, and indeed the people of all the State, have lived in anticipation of the development of the upper Colorado River Basin for many years and it is with great hope and anticipation that they are watching and reading the developments in connection with this project and others authorized in the upper Colorado River area.

I would now like to devote a few minutes to the particular part of the project that would be affected by the San Juan-Chama Transmountain Diversion, and particularly to the benefits that would accrue to the Middle Rio Grande Conservancy District. The exterior boundaries of the Middle Rio Grande Conservancy District cover an area of approximately 300,000 acres, of which about 120,000 lie within the benefited area and are located along the Rio Grande between White Rock Canyon, which is near the northerly boundary of the Cochiti Indian lands and extends a distance of approximately 155 miles in a southerly direction to the Bosque del Apache Wildlife Refuge, which is about 20 miles south of Socorro, N. Mex. The district is responsible for irrigation, drainage, and flood control on the developed areas of six Indian reservations, the towns of Socorro, Belen, Los Lunas, Bernalillo, and numerous small villages and communities intermingled with approximately 98,000 acres of very valuable agricultural lands. A major portion of the residential area and practically all of the main business and industrial sections of Albuquerque are also within the conservancy district and depend on us most particularly for protection from high ground water tables and the possibility of floods from the Rio Grande.

The agricultural development and extremely favorable climate has been extremely important in the development of these urban areas and the record-breaking population increases that have been experienced by the cities and towns within the middle Rio Grande area. This increase in population has, of course, had a direct effect on the amounts of water available for all purposes and since the domestic and industrial water supply, generally, is being secured from the underground basin immediately adjacent to the Rio Grande, a decrease in surface flow of the river has been inevitable. These nonagricultural uses in the Albuquerque area alone now exceed 53,000 acre-feet per year and are over 70,000 acre-feet per year for all of the urban development within the district boundaries. This loss of water to the agricultural development, plus intermittent drought cycles experienced in our area, most certainly indicates that the various interests along the Rio Grande in the central part of New Mexico would certainly be remiss in their duty should they fail to use every financial and physical means available to secure the additional water supply that will be made available to the valley through the transmountain diversion.

The total depletion resulting from municipal and industrial development to the flow of the middle Rio Grande is estimated to be over one-half of the 70,000 acre-feet diverted, or something near 35,000 acre-feet per annum. The 55,000 acre-feet in the initial development of the transmountain diversion allocated to the city of Albuquerque, plus the present use of approximately 33,000 acre-feet, will allow domestic and industrial supplies for a city several times the present size. Many competent economists estimate present local trends indicate that this is not only possible but entirely probable and additional water is a must to preclude the probability of a catastrophe that might be brought about in a decreased water supply available to the agriculturally supported areas and also to eliminate the possibility of the suffering and misery that might result from continued drought in the middle Rio Grande areas to domestic users.

There is allocated about 22,000 acre-feet of water directly to the Middle Rio Grande Conservancy District which would be used to supplement presently available supplies. We believe that the completion of this project, with construction of storage reservoirs proposed, would allow a steady and firm supply of water for agricultural use that would induce our farmers to devote more land and time to the growing of vegetables, fruit, and other similar productive crops. This type of agriculture requires smaller but more sustained irrigation supplies than are now available throughout the valley.

The present types of crops now being produced are generally small grain, alfalfa, corn, and cotton, with a very limited amount of fruit and vegetables. These types of crops are generally those which are surplus in the country and we wish to particularly point out that such a change in the crop pattern in our area would delete from rather than augment the overabundance of field crops which are now such a financial problem to the Government economy and the well-being of our agricultural communities.

We wish to also emphasize that the probable growth of population would certainly be able to consume locally the additional vegetables, fruit, and dairy supplies thus made available rather than be in competition to other similar crop-growing areas. We believe that this is a most important point, since other hearings on proposed irrigation projects invariably bring up this question of crop surplusage.

We would further emphasize the probability of a change in this agricultural pattern due to the size of the average farm within the district. There are not more than a dozen farms of family ownership in the valley which exceed 160 acres and several of these are in areas where suburban development within the next few years is inevitable. Ninety percent of the lands of the Middle Rio Grande Conservancy District are held by individual owners in tracts of less than 20 acres. This type of small homesite development readily lends itself to the growing of types of crops which must be intensely cultivated. I am informed by the county agents of the various counties within the district that this conclusion is entirely correct and that they will support this conclusion with any figures or statements which might be required.

Important among the many problems which are always arising at hearings for authorization of irrigation projects concern the matter of financing, construction, operation, and maintenance. We are assured that the water allocated for municipal and industrial use will

be paid for by various municipalities and that they expect to pay interest as well as principal on that part determined to be properly chargeable to this portion of the project.

The Middle Rio Grande Conservancy District certainly expects to pay its proper share for that portion of the construction, operation and maintenance cost which is allocated to the district for repayment to the Government for our allocated portion of the available water.

There are several other smaller irrigation projects for which supplemental and additional water supplies are allocated, particularly along tributary areas north of the Middle Rio Grande Conservancy District, which are also represented here by witnesses who will testify in their behalf. We concur fully in their statements and also those of other proponents of the proposed project which you have heard and will hear. We join them in urging that this project be fully authorized and that all haste be made in the construction so that the benefits we are sure will be realized can be ready in time to take care of the need which we feel the increased population of our State and community will require by the time these proposed works could possibly reach a usable state of completion.

Thank you very much for your kindness and consideration.

Now, since it looks like I am the last person appearing from our particular area, it seems like it is up to me to more or less sum up what has been said, in about three words. I am now talking not from my prepared statement.

First, I want to say the Middle Rio Grande Conservancy District concurs heartily in all of the statements that have been presented up to this time, and I sincerely hope that I can concur with the statements that will be made after I am through.

The people in our valley have supported this program 100 percent. I have gone over all of the formulas, the facts and the figures, as presented by the Governor, the Bureau of Reclamation, and the people representing them, and we are in complete accord so far as I know, no disagreement with any of the proposed methods of handling the water.

I wish to thank the committee for the consideration they have given us, and I have just two items that I would like to point out. One is that there has been particular stress laid on the amount of water used by the city of Albuquerque. That is only a portion of the domestic and municipal water used in the valley. There are other areas where there has been considerable development, and I think that the amount of money now being used in the valley for domestic and municipal, industrial purposes, would exceed 70,000 acre-feet, Mr. Chairman. I think I can submit facts and figures to prove that, which would only add to the arguments for increased water from some source other than the Rio Grande for those purposes.

Another item that I would like to stress particularly is that in the House, particularly, the No. 1 argument of some of the people opposing the upper Colorado was the surplus crops that are raised in the United States. Every time an irrigation project is submitted for authorization, that question comes up: Why do we want to spend good money only to creat more surpluses?

In the area where we live and particularly the middle Rio Grande, we are raising surplus crops now, corn, cotton, and wheat, with some alfalfa. Alfalfa, I can tell you, Mr. Chairman, was pretty cheap when we left Albuquerque last week.

Senator ANDERSON. You are telling me, with a thousand tons of it?

Mr. BALL. That is just why I am pointing it out. I think you know exactly what I am talking about.

This irrigation project would allow a much better type of agriculture; a more sustained water supply would permit a change from crops which are now surplus to vegetable and fruit crops in our area which would not compete with the crops that now are costing the Federal Government so much to support each year.

I wanted to point that out particularly because I listened to the arguments in the House, and I got pretty tired of hearing that same old argument.

I have heard you make the statement many times that it is not always an oversupply; sometimes it is an underconsumption of crops. And at the rate we are losing farmlands in this country, the argument is pretty much a moot question, right at this time anyhow. It is only a matter of 5 years, or less time than it would take to complete this project, before they will be importing some feed into this country.

I thank you, Mr. Chairman.

Senator ANDERSON. Thank you, Mr. Ball.

Mr. Gregg.

STATEMENT OF JOHN L. GREGG, ON BEHALF OF THE ELEPHANT BUTTE IRRIGATION DISTRICT

Mr. GREGG. Mr. Chairman and members of the committee, my name is John L. Gregg and I represent the Elephant Butte Irrigation District, located in Dona Ana and Sierra Counties in south-central New Mexico. The district contains 90,000 acres of irrigated land and obtains its water supply from the Rio Grande. There are about 2,000 water-users in the district. This statement is made on behalf of the board of directors of the district.

The interest of the district in the bill now before your committee is confined to the proposed San Juan-Chama project and arises out of the facts that water imported from the San Juan Basin will be mingled with Rio Grand Basin water and diverted at various points along the Rio Grande; and that storage and diversion facilities will be provided for tributary irrigated areas north of Santa Fe, N. Mex., that will enable them to make greater use of Rio Grande Basin water, the additional use to be compensated for with water imported from the San Juan Basin.

Even under the best of conditions, operation of the San Juan-Chama project will be complicated and difficult. It will require consistently accurate accounting for imported water, which will be mingled with Rio Grande Basin streamflow, and for stream losses and diversions along stream channels in northern and central New Mexico aggregating some 200 miles in length. Above all, successful operation of the project will require strict control over the diversion of water along the Rio Grande and in the tributary areas north of Santa Fe.

The critical question in connection with this matter, insofar as the Elephant Butte Irrigation District is concerned, is whether or not the San Juan-Chama project can be consistently operated by local agencies so that diversions will be limited strictly to volumes of San Juan water actually available, and so that there will be no encroachment upon the water supplies of downstream areas such as the Elephant Butte Irrigation District, especially in times of severe water shortage due to prolonged droughts that occasionally occur in the Rio Grande and San Juan Basins.

San Juan-Chama project reports state that operation and maintenance of the project, with the exception of the Heron regulating reservoir at the head of the Chama, will be turned over to local areas or agencies. It is this transfer of operation and maintenance from the Bureau of Reclamation to local agencies that raises serious doubt as to whether or not the project can be successfully operated. The Elephant Butte Irrigation District is honestly convinced that, on the basis of experience with upstream operation by local agencies, and for the following reasons, the San Juan-Chama project cannot be consistently operated by local agencies without, at some time or another, infringing upon the water supply of the district.

There no longer exists a solid and reliable legal basis for the protection of the water supply of the Elephant Butte Irrigation District in the form of an enforceable Rio Grande compact. The Rio Grande compact was agreed to in 1939 by Colorado, New Mexico, and Texas for the purpose of dividing the waters of the Rio Grande among the three States. It was intended to provide a permanent basis for the protection of the water supplies of downstream areas that are dependent upon the Rio Grande, including the Elephant Butte Irrigation District. It was assumed that the compact would provide reasonable assurance that existing and future projects and facilities for the diversions and storage of water would be properly operated so that no injury would be inflicted by one area upon another.

In connection with a suit filed by Texas against New Mexico and the Middle Rio Grande Conservancy District in 1951 for the purpose of enforcing the terms of the compact, the question of the indispensability of the United States as a party was raised by the defendants, and the United States Supreme Court dismissed the suit on the grounds that the United States was an indispensable party. The ruling was presumably based on the presence of Indian lands and other Federal interests in the Middle Rio Grande Conservancy District, located in the vicinity of Albuquerque. The United States refused to intervene and the Rio Grande compact became, in effect, an unenforceable instrument. Thus, the principal legal basis for the enforcement of proper operation of Rio Grande Basin projects, including the proposed San Juan-Chama project, was eliminated, and there now exists no compelling reason for consistently proper operation of projects along the Rio Grande in New Mexico.

Proper operation of projects along the Rio Grande in New Mexico, under conditions of low water supply due to drought, as well as under conditions of normal water supply, now depends upon the ability and willingness of local officials, when they are in charge of operation, to respect the rights of downstream areas in operating their projects, or the ability and willingnes of the State of New Mexico to compel them to do so. In the past, local officials have not demonstrated a willingness to consistently respect downstream rights, and the State of New Mexico has not been willing, or able to compel them to do so. The outstanding example of unwillingness on the part of local officials to respect the rights of downstream areas on the Rio Grande is the attitude of the Middle Rio Grande Conservancy District as expressed

28824—58——10

in a resolution adopted by its board of directors in 1951, during a period of severe water shortage, which reads as follows:

Whereas the terms of the Rio Grande compact having been discussed and the members of the board being familiar therewith; and

Whereas the board recognizes the responsibility of the State engineer under the Rio Grande compact, but because of the shortage of water and the dire necessity of the people of the Middle Rio Grande Conservancy District: Now, therefore, be it

Resolved, That the policy of the board is to take care of the need of the farmers of the Middle Rio Grande Conservancy District insofar as it is posible with the limited supply of water available.

When such an attitude exists, operation policy that disregards the rights of downstream areas also dependent upon the stream is inevitable.

We wish to emphasize that, in the absence of effective restraints upon the operating policies of local areas in New Mexico, the adverse effects of improper operation become most apparent, and most dangerous to downstream areas, during extended periods of severe drought that occasionally descend upon the Rio Grande and San Juan Basins. We have just passed through such a period of several years' duration when streamflow was reduced far below normal. The San Juan Basin, located adjacent to the Rio Grande Basin, is subject to drought periods at the same time, and of equal severity, which will materially reduce the volume of San Juan water available for exportation to the Rio Grande Basin.

It is the purpose of the initial phase of the San Juan-Chama project to furnish 50,000 acre-feet of water to the city of Albuquerque, N. Mex., for municipal and industrial purposes, and 46,000 acre-feet of supplemental irrigation water to 120,000 acres of land located in the tributary areas north of Santa Fe, N. Mex., and in the Middle Rio Grande Conservancy District around Albuquerque. Firm uses will be established for 96,000 acre-feet of additional water for municipal, industrial, and agricultural purposes in the Rio Grande Basin of New Mexico. Then, when prolonged drought occurs, as it inevitably will, these local areas, operating their own diversion and storage works, will be expected to curtail their expanded uses to correspond to the reduction in the volume of imported San Juan water. We do not believe that they will voluntarily do so, nor that the State of New Mexico will be able to compel them to do so. They will simply make up the deficit by increased diversions of Rio Grande Basin water.

Sharp reduction in established municipal diversions in time of severe and prolonged drought will be particularly difficult to accomplish. Since the Rio Grande compact is no longer enforceable, there is no prompt and effective method for downstream areas to protect themselves. The State of New Mexico has not demonstrated its ability to control the use of water by its political subdivisions. Hence, the burden of upstream encroachment during periods of extended drought to satisfy expanded uses will fall upon downstream areas such as the Elephant Butte Irrigation District.

It will probably be said that the people in the Elephant Butte Irrigation District can go into State courts to protect themselves against improper operation of the San Juan-Chama project resulting in encroachment upon their water supply. With all due respect to this possibility, it does not offer a practical solution. The financial burden

that would be imposed upon the district in preparing and conducting suits against the numerous areas that might be involved would be beyond the resources of the people in the district. There are extensive Federal interests involved in the San Juan-Chama project such as several thousand acres of Indian lands to be supplied with supplemental water in 3 of the 4 tributary areas, as well as Federal installations in and near Albuquerque that will probably become dependent, to some degree, upon San Juan water supplied by the city.

There is little doubt that, in any case filed by the Elephant Butte Irrigation District as a result of encroachment upon its water supply through improper operation of the San Juan-Chama project, the question of the indispensability of the United States as a party to the suit would be raised. If State courts should accept the view that the United States is an indispensable party to the action—and we believe that they would be inclined to do so—the case would be promptly terminated and we would be unable to secure relief.

We feel that, should this committee see fit to report favorably on the bill now under discussion, a clause should be inserted that would make the United States a party to suits that might be filed in connection with improper operation of the San Juan-Chama project.

No determination has been made of the amount of Rio Grande Basin water to which tributary areas north of Santa Fe, N. Mex., are now entitled. This information is a prerequisite to the operation of tributary area storage and diversion works to be provided as part of the San Juan-Chama project. These works will enable the tributary areas to make greater use of Rio Grande Basin water on an exchange basis. Determination of present tributary uses may require years of investigation and litigation but, insofar as we know, the process of making the determination has not yet been started.

We ask that the authorization of the San Juan-Chama project be deferred until:

1. The Rio Grande compact becomes an effective and enforceable instrument that will protect downstream areas against encroachment upon their water supplies.

2. Present water uses in tributary areas included in the San Juan-Chama project are definitely determined in order to provide a basis for operation in those areas.

3. A plan of operation is worked out under which:

   (*a*) The State of New Mexico assumes definite responsibility for limiting the use of San Juan-Chama project water by all participating irrigated areas and municipalities to the amounts made available by importations from the San Juan Basin, and establishes the necessary legal and administrative machinery for carrying out this responsibility.

   (*b*) The State of New Mexico agrees to underwrite the cost of operating and maintaining required stream-gaging facilities throughout the San Juan-Chama project area by making available each year, in advance, the necessary funds for such operation and maintenance.

Senator ANDERSON. Mr. Gregg, your first request is that the San Juan-Chama project not be authorized until the Rio Grande compact becomes an effective and enforcible instrument. Would that not have to be read in connection with your previous statements?

It cannot become an enforcible instrument if it is not one now.

Mr. GREGG. I think it could eventually be made an enforcible instrument.

Senator ANDERSON. How could it, in your opinion?

Mr. GREGG. That is mainly a question for the attorneys. However, if the United States were agreeable to intervene in any future suits in which the compact was involved, that might be straighten it out.

We certainly feel that a complicated project such as the San Juan-Chama cannot be superimposed upon the existing development in the Rio Grande Basin in New Mexico without some sort of an overriding and enforceable law which would protect all the areas that are dependent upon the stream for irrigation water supplies. And the Rio Grande compact is the only thing of that nature in sight.

Senator ANDERSON. Do you feel the farmers under the Elephant Butte project would be better off or worse off by the importation of 110,000 acre-feet into the Rio Grande area?

Mr. GREGG. They would be better off, provided the San Juan-Chama project is properly operated. It is our contention that on the basis of past experience and with no firm legal basis for the protection of water rights, the San Juan-Chama project cannot be properly operated for an indefinite period of time without infringing upon our water supply.

Senator ANDERSON. We did write into the law, the previous law, some protective language. I might say to you that when the House passed the bill it did not have the protective language in it, and when the House and Senate conferees met, they first reported out the bill, the conference report, without any protective language in it.

There was a conferee that stopped that action, and we said we agreed to that after consultation with Gov. Price Daniel, and we were going to write in what language we agreed on preliminarily—and we did, to show that some of us at least were trying to maintain good faith.

Mr. GREGG. Senator, we appreciate your interest in the matter and your efforts. But nevertheless, there is no basic enforceable law on the river at the persent time, and that concerns us greatly.

Senator ANDERSON. It concerns me as it does you. As I have said many times, I have a farm that I know has a water right that is at least 250 years old. But it gets expunged, apparently, as these people up near Taos have found their rights expunged by a compact that said one State gets its water first and the other State is a residuary legatee to get what is left.

That is not exactly in accordance with the provision that says that putting the water to beneficial use first shall establish a water right.

I know it is a very difficult problem, and I hope it can be worked out.

Mr. GREGG. It would depend entirely upon the operating policies of the local areas. Certainly if some of them would be fairminded and attempt to operate their projects with their irrigated areas in mind. Others would not.

Senator ANDERSON. Does this say "local areas"?

This says that the dam is going to be constructed at Willow Creek, so that we'll know what this water is; that it will be operated by the Bureau of Reclamation of the Department of the Interior in strict compliance. That is not a local agency, is it?

Mr. GREGG. We are not concerned in any way with the operation of the reservoir. That would be under control of the Bureau and we know that the Bureau will operate it strictly in accordance with the compact. But it is what happens down below in connection with the administration of the local areas who will operate their own storage and diversion work so that gives us cause for concern. If they operate within the limitations imposed by the compact and with the rights of the downstream areas in mind, certainly we would not be interested. But we are afraid that the experience in the past indicates that they will not always do that, particularly during periods of extreme drought. That is what has us very much concerned.

Senator ANDERSON. If they do not do so then the Bureau of Reclamation of the Department of Interior cuts off their water. So how do they benefit?

Mr. GREGG. I beg to disagree with you there. According to the reports once a project is constructed, the Bureau of Reclamation will surrender complete control of the operation and maintenance.

Senator ANDERSON. I do not follow that in the report. The report has to be subservient to the law, does it not?

Mr. GREGG. We would hope so.

Senator ANDERSON. You know so, Mr. Gregg, do you not?

Mr. GREGG. But the report says very clearly that operation and maintenance of the tributary areas and the diversion facilities for the city of Albuquerque and for the Rio Grande Conservancy District will be operated and maintained by the local areas, by the tributary organizations, by the city, and by the conservancy district. There is no indication in the report that the Bureau will have anything whatsoever to do with it. That is our interpretation of the material in the report.

Senator ANDERSON. We are going to be able someday to make some worthwhile legislative history. That certainly is not my interpretation. I do not think it is the interpretation of others. I do not know what report you are referring to. It was reported completely before the passage of Public Law 485. It would be controlled by the exact wording of the law, would it not? A report previously given then supplemented or subplanted by the exact wording of the law with protective language written in because of the uncertainty of the report that language would be compelling, would it not? I am not a lawyer. You are not either, I guess. But we do know that if I come along and say that I want to build a building in a certain location in the city of Washington and Congress passes this specific piece of legislation and says that I cannot build it more than so many feet high, regardless if I have plans for a 20-story building, and if the Congress says you cannot build it more than 10 stories high, I am not going to be able to build it more than 10 stories high. I don't know what the plans are. The hope was even though the plans said how it was going to be administered the language clearly provided that it had to be administered in accordance with the law of the river. If it was not done that way the Department of Interior, the Bureau of Reclamation, could simply say, very well, we have obligations, and we are not

going to turn this water loose unless you agree to do what you agreed to do originally.

Mr. GREGG. We will be tickled to death if the Bureau of Reclamation would assume control of the operation and maintenance of the tributary facilities and of the diversion facilities for the conservancy district and the city of Albuquerque on a permanent basis. As a matter of fact we asked for that a good many years ago when San Juan-Chama was under discussion. We understand, however, that the Bureau is not going to do it. Perhaps we are misinformed but that is the information that we got from the 1955 and the 1957 reports of the San Juan-Chama project.

Senator ANDERSON. You may not remember, Mr. Gregg, but at one time I as an individual filed a suit against the Rio Grande Conservancy District.

Mr. GREGG. I remember.

Senator ANDERSON. On the premise that it was going to be administered by the Bureau of Reclamation, and it was not being done so. So we are not far apart in the hope that the Bureau of Reclamation will administer a great deal in the area.

In the meantime do you feel that a Federal water supervisor such as they have in the State of Idaho would be of any use?

Mr. GREGG. There is some possibility that it may have to come to that. Of course, what we were shooting for was permanent control by the Bureau all along the river.

Senator ANDERSON. You would not use this bill to secure what you want in some other regard, would you?

You would want this bill to stand on its own feet.

Mr. GREGG. We want to be sure that we would be protected.

Senator ANDERSON. I do not blame you. I would hope that we might be able to work that protection out without too much trouble.

Thank you, Mr. Gregg.

Mr. Phillips.

Mr. PHILLIPS. If the chairman please, I would like to proceed as far as Texas' position is concerned in this order: Mr. Dixon, a member of the State board of water engineers speaks first, then me, and then Mr. Scott.

STATEMENTS OF R. M. DIXON, MEMBER, BOARD OF WATER ENGINEERS, STATE OF TEXAS; N. B. PHILLIPS, MANAGER, EL PASO COUNTY WATER IMPROVEMENT DISTRICT NO. 1; AND LOUIS A. SCOTT, RIO GRANDE COMPACT COMMISSIONER FOR TEXAS

Mr. DIXON. I appreciate the opportunity of coming before you. I am R. M. Dixon, chairman of the Board of Water Engineers for the State of Texas. I am also authorized to convey to you the greetings of the governor of the State of Texas and say that I am authorized to speak for him.

After reviewing the situation and listening to the testimony, Mr. Chairman, it is our feeling that we have nothing to add to the letter that we sent to Mr. Jennings which we have duplicated and which we would like to have inserted in the record.

Senator ANDERSON. That letter will go into the record at this point.

LETTER FROM THE STATE OF TEXAS BOARD OF WATER ENGINEERS

BOARD OF WATER ENGINEERS,
Austin, Tex., December 19, 1957.

Re San Juan-Chama project, Colorado-New Mexico

Mr. ROBERT W. JENNINGS,
Regional Director, Bureau of Reclamation,
Amarillo, Tex.

DEAR MR. JENNINGS: On October 17, 1957, this office received your May 1957 supplemental report on the captioned project, and after giving the same due consideration the State of Texas submits the following as conditions and provisions to be included in any authorizing legislation by the Congress of the United States:

1. The plans and specifications for this project shall provide for and comply with the three conditions stated in the proviso contained in section 2 of Public Law 485, 84th Congress, chapter 203, 2d session, approved April 11, 1956.

2. All works of the project shall be constructed so as to permit compliance physically with all provisions of the Rio Grande compact, and all such works shall be operated at all times in conformity with the Rio Grande compact.

3. In event the quantity of imported water should be insufficient to satisfy the full allocation of such water, diversions shall be curtailed in proportion to the amount of water actually imported in any calendar year whenever New Mexico shall have an accrued debit as defined in the Rio Grande compact.

4. (*a*) Details of project operation essential to the accounting of diverted San Juan River and Rio Grande flows shall be cooperatively developed through the joint efforts of the Rio Grande Compact Commission, the agencies of the affected States, including the State of Texas, and the various project entities. In this connection such actions shall include agreements on a system of gaging devices and measurements program to secure data necessary to determine the present effects of tributary irrigation, as well as present river channel losses.

(*b*) In the study of hydrologic relationships, three primary reaches shall be involved, namely, (1) the Rio Grande from the Colorado-New Mexico State line to the Otowi gaging station, (2) the combined reach of the Rio Chama and the Rio Grande from El Vado Dam to the Otowi gaging station, and (3) the Rio Grande proper from the Otowi gaging station to Elephant Butte Dam. Secondary reaches shall be established where necessary within the primary reaches and shall include the tributaries on which project development with its attendant exchange of water would occur.

(*c*) Equations shall be developed representing mathematically the flows at key stations within each reach and multiple or simple correlations shall be run reflecting present conditions for both the primary and secondary reaches established. Similarly, relationships shall be established for "with" project conditions in order that proper losses can be charged and both San Juan-Chama and Rio Grande water users be assured of proper water delivery.

(*d*) The system of gages and the procedures for establishing streamflow relationships shall be reviewed with the affected States, including the State of Texas, and concerned project interests.

(*e*) After project construction, continued measurements and continued checking of the relationships shall be made to insure application of proper loss factors and use of proper replacement quantities in project operation.

5. The requirements of paragraph 4 (*a*), (*b*), (*c*), and (*d*) shall be complied with and incorporated in a written report to the affected States, including the State of Texas, as provided in the Flood Control Act of 1944, before any appropriation shall be made for project construction.

Respectfully submitted.

R. M. DIXON, *Chairman.*

Mr. DIXON. With that, if the letter goes into the record, then with the recommendations to Mr. Jennings, we are setting out the State of Texas' views and we are in the happy position of saying we do not oppose the project but we would like to make one comment on a suggestion made by Mr. Reynolds with regard to language on page 15 of the statement. He said in his statement that he felt the language on

page 15 would be acceptable to the State of Texas. We do concur in that. He does go on to say:

> We believe that the incorporation of such language in authorizing legislation is not necessary since such operation would be required by our State law and the compact.

In a friendly sort of way I would like to disagree with him.

Senator ANDERSON. As I understand it, Mr. Reynolds, while you think the language is not necessary, you do not object to it, do you?

Mr. REYNOLDS. That is right.

Senator ANDERSON. Is it the position of the State of New Mexico that it is satisfactory to have this language in the law?

Mr. REYNOLDS. As far as I am concerned it is going in.

Mr. DIXON. I appreciate it. I would like to yield in the interest of time to my compatriot.

Senator ANDERSON. You tell Governor Daniel that he and I sat down and scribbled this in longhand after a telephone conversation he had with somebody from El Paso, I expect Mr. Scott.

I might say that I assume you are referring to the second language?

Mr. DIXON. Yes, sir.

Senator ANDERSON (reading):

> In event the quantity of imported water should be insufficient to satisfy the full allocation of such water, diversion shall be curtailed in proportion to the amount of imported water actually available from direct diversion and storage in any calendar year whenever New Mexico shall have an accrued debit defined in the Rio Grande compact.

Mr. DIXON. That is correct.

Senator ANDERSON. You want that?

Mr. DIXON. Yes.

Senator ANDERSON. Do you agree that it is all right?

Mr. REYNOLDS. Yes.

Senator ANDERSON. I will take a chance that that might be in the bill that will be reported.

STATEMENT OF N. B. PHILLIPS, MANAGER, EL PASO COUNTY WATER IMPROVEMENT DISTRICT NO. 1

Mr. PHILLIPS. My name is N. B. Phillips and I am the manager of the El Paso County Water Improvement District No. 1, which is the Texas part of the Rio Grande Federal reclamation project, serving 10,000 water users in Texas.

It is the position of El Paso County Water Improvement District No. 1 that before approval of Senate bill No. S. 3648, pertaining to the construction and operation of the San Juan-Chama project, Colorado-New Mexico, is given, more definite language should be included in the authorizing legislation.

In addition to the provisions of the act of April 11, 1956 (70 Stat. 105), we feel that the authorizing legislation should include the following provisions:

1. All works of the project shall be constructed so as to permit compliance physically with all provisions of the Rio Grande compact and all such works shall be operated at all times in conformity with the Rio Grande compact.

I would like to explain that paragraph. It so happens now that there are two storage dams and tributaries of the Rio Grande that were constructed.

Senator ANDERSON. Like the Hamas?

Mr. PHILLIPS. I am thinking of El Vado and El Toro. They were constructed for some reason or other with two little old holes in them that are just about big enough to drain a good-sized swimming pool. So we do not want the Bureau of anybody else responsible to build some more structures with the outlet so small that they cannot release water to comply with the content.

That is the intent of that compact.

Senator ANDERSON. I would say that sounds sensible.

Mr. PHILLIPS. Secondly, in event the quantity of imported water from San Juan Basin should be insufficient to satisfy the full allocations of such water, deliveries to San Juan-Chama project will be curtailed in proportion to the amount of water actually imported in any calendar year, whenever New Mexico shall have an accrued debit as defined in the Rio Grand compact.

I accede to Mr. Reynolds' language.

Senator ANDERSON. The official representative of the governor says he is satisfied with the language. You are satisfied with the language?

Mr. REYNOLDS. Yes.

Senator ANDERSON. I say to you what I said a moment ago, that I would be shocked if the bill came out of the subcommittee and did not have that language in it.

Mr. PHILLIPS. Thirdly, details of project operation essential to the accounting of diverted San Juan River and Rio Grande flows shall be cooperatively developed through the joint efforts of the Rio Grande Compact Commission, the agencies of the affected States, including the State of Texas, and the various project entities. In this connection such actions shall include agreements on a system of gaging devices and measurements program to secure data necessary to determine the present effects of tributary irrigation, as well as present river channel losses. The requirements of this paragraph shall be complied with and incorporated in a written report to the affected States, including the State of Texas, as provided in the Flood Control Act of 1944, before any appropriation shall be made for project construction.

Mr. Reynolds stated that he felt that such a gaging and measuring investigation should be made, if I understood him correctly. He did not, however, say that it was necessary to put it into the bill. We feel that it should be put into the bill.

Senator ANDERSON. I think we would want to talk to the Bureau of Reclamation a little bit, too, on that and see what they have to say.

Mr. PHILLIPS. That is all right.

Senator ANDERSON. Do I understand, that the State is not adverse to doing what they are talking about here in a general way?

Mr. REYNOLDS. Are you referring to No. 3, Mr. Phillips?

Mr. PHILLIPS. Yes.

Mr. REYNOLDS. I would not necessarily agree at this time. I think perhaps you would not want to agree that the program of gaging required is accurately described here. I think we want some more

study before we know what things need be measured and what needs to be correlated.

Senator ANDERSON. What I am trying to say, Mr. Reynolds, is this: I think Mr. Phillips wants to make sure that we have accurate measurements for what we are going to do.

Mr. PHILLIPS. We want to know what the inflow and the outflow of the river is now.

Mr. REYNOLDS. So do we.

Senator ANDERSON. That is what I was trying to get to. As to that general statement, you are in agreement?

Mr. REYNOLDS. Yes, sir.

Senator ANDERSON. As to the exact specification that might go into a bill, we have to have room to argue, but with the general purpose you find yourself in agreement?

Mr. REYNOLDS. Yes, sir.

Senator ANDERSON. There are other people here.

Mr. Love, do you object to that general statement?

Mr. LOVE. No.

Senator ANDERSON. Mr. Morris?

Mr. MORRIS. No.

Senator ANDERSON. Mr. Coury?

Mr. COURY. No, sir.

Senator ANDERSON. We are not going too far apart on that, Mr. Phillips.

Mr. PHILLIPS. I think, Senator, that the next paragraph of my statement rather supports what I have asked for because it says as follows:

The reports of the Bureau of Reclamation of November 1955, and May 1957, on the San Juan-Chama project, recommends that studies provided for in paragraph 3 above should be made.

Of course they go into a more elaborate method of making them.

My statement in item 3 was to condense it. I mean get the same thought in there but to condense it.

We feel that it is not only important to us that an accounting of present inflow and outflow of the Rio Grande be made prior to the importation of San Juan River water, but also to the now-existent projects above Elephant Butte Dam in New Mexico.

Senator ANDERSON. Mr. Phillips, that sounds like a very reasonable statement, reasonable request. I can only say to you that as far as I am able to do so I will try to see if we can find language that will satisfy you and we will try to put that into written form so that you can have a look at it before it ever reaches the Senate floor.

Mr. PHILLIPS. Thank you, sir.

Senator ANDERSON. Mr. Scott.

Mr. SCOTT. Senator Anderson, I have a very brief statement here. When I finish with it I would just like to add about 1 or 2 minutes of comment.

Senator ANDERSON. Surely.

STATEMENT OF LOUIS A. SCOTT, RIO GRANDE COMPACT COMMISSIONER, EL PASO, TEX.

Mr. SCOTT. My name is Louis A. Scott. My address is 1100 First National Building, El Paso, Tex., and I am Rio Grande compact commissioner for Texas.

I first wish to say that Texas recognizes that all waters of the San Juan River allocated to New Mexico under the upper Colorado River Basin compact are New Mexico waters, and Texas, therefore, asserts no claim to them.

The primary concern of Texas is that the authorizing legislation provides that in the operation of the San Juan-Chama project, and in the interchange and commingling of the waters of the San Juan River and Rio Grande, Texas shall not be deprived of any water to which she is entitled under the Rio Grande compact.

In our opinion, this can be assured only by the authorizing of legislation specifically providing for the method and manner of project operation. I, therefore, approve the statements made to the committee by the Honorable R. M. Dixon, a member of, and speaking for, the Texas Board of Water Engineers, and Mr. N. B. Phillips, manager of El Paso County Water Improvement District No. 1, which is 1 of the 2 irrigation and reclamation districts forming the Rio Grande Federal reclamation project.

Attached to my statement, Senator, is a copy of a letter from Governor Daniel to Mr. Jennings of the Bureau of Reclamation and in the second paragraph he mentions what occurred between you and him during the 84th Congress.

Senator ANDERSON. The letter will be included in the record at this point.

LETTER FROM GOVERNOR DANIEL

THE STATE OF TEXAS,
EXECUTIVE DEPARTMENT,
Austin, Tex., January 7, 1958.

Hon. ROBERT W. JENNINGS,
Regional Director, Bureau of Reclamation, Department of the Interior,
Amarillo, Tex.

DEAR MR. JENNINGS: Under date of December 19, 1957, the chairman of the State board of water engineers, Hon. R. M. Dixon, forwarded to you the board's comments on your May 1957 supplemental report on the San Juan-Chama project in Colorado and New Mexico. After careful study of Mr. Dixon's letter, I concur wholeheartedly in the suggested conditions and provisions to be included in any further legislation by the Congress on this project.

As a United States Senator from Texas, I had the privilege of working out with Senator Clinton Anderson, of New Mexico, the 3 conditions of the proviso in section 2, Public Law 485, 84th Congress, chapter 203, 2d session, referred to in paragraph 1 of Mr. Dixon's letter, copy of which is attached. It is still the official policy of the State of Texas that all works of the San Juan-Chama project should be constructed so as to permit compliance physically with all provisions of the Rio Grande compact and that all such works be operated at all times in conformity with the compact. We also believe the requirements of paragraphs 3, 4, and 5 of Mr. Dixon's letter must be met in order to provide adequate safeguards for the water users in and around El Paso and below Elephant Butte Dam in accordance with the Rio Grande compact and the Flood Control Act of 1948.

If consistent with your procedure, I will appreciate your inserting this letter and the one from Chairman Dixon in your final report to the Secretary of the Interior and the Congress.

Sincerely yours,

PRICE DANIEL, *Governor.*

I want to say that we put the language in the Senate bill. When the House passed the bill they left out the language and the conferees, not knowing about the language, were about to read the conference report without the language being in it.

When I saw that I said, "Wait a minute. We made a commitment to Price Daniel and I cannot take this bill without this language that we agreed to."

We put the language back in. I only cite that to show that these agreements which I made ought to be lived up to.

Mr. SCOTT. We are grateful for your cooperation and help in that respect. We are planning—I say "we" because we feel we are a part of it—we are talking about something and planning for something not for today and next year, but for generations to come. At least we hope that is the way it will work out. I am sure it will.

Therefore, it is our firm and sincere belief that the method of operating the project should be rather spelled out, Senator, in the authorizing legislation. If that is done it is there. It tells everybody concerned what is to be done and how it is to be done, and it will not be necessary to go back into legislative history to ascertain what the purpose and intent of Congress was at that time.

Senator ANDERSON. I quite agree with that. On the other hand, I just want to point out that I had lunch this noon with Governor Mechem and pointed out to him that the elaborate formula that the Bureau of Reclamation worked out for calculating this question of how we are going to operate under this sharing loss principle up there might be so complicated that if we got it written right into the law we would never be able to administer it.

Mr. SCOTT. I do not mean all of that detail, Senator. We have here a proposed amendment to the bill which would leave section 6 reading exactly as it is now but adding a proviso. It is less than one page.

Senator ANDERSON. Would you read that into the record at this point.

Mr. SCOTT. Yes, sir.

Section (c) when I get it will be changed to read in conformity with the wording that Mr. Reynolds has in his statement.

Senator ANDERSON. Yes.

Mr. SCOTT. But this would be our suggested amendment:

Amend by adding to section 6 the following:

Provided: (a) All works of the project, both in its initial stage and in its final development, shall be constructed so as to permit compliance physically with all provisions of the Rio Grande compact, and all such works shall be operated at at all times in conformity with the Rio Grande compact;

Section (b) as I said is Mr. Reynolds' language.

In event the quantity of imported water should be insufficient to satisfy the full allocation of such water, diversion shall be curtailed in proportion to the amount of imported water actually available from direct diversion and storage in any calendar year whenever New Mexico shall have an accrued debit defined in the Rio Grande compact;

Then section (c).

Details of project operation essential to the accounting of diverted San Jan River and Rio Grande flows shall be cooperatively developed through the joint efforts of the Rio Grande Compact Commission, the agencies of the affected States, including the State of Texas, and the various project entities. In this connection such actions shall include agreements on a system of gaging devices and measurements program to secure data necessary to determine the present effects of tributary irrigation, as well as present river channel losses. The requirements of this paragraph shall be incorporated in a written report to the affected States, including the State of Texas, as provided in the Flood Control Act of 1944, before any appropriation shall be made for project construction.

Senator ANDERSON. That completes your suggestion as to what you think the amendment should be?

Mr. SCOTT. Yes.

Senator ANDERSON. Mr. Reynolds, will you eventually give us the opinion of the State of New Mexico on the proposed amendment after you have had opportunity to consult with the Governor and the attorney general if you wish?

I would like to have Mr. Love have it studied from the Rio Grande Conservancy District and give me a comment on it, and any other affected or interested groups that might wish to comment on it. I do not believe it affects the Navajo project.

Mr. PHILLIPS. No.

I think that is all we need so far as we are concerned.

Senator ANDERSON. Except I wish you would ask the Bureau of Reclamation for their comments also.

Mr. LINEWEAVER. Yes, Senator.

Senator ANDERSON. Do you have an additional statement?

Mr. SCOTT. No, sir. Thank you very much.

Senator ANDERSON. I appreciate the shortness of the statements by our friends from the Texas area.

We will be in session tomorrow starting at 10 o'clock for the views of California which I understand are going to be short. I want to say that if something comes up we think additional comment should be made we will try to accommodate you.

(Whereupon, the committee recessed at 6:15 p. m. to resume at 10 a. m., Thursday, July 10, 1958.)