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SALINITY CONTROL MEASURES ON THE COLORADO RIVER

GOVERNMENT
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JUL 30 1974
SECRETARY
KANSAS STATE UNIVERSITY

HEARING

BEFORE THE

SUBCOMMITTEE ON WATER AND POWER RESOURCES

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

NINETY-THIRD CONGRESS

SECOND SESSION

ON

S. 1807

A BILL TO AUTHORIZE THE SECRETARY OF THE INTERIOR TO EXECUTE A PROGRAM OF SALINITY CONTROL FOR THE COLORADO RIVER, AND FOR OTHER PURPOSES

S. 2940

A BILL TO AUTHORIZE THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF CERTAIN WORKS IN THE COLORADO RIVER BASIN TO CONTROL THE SALINITY OF WATER DELIVERED TO USERS IN THE UNITED STATES AND MEXICO

S. 3094

A BILL TO AUTHORIZE THE MEASURES NECESSARY TO CARRY OUT THE PROVISIONS OF MINUTE NUMBERED 242 OF THE INTERNATIONAL BOUNDARY AND WATER COMMISSION, CONCLUDED PURSUANT TO THE WATER TREATY OF 1944 WITH MEXICO (TIAS 994), ENTITLED "PERMANENT AND DEFINITIVE SOLUTION TO THE INTERNATIONAL PROBLEM OF THE SALINITY OF THE COLORADO RIVER"

APRIL 26, 1974

Printed for the use of the
Committee on Interior and Insular Affairs

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SALINITY CONTROL MEASURES ON THE COLORADO RIVER

FRIDAY, APRIL 26, 1974

U.S. SENATE,
SUBCOMMITTEE ON WATER AND POWER RESOURCES,
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 3110, Dirksen Office Building, Hon. Frank Church, chairman, presiding.

Present: Senators Church, Bible, Haskell, and Fannin.

Also present: Jerry T. Verkler, staff director; Daniel A. Dreyfus and Russell R. Brown, professional staff members; and W. O. Craft, Jr., deputy minority counsel.

OPENING STATEMENT OF HON. FRANK CHURCH, A U.S. SENATOR FROM THE STATE OF IDAHO

Senator CHURCH. The hearing will please come to order.

The purpose of this hearing before the Water and Power Subcommittee this morning is to take testimony on three bills which would authorize measures for the control of salinity of the Colorado River.

S. 3094, a bill proposed by the administration, would authorize the actions which are necessary to carry out a recent agreement between the United States and Mexico. The work which is involved would primarily affect the salinity of the Colorado River water delivered to Mexico under the provisions of the Water Treaty of 1944.

S. 1807, which was cosponsored by Senator Tunney and several other Senators from Colorado River Basin States, would authorize a program of salinity control in the Upper Colorado River Basin. It would include some immediate construction authorities and a study program.

Finally, S. 2940, which was introduced by Senators Fannin and Bible, generally incorporates the provisions of both of the other bills. It would authorize measures for salinity control throughout the basin, including those necessary to implement the agreement with Mexico.

The increasing salinity of the Colorado River has been a matter of concern for some time. The stream is a resource of critical significance to seven Western States and a large area in Mexico. The economic losses to all of the users because of salinity, the international ten-

sions arising from increasing salinity of the deliveries to Mexico, and the threat of ultimate termination of further uses of the river are matters of great importance to the Congress.

I am hopeful that the testimony we will receive will provide an adequate record to support prompt action by the committee.

The texts of all three measures and the executive communications relating to the bills will be included in the record at this point.

[The bills and executive communications follow:]

93D CONGRESS
1ST SESSION

S. 1807

IN THE SENATE OF THE UNITED STATES

MAY 14, 1973

Mr. TUNNEY (for himself, Mr. CRANSTON, Mr. BENNETT, Mr. BIBLE, Mr. CANNON, Mr. DOMENICI, Mr. DOMINICK, Mr. GOLDWATER, Mr. HANSEN, Mr. HASKELL, Mr. MCGEE, Mr. MONTOYA, and Mr. MOSS) introduced the following bill; which was read twice and referred to the Committee on Interior and Insular Affairs

A BILL

To authorize the Secretary of the Interior to execute a program of salinity control for the Colorado River, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—OBJECTIVE

SEC. 101. That this Act may be cited as the "Colorado River Basin Salinity Control Act of 1973".

SEC. 102. (a) In recognition of the problems caused by the increasing concentration of dissolved solids in the waters of the main stem of the Colorado River downstream from Lee Ferry, and to preserve the general welfare of the

citizens of the Nation, interstate harmony, and international comity with Mexico, it is the objective of this Act to provide a program for salinity control in the Colorado River Basin.

(b) It is the policy of Congress that the Secretary of the Interior (hereinafter referred to as the "Secretary") shall implement the salinity control policy adopted for the Colorado River in the "Conclusions and Recommendations" published in the Proceedings of the Reconvened Seventh Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries in the States of California, Colorado, Utah, Arizona, Nevada, New Mexico and Wyoming, held in Denver, Colorado on April 26–27, 1972, under the authority of section 10 of the Federal Water Pollution Control Act (33 U.S.C. 1160), and approved by the Administrator of the Environmental Protection Agency on June 9, 1972.

(c) The Secretary is hereby directed to expedite the investigation, planning, and implementation of the salinity control program generally as described in chapter VI of the Secretary's report entitled "Colorado River Water Quality Improvement Program, February 1972."

(d) In conformity with section 102(b) of this Act and the authority of the Environmental Protection Agency under Federal laws, the Secretary and the Administrator of the Environmental Protection Agency are directed to

cooperate and coordinate their activities to effectively carry out the objective of this Act.

TITLE II—INITIAL STAGE

SEC. 201. In conformity with sections 102(b) and 102(c) of this Act, the Secretary is authorized to construct the following salinity control units as the initial stage of the Colorado River Basin salinity control program: La Verkin Springs, Paradox Valley, and Grand Valley.

TITLE III—CONTINUING PROGRAM

SEC. 301. The Secretary is authorized and directed to—

(a) expedite completion of the planning report on the following units, of which (1) through (3) are described in the Secretary's report, "Colorado River Water Quality Improvement Program, Febraury 1972".

(1) Irrigation source control:

Lower Gunnison.

Uintah Basin.

Colorado River Indian Reservation.

Palo Verde Irrigation District.

(2) Point source control:

Littlefield Springs.

Crystal Geyser.

Glenwood-Dotsero Springs.

(3) Diffuse source control:

Price River.

San Rafael River.

Dirty Devil River.

McElmo Creek.

Big Sandy River.

(4) Saline water collection system of Las Vegas Wash.

(b) submit each planning report on the units named in section 301 (a) of this Act promptly to the Colorado River Basin States and to such other parties as the Secretary deems appropriate for their review and comments. After receipt of comments on a unit and careful consideration thereof, the Secretary shall submit each final report with his recommendations to the President, other concerned Federal departments and agencies, the Congress, and the Colorado River Basin States.

SEC. 302. The Secretary is directed:

(a) in the investigation, planning, construction, and implementation of any salinity control unit involving control of salinity from irrigation sources to cooperate with the Secretary of Agriculture in carrying out research and demonstration projects and in implementing on-the-farm improvements and farm management practices and programs which will further the objective of this Act;

(b) to undertake research on additional methods

for accomplishing the objective of this Act, utilizing to the fullest extent practicable the capabilities and resources of other Federal departments and agencies, interstate institutions, States, and private organizations.

TITLE IV—ADVISORY COUNCIL

SEC. 401. (a) There is hereby created the Colorado River Basin Salinity Control Advisory Council composed of no more than three members from each State appointed by the Governor of each of the Colorado River Basin States.

(b) The Council shall be advisory only and shall—

(1) act as liaison between both the Secretary and the Administrator of the Environmental Protection Agency and the States in accomplishing the purposes of this Act;

(2) receive reports from the Secretary on the progress of the salinity control program and review and comment on said reports; and

(3) recommend to both the Secretary and the Administrator of the Environmental Protection Agency appropriate studies of further projects, techniques, or methods for accomplishing the purposes of this Act.

TITLE V—ALLOCATION OF COSTS, REPAYMENTS

SEC. 501. The Secretary shall allocate the total costs of each unit or separable feature thereof authorized by section 201 of this Act, as follows:

(a) In recognition of Federal responsibility for the Colorado River as an interstate stream and for international comity with Mexico, Federal ownership of the lands of the Colorado River Basin from which most of the dissolved salts originate, and the policy embodied in the Federal Water Pollution Control Act Amendments of 1972 (86 Stat. 816), 75 per centum of the total costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof shall be nonreimbursable.

(b) Twenty-five per centum of the total costs shall be allocated between the Upper Colorado River Basin Fund established by section 5(a) of the Colorado River Storage Project Act (70 Stat. 107) and the Lower Colorado River Basin Development Fund established by section 403(a) of the Colorado River Basin Project Act (82 Stat. 895) after consultation with the Advisory Council created in section 401(a) of this Act and consideration of the following items—

(1) benefits to be derived in each basin from the use of water of improved quality and the use of works for improved water management;

(2) causes of salinity; and

(3) availability of revenues in the Lower Colorado River Basin Development Fund and increased revenues to the Upper Colorado River Basin Fund made available under section 504 of this Act: *Provided*, That costs allo-

cated to the Upper Colorado River Basin Fund under section 501 (b) of this Act shall not exceed 15 per centum of the costs allocated to the Upper Colorado River Basin Fund and the Lower Colorado River Basin Development Fund.

(c) Costs of construction of each unit or separable feature thereof allocated to the Upper Basin and to the Lower Basin under section 501 (b) of this Act shall be repaid within a fifty-year period without interest from the date such unit or separable feature thereof is determined by the Secretary to be in operation.

SEC. 502. (a) Costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof allocated for repayment by the lower basin under section 501 (b) of this Act shall be paid in accordance with subsection (b) of this section, from the Lower Colorado River Basin Development Fund.

(b) Section 403 (g) of the Colorado River Basin Project Act (82 Stat. 896) is hereby amended as follows: strike the word "and" after the word "Act" in line 8; insert after the word "Act" the following: "(2) for repayment to the General Fund of the Treasury the costs of each salinity control unit or separable feature thereof payable from the Lower Colorado River Basin Development Fund in accordance with sections 501 (b), 501 (c), and 502 (a) of the

Colorado River Basin Salinity Control Act of 1973, and" change paragraph (2) to paragraph (3).

SEC. 503. (a) Costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof allocated for repayment by the upper basin under section 501(b) of this Act shall be paid in accordance with subsection (b) of this section, from the Upper Colorado River Basin Fund within the limit of the funds made available under section 504 of this Act.

(b) Section 5(d) of the Colorado River Storage Project Act (70 Stat. 108) is hereby amended as follows: strike the word "and" at the end of paragraph (3); strike the period after the word "years" at the end of paragraph (4) and insert a semicolon in lieu thereof followed by the word "and"; add a new paragraph (5) reading: "(5) the costs of each salinity control unit or separable feature thereof payable from the Upper Colorado River Basin Fund in accordance with sections 501(b), 501(c), and 503(a) of the Colorado River Basin Salinity Control Act of 1973."

SEC. 504. The Secretary is authorized to make upward adjustments in rates charged for electrical energy under all contracts administered by the Secretary under the Colorado River Storage Project Act (70 Stat. 105; 43 U.S.C. 620) as soon as practicable and to the extent necessary to cover the costs of construction, operation, maintenance, and re-

placement of units allocated under section 501 (b) and in conformity with section 501 (c) of this Act: *Provided*, That revenues derived from said rate adjustments shall be available solely for the construction, operation, maintenance, and replacement of salinity control units in the Colorado River Basin herein authorized.

TITLE VI—GENERAL PROVISIONS

SEC. 601. Commencing on January 1, 1975, and every two years thereafter, the Secretary shall submit to the President, the Congress, and the Advisory Council created in section 401 (a) of this Act a report on the Colorado River salinity control program authorized by this Act covering the progress of investigations, planning, and construction of salinity control units for the previous fiscal year, the effectiveness of such units, anticipated work needed to be accomplished in the future to meet the objective of this Act with emphasis on the needs during the five years immediately following the date of each report, and any special problems that may be impeding progress in attaining an effective salinity control program. Said report may be included in the biennial report on the quality of water of the Colorado River Basin prepared by the Secretary pursuant to section 15 of the Colorado River Storage Project Act (70 Stat. 111; 43 U.S.C. 602n), section 15 of the Navajo Indian irrigation project and the initial stage of the San Juan-Chama Proj-

ect Act (76 Stat. 102), and section 6 of Fryingpan-Arkansas Project Act (76 Stat. 393).

SEC. 602. Except as provided in sections 502 (b) and 503 (b) of this Act with respect to the Colorado River Storage Project Act and the Colorado River Basin Project Act, nothing in this Act shall be construed to alter, amend, repeal, modify, interpret, or be in conflict with the provisions of the Colorado River compact (45 Stat. 1057), the Upper Colorado River Basin compact (63 Stat. 31), the Water Treaty of 1944 with the United Mexican States (Treaty Series 994; 59 Stat. 1219), the decree entered by the Supreme Court of the United States in Arizona versus California and others (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), Boulder Canyon Project Adjustment Act (54 Stat. 774; 43 U.S.C. 618a), section 15 of the Colorado River Storage Project Act (70 Stat, 111; 43 U.S.C. 620n), the Colorado River Basin Project Act (82 Stat. 885), section 6 of the Fryingpan-Arkansas Project Act (76 Stat. 393), and section 15 of the Navajo Indian Irrigation Project and initial stage of the San Juan-Chama Project Act (76 Stat. 102).

SEC. 603. As used in this Act—

(a) all terms that are defined in the Colorado River compact shall have the meanings therein defined;

(b) "Colorado River Basin States" means the States

of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.

SEC. 604. There are hereby authorized to be appropriated such sums as may be required to carry out the objective of this Act.

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93D CONGRESS
2D SESSION

S. 2940

IN THE SENATE OF THE UNITED STATES

FEBRUARY 1, 1974

Mr. FANNIN (for himself and Mr. BIBLE) introduced the following bill; which was read twice and referred to the Committee on Interior and Insular Affairs

A BILL

To authorize the construction, operation, and maintenance of certain works in the Colorado River Basin to control the salinity of water delivered to users in the United States and Mexico.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Colorado River Basin Salinity Control Act".

TITLE I—PROGRAMS DOWNSTREAM FROM IMPERIAL DAM

SEC. 101. (a) The Secretary of the Interior, hereinafter referred to as the "Secretary", is authorized and directed to proceed with a program of works of improvement for the enhancement and protection of the quality of water

available in the Colorado River for use in the United States and the Republic of Mexico, in accordance with the provisions of this Act.

(b) (1) The Secretary is authorized to construct, operate, and maintain a desalting complex, including (1) a desalting plant to reduce the salinity of drain water from the Wellton-Mohawk division of the Gila project, Arizona (hereinafter referred to as the "division"), including a pretreatment plant for settling and filtration of the drain water to be desalted; (2) the necessary appurtenant works including the intake pumping plant system, product waterline, power transmission facilities, and permanent operating facilities; (3) the necessary extension of the existing bypass drain to carry the reject stream from the desalting plant and other drainage waters to the Santa Clara Slough in Mexico, subject to arrangements made pursuant to section 101(c); (4) replacement of the metal flume in the existing main outlet drain extension with a concrete siphon; (5) reduction of irrigation return flows through acquisition of lands to reduce the size of the division, and irrigation efficiency improvements to limit return flows; (6) regulation of Gila River floodwaters entering the division, including possible acquisition of private lands above Painted Rock Dam in Arizona; and (7) all associated facilities including roads, railroad spur, and transmission lines.

(2) The desalting plant shall be designed to reduce the salinity of approximately one hundred and twenty-nine million gallons a day of drain water by a membrane process using advanced technology commercially available. The plant shall effect recovery initially of not less than 70 per centum of the drain water as product water, and shall effect reduction of not less than 90 per centum of the dissolved solids in the feed water. The Secretary shall use sources of electric power supply for the desalting complex that will not diminish the supply power to preference customers from Federal power systems operated by the Secretary. All costs associated with the desalting plant shall be nonreimbursable.

(c) Replacement of the reject stream from the desalting plant and other drainage waters bypassed to the Santa Clara Slough, at such times as surplus deliveries would not otherwise be made to Mexico, is recognized as a national obligation. The Secretary shall conduct studies to be completed not later than June 30, 1980, providing for adequate replacement water.

(d) The Secretary is hereby authorized to advance funds to the United States section, International Boundary and Water Commission (IBWC), for construction, operation, and maintenance by Mexico pursuant to minute numbered 242 to the Mexican Water Treaty of February 3, 1944, of that portion of the bypass drain within Mexico.

Such funds shall be transferred to an appropriate Mexican agency, under arrangements to be concluded by the IBWC providing for the construction, operation, and maintenance of such facility by Mexico.

(e) Any desalted water not needed for the purposes of this Act may be disposed of at prices and under terms and conditions satisfactory to the Secretary and the proceeds therefrom shall be deposited in the general fund of the Treasury.

(f) For the purpose of reducing the return flows from the division to one hundred and seventy-five thousand acre-feet or less annually, the Secretary is authorized to:

(1) Accelerate the cooperative program of Irrigation Management Services with the Wellton-Mohawk Irrigation and Drainage District, hereinafter referred to as the "district", for the purpose of improving irrigation efficiency. The district shall bear its share of the cost of such program as determined by the Secretary.

(2) Acquire, by purchase or through eminent domain or exchange, to the extent determined by him to be appropriate, lands or interests in lands to reduce the existing seventy-five thousand irrigable acres authorized by the Act of July 30, 1947, (61 Stat. 628) known as the Gila Reauthorization Act. The initial reduction

in irrigable acreage shall be limited to approximately ten thousand acres. If the Secretary determines that the irrigable acreage of the division must be reduced below sixty-five thousand acres of irrigable lands to carry out the purpose of this section, the Secretary is authorized to acquire additional developed irrigable lands, as may be deemed by him to be appropriate.

(g) The Secretary is authorized to dispose of the acquired lands and interests therein on terms and conditions satisfactory to him and meeting the objective of this Act or to retain such lands for fish, wildlife, or other appropriate purposes.

(h) The Secretary is authorized, either in conjunction with or in lieu of land acquisition, to assist water users in the division in installing system improvements, such as ditch lining, change of field layouts, automatic equipment, sprinkler systems, and bubbler systems, as a means of increasing irrigation efficiencies: *Provided, however,* That all costs associated with the improvements authorized herein and allocated to the water users on the basis of benefits received, as determined by the Secretary, shall be reimbursed to the United States in amounts and on terms and conditions satisfactory to the Secretary. All costs associated with improvements that will enable water users to meet applicable

water quality requirements of State and Federal law shall be the responsibility of the water users under financial criteria established by law.

(i) The Secretary is authorized to amend the contract between the United States and the district dated March 4, 1952, as amended, to provide that—

(1) the portion of the existing repayment obligation owing to the United States allocable to irrigable acreage eliminated from the division for the purposes of this Act, as determined by the Secretary, shall be nonreimbursable; and

(2) if deemed appropriate by the Secretary, the district shall be given credit against its outstanding repayment obligation to offset any increase in operation and maintenance assessments per acre which may result from the district's decreased operation and maintenance base, all as determined by the Secretary.

(j) The Act of July 30, 1947 (61 Stat. 628), is hereby amended to reduce the authorized irrigable acreage of the division as provided in section 201 (e) herein.

(k) The Secretary is authorized to acquire through the Corps of Engineers fee title to, or other necessary interests in, additional lands above the Painted Rock Dam in Arizona that are required for the temporary storage capacity needed to permit operation of the dam and reservoir in times

of serious flooding. The Secretary is also authorized, in conjunction with the Corps of Engineers, to adopt other control measures below the dam to permit the United States to comply with its obligations under minute numbered 242. No funds shall be expended for acquisition of land or interests therein until it is finally determined by a Federal court of competent jurisdiction that the Corps of Engineers presently lacks legal authority to use said lands for this purpose. Nothing contained in this Act nor any action taken pursuant to it shall be deemed to be a recognition or admission of any obligation to the owners of such land on the part of the United States or a limitation or deficiency in the rights or powers of the United States with respect to such land or the operation of the reservoir.

(l) To the extent desirable to carry out sections 101 (f) (1) and 101 (h), the Secretary may transfer funds to the Secretary of Agriculture as may be required for technical assistance to farmers, conduct of research and demonstration and such related investigations as are required to achieve higher onfarm irrigation efficiencies.

(m) All cost associated with the desalting complex shall be nonreimbursable except as provided in sections 101 (f) and 101 (g).

SEC. 102. (a) The Secretary is authorized to construct a new concrete-lined canal or to line the presently unlined

portion of the Coachella Canal of the Boulder Canyon project in California from station 2+26 to the beginning of siphon number 7, a length of approximately forty-nine miles.

(b) The total construction charges shall be repayable without interest in equal annual installments over a period of forty years beginning in the year following completion of construction: *Provided,* That repayment shall be prorated by the Secretary between the United States and the Coachella Valley County Water District based upon the benefits that each receives from the project authorized by section 102(a), all as determined by the Secretary. The annual repayment installments shall be nonreimbursable to the extent the Secretary determines that the United States benefits from the project by virtue of the use of water saved in meeting the international settlement objective of this Act. In no event shall the United States reserve such benefit after the Secretary reduces deliveries of main stream Colorado River water to California to 4.4 million acre-feet per year.

(c) The Secretary is authorized to acquire by purchase, eminent domain, or exchange private lands or interests therein, as may be determined by him to be appropriate, within the Imperial Irrigation District on the Imperial East Mesa which receive, or which have been granted rights to receive, water from Imperial Irrigation District's capacity in

the Coachella Canal. Costs of such acquisitions shall be nonreimbursable and the Secretary is authorized to dispose of the acquired lands or interests therein together with the rights to any water therefor on terms and conditions satisfactory to him, and the proceeds therefrom shall be deposited in the general fund of the Treasury.

(d) The Secretary is authorized to credit Imperial Irrigation District against its final payments for certain outstanding construction charges payable to the United States on account of capacity to be relinquished in the All-American and Coachella Canals as a result of the canal lining program, all as determined by the Secretary: *Provided*, That relinquishment of capacity shall not affect the established basis for allocating operation and maintenance costs of the main All-American Canal to existing contractors.

SEC. 103. (a) If the comprehensive agreement on ground water provided for in section 5 of minute numbered 242 is not reached within two years from the date of this Act, the Secretary shall consult with the Secretary of State and determine whether such an agreement is likely to be concluded within a reasonable time. If the Secretary determines that such an agreement is not likely to be concluded within a reasonable time, the Secretary is authorized to:

(1) Construct, operate, and maintain wells in the

areas found appropriate for well fields as a means of utilizing ground waters of the Yuma Mesa division, Gila project, and the Valley division, Yuma project areas, Arizona, which wells shall be capable of furnishing approximately one hundred and sixty thousand acre-feet of water per year for use in the United States and for delivery to Mexico in satisfaction of the 1944 Mexican Water Treaty.

(2) Acquire by purchase, eminent domain, or exchange, to the extent determined by him to be appropriate, approximately twenty-three thousand five hundred acres of lands or interests therein within approximately five miles of the Mexican border on the Yuma Mesa.

(b) The cost of work provided for in this section shall be nonreimbursable.

SEC. 104. The Secretary is authorized to provide for modifications of the projects authorized by this Act to the extent he determines appropriate for purposes of meeting the international settlement objective of this Act at the lowest overall cost to the United States. No funds for any such modification shall be expended until the expiration of sixty days after the proposed modification has been submitted to the Congress, unless the Congress approves an earlier date by concurrent resolution. The Secretary shall notify the

Governors of the Colorado River Basin States of such modifications.

SEC. 105. The Secretary is hereby authorized to enter into contracts that he deems necessary to carry out the provisions of this Act in advance of the appropriation of funds therefor.

SEC. 106. In carrying out the provisions of this Act, the Secretary shall consult and cooperate with the Secretary of State, the Administrator of the Environmental Protection Agency, the Secretary of Agriculture, and other affected Federal, State, and local agencies.

SEC. 107. Nothing in this Act shall be deemed to modify the National Environmental Policy Act of 1969, the Federal Water Pollution Control Act, as amended, or, except as expressly stated herein, the provisions of any other Federal law.

SEC. 108. There is hereby authorized to be appropriated the sum of $119,500,000 for the construction of the works and accomplishment of the purposes authorized in sections 101 and 102, and $34,000,000 to accomplish the purpose of section 103, based on April 1973 prices, plus or minus such amounts as may be justified by reason of ordinary fluctuations in construction costs involved therein, and such sums as may be required to operate and maintain such works and to provide for such modifications as may be made pursuant to sec-

tion 104. There is further authorized to be appropriated such sums as may be necessary to pay condemnation awards in excess of appraised values and to cover costs required in connection with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 90–646).

TITLE II—MEASURES UPSTREAM FROM IMPERIAL DAM

SEC. 201. (a) The Secretary of the Interior shall implement the salinity control policy adopted for the Colorado River in the "Conclusions and Recommendations" published in the Proceedings of the Reconvened Seventh Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries in the States of California, Colorado, Utah, Arizona, Nevada, New Mexico, and Wyoming, held in Denver, Colorado, on April 26–27, 1972, under the authority of section 10 of the Federal Water Pollution Control Act (33 U.S.C. 1160), and approved by the Administrator of the Environmental Protection Agency on June 9, 1972.

(b) The Secretary is hereby directed to expedite the investigation, planning, and implementation of the salinity control program generally as described in chapter VI of the Secretary's report entitled "Colorado River Water Quality Improvement Program, February, 1972".

(c) In conformity with section 201 (a) of this Act and the authority of the Environmental Protection Agency under Federal laws, the Secretary, the Administrator of the Environmental Protection Agency, and the Secretary of Agriculture are directed to cooperate and coordinate their activities to effectively carry out the objective of this Act.

SEC. 202. The Secretary is authorized to construct, operate, and maintain the following salinity control units as the initial stage of the Colorado River Basin salinity control program:

(1) The Paradox Valley unit, Montrose County, Colorado, consisting of facilities for collection and disposition of saline ground water of Paradox Valley, including wells, pumps, pipelines, solar evaporation ponds, and all necessary appurtenant and associated works such as roads, fences, dikes, power transmission facilities, and permanent operating facilities.

(2) The Grand Valley unit, Colorado, consisting of measures and all necessary appurtenant and associated works to reduce the seepage of irrigation water from the irrigated lands of Grand Valley into the ground water and from thence into the Colorado River. Measures shall include lining of canals, laterals, and farmer's ditches and the combining of existing canals and laterals into fewer and more efficient facilities. Prior to initiation of construction of the Grand

Valley unit the Secretary shall enter into contracts through which the agencies owning, operating, and maintaining the water distribution systems in Grand Valley, singly or in concert, will assume all obligations relating to the continued operation and maintenance of the unit's facilities to the end that the maximum reduction of salinity inflow to the Colorado will be achieved. The Secretary is also authorized to provide, as an element of the Grand Valley unit, for a technical staff to provide information and assistance to water users on means and measures for limiting excess water applications to irrigated lands.

(3) The Crystal Geyser unit, Utah, consisting of facilities for collection and disposition of saline geyser discharges; including dikes, pipelines, solar evaporation ponds, and all necessary appurtenant works including operating facilities.

(4) The Las Vegas Wash unit, Nevada, consisting of facilities for collection and disposition of saline ground water of Las Vegas Wash, including infiltration galleries, pumps, desalter, pipelines, solar evaporation facilities, and all appurtenant works including but not limited to roads, fences, power transmission facilities, and operating facilities.

SEC. 203. (a) The Secretary is authorized and directed to—

(1) Expedite completion of the planning reports on the following units, described in the Secretary's re-

port, "Colorado River Water Quality Improvement Program, February 1972".

(i) Irrigation source control:

Lower Gunnison.

Uintah Basin.

Colorado River Indian Reservation.

Palo Verde Irrigation District.

(ii) Point source control:

LaVerkin Springs.

Littlefield Springs.

Glenwood-Dotsero Springs.

(iii) Diffuse source control:

Price River.

San Rafael River.

Dirty Devil River.

McElmo Creek.

Big Sandy River.

(2) Submit each planning report on the units named in section 203 (a) (1) of this Act promptly to the Colorado River Basin States and to such other parties as the Secretary deems appropriate for their review and comments. After receipt of comments on a unit and careful consideration thereof, the Secretary shall submit each final report with his recommendations, simultaneously, to the President, other concerned Federal departments

and agencies, the Congress, and the Colorado River Basin States.

(b) The Secretary is directed—

(1) in the investigation, planning, construction, and implementation of any salinity control unit involving control of salinity from irrigation sources, to cooperate with the Secretary of Agriculture in carrying out research and demonstration projects and in implementing on-the-farm improvements and farm management practices and programs which will further the objective of this Act;

(2) to undertake research on additional methods for accomplishing the objective of this Act, utilizing to the fullest extent practicable the capabilities and resources of other Federal departments and agencies, interstate institutions, States, and private organizations.

SEC. 204. (a) There is hereby created the Colorado River Basin Salinity Control Advisory Council composed of no more than three members from each State appointed by the Governor of each of the Colorado River Basin States.

(b) The Council shall be advisory only and shall—

(1) act as liaison between both the Secretaries of Interior and Agriculture and the Administrator of the Environmental Protection Agency and the States in accomplishing the purposes of this Act;

(2) receive reports from the Secretary on the prog-

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ress of the salinity control program and review and comment on said reports; and

(3) recommend to both the Secretary and the Administrator of the Environmental Protection Agency appropriate studies of further projects, techniques, or methods for accomplishing the purposes of this Act.

SEC. 205. (a) The Secretary shall allocate the total costs of each unit or separable feature thereof authorized by section 202 of this Act, as follows:

(1) In recognition of Federal responsibility for the Colorado River as an interstate stream and for international comity with Mexico, Federal ownership of the lands of the Colorado River Basin from which most of the dissolved salts originate, and the policy embodied in the Federal Water Pollution Control Act Amendments of 1972 (86 Stat. 816), 75 per centum of the total costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof shall be nonreimbursable.

(2) Twenty-five per centum of the total costs shall be allocated between the Upper Colorado River Basin Fund established by section 5(a) of the Colorado River Storage Project Act (70 Stat. 107) and the Lower Colorado River Basin Development Fund established by section 403(a) of the Colorado River Basin Project Act (82 Stat. 895), after consultation with the Advisory Council created in sec-

tion 304(a) of this Act and consideration of the following items:

(i) benefits to be derived in each basin from the use of water of improved quality and the use of works for improved water management;

(ii) causes of salinity; and

(iii) availability of revenues in the Lower Colorado River Basin Development Fund and increased revenues to the Upper Colorado River Basin Fund made available under section 305(d) of this Act: *Provided,* That costs allocated to the Upper Colorado River Basin Fund under section 205(a)(2) of this Act shall not exceed 15 per centum of the costs allocated to the Upper Colorado River Basin Fund and the Lower Colorado River Basin Development Fund.

(3) Costs of construction of each unit or separable feature thereof allocated to the upper basin and to the lower basin under section 205(a)(2) of this Act shall be repaid within a fifty-year period without interest from the date such unit or separable feature thereof is determined by the Secretary to be in operation.

(b)(1) Costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof allocated for repayment by the lower basin under section 205(a)(2) of this Act shall be paid in accordance with

subsection (2) of this section, from the Lower Colorado River Basin Development Fund.

(2) Section 403(g) of the Colorado River Basin Project Act (82 Stat. 896) is hereby amended as follows: strike the word "and" after the word "Act" in line 8; insert after the word "Act" the following: "(2) for repayment to the general fund of the Treasury the costs of each salinity control unit or separable feature thereof payable from the Lower Colorado River Basin Development Fund in accordance with sections 205(a)(2), 205(a)(3), and 205(b)(1) of the Colorado River Salinity Control Act and"; and change paragraph (2) to paragraph (3).

(c) Costs of construction, operation, maintenance, and replacement of each unit or separable feature thereof allocated for repayment by the upper basin under section 205(a)(2) of this Act shall be paid in accordance with section 205(d) of this Act, from the Upper Colorado River Basin Fund within the limit of the funds made available under section 205(e) of this Act.

(d) Section 5(d) of the Colorado River Storage Act (70 Stat. 108) is hereby amended as follows: strike the word "and" at the end of paragraph (3); strike the period after the word "years" at the end of paragraph (4) and insert a semicolon in lieu thereof followed by the word "and"; and add a new paragraph (5) reading:

"(5) the costs of each salinity control unit or separable feature thereof payable from the Upper Colorado River Basin Fund in accordance with sections 205(a)(2), 205(a)(3), and 205(b)(1) of the Colorado River Salinity Control Act.".

(e) The Secretary is authorized to make upward adjustments in rates charged for electrical energy under all contracts administered by the Secretary under the Colorado River Storage Project Act (70 Stat. 105; 43 U.S.C. 620) as soon as practicable and to the extent necessary to cover the costs of construction, operation, maintenance, and replacement of units allocated under section 205(a)(2) and in conformity with section 205(a)(3) of this Act: *Provided,* That revenues derived from said rate adjustments shall be available solely for the construction, operation, maintenance, and replacement of salinity control units in the Colorado River Basin herein authorized.

SEC. 206. Commencing on January 1, 1975, and every two years thereafter, the Secretary shall submit, simultaneously, to the President, the Congress, and the Advisory Council created in section 204(a) of this Act a report on the Colorado River salinity control program authorized by this Act covering the progress of investigations, planning, and construction of salinity control units for the previous fiscal year, the effectiveness of such units, anticipated work

needed to be accomplished in the future to meet the objectives of this Act with emphasis on the needs during the five years immediately following the date of each report, and any special problems that may be impeding progress in attaining an effective salinity control program. Said report may be included in the biennial report on the quality of water of the Colorado River Basin prepared by the Secretary pursuant to section 15 of the Colorado River Storage Project Act (70 Stat. 111; 43 U.S.C. 602n), section 15 of the Navajo Indian irrigation project, and the initial stage of the San Juan Chama Project Act (76 Stat. 102), and section 6 of the Fryingpan-Arkansas Project Act (76 Stat. 393).

SEC. 207. Except as provided in section 205(b) and 205(d) of this Act with respect to the Colorado River Basin Project Act and the Colorado River Storage Project Act, respectively, nothing in this Act shall be construed to alter, amend, repeal, modify, interpret, or be in conflict with the provisions of the Colorado River Compact (45 Stat. 1057), the Upper Colorado River Basin Compact (63 Stat. 31), the Water Treaty of 1944 with the United Mexican States (Treaty Series 994; 59 Stat. 1219), the decree entered by the Supreme Court of the United States in Arizona against California and others (376 U.S. 340), the Boulder Canyon Project Act (45 Stat. 1057), Boulder Canyon Project Ad-

justment Act (54 Stat. 774; 43 U.S.C. 618a), section 15 of the Colorado River Storage Project Act (70 Stat. 111; 43 U.S.C. 620n), the Colorado River Basin Project Act (82 Stat. 885), section 6 of the Fryingpan-Arkansas Project Act (76 Stat. 393), section 15 of the Navajo Indian irrigation project and initial stage of the San Juan-Chama Project Act (76 Stat. 102), the National Environmental Policy Act of 1969, and the Federal Water Pollution Control Act, as amended.

SEC. 208. (a) The Secretary is authorized to provide for modifications of the projects authorized by this Act as determined to be appropriate for purposes of meeting the objective of this Act. No funds for any such modification shall be expended until the expiration of sixty days after the proposed modification has been submitted to appropriate committees of the Congress, and not then if disapproved by said committees, except that funds may be expended prior to the expiration of such sixty days in any case in which the Congress approves an earlier date by concurrent resolution. The Governors of the Colorado River Basin States shall be notified of these changes.

(b) The Secretary is hereby authorized to enter into contracts that he deems necessary to carry out the provisions of this Act, in advance of the appropriation of funds therefor. There is hereby authorized to be appropriated the sum of

$121,200,000 for the construction of the works and for other purposes authorized in section 202 of this Act, based on April 1973 prices, plus or minus such amounts as may be justified by reason of ordinary fluctuations in costs involved therein, and such sums as may be required to operate and maintain such works. There is further authorized to be appropriated such sums as may be necessary to pay condemnation awards in excess of appraised values and to cover costs required in connection with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 90–646).

SEC. 209. As used in this Act—

(a) all terms that are defined in the Colorado River Compact shall have the meetings therein defined;

(b) "Colorado River Basin States" means the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming.

93D CONGRESS
2D SESSION

S. 3094

IN THE SENATE OF THE UNITED STATES

MARCH 1, 1974

Mr. JACKSON (by request) introduced the following bill; which was read twice and referred to the Committee on Interior and Insular Affairs

A BILL

To authorize the measures necessary to carry out the provisions of minute numbered 242 of the International Boundary and Water Commission, concluded pursuant to the Water Treaty of 1944 with Mexico (TIAS 994), entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River".

Whereas minute numbered 242 has been concluded under the authority of the Water Treaty of 1944, and

Whereas the United States Section, International Boundary and Water Commission, is the United States agency designated in the Water Treaty of 1944 to undertake the works necessary on the part of the United States to implement the treaty, or other agreements in force between the two governments dealing with boundaries and boundary waters, and

Whereas the measures necessary to implement minute numbered 242 include a desalting complex that extends on both sides of the boundary between the United States and Mexico in addition to works located wholly within the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of State is authorized, through the Commissioner of the United States Section, International Boundary and Water Commission, who shall consult with the Secretary of the Interior and may delegate such authority to the Secretaries of Agriculture, the Army, and the Interior, and the Administrator of the Environmental Protection Agency, to:

(a) Construct, operate, and maintain a desalting complex, including a desalting plant within the boundaries of the United States and a bypass drain for the discharge of the reject stream from the plant and other Wellton-Mohawk drain water to the Santa Clara Slough in Mexico, with the part in Mexico to be constructed by the appropriate agencies of the Government of Mexico with funds transferred through the Commission.

(b) Accelerate cooperative management programs with the Wellton-Mohawk Irrigation and Drainage District for the purpose of reducing saline drainage flows by improving irrigation efficiency. The district shall pay for its share of the costs of such cooperative programs.

(c) Acquire to the extent determined by him to be necessary, lands or interest in lands within the Wellton-Mohawk division, Gila project, to reduce the seventy-five thousand irrigable acres authorized by the Act of July 30, 1947 (61 Stat. 628), known as the Gila River Reauthorization Act, and to dispose of or use such lands or interests therein on terms consistent with the objective of this Act. The initial reduction in irrigable acreage shall be limited to approximately ten thousand acres: *Provided,* That additional acreage may be acquired, as may be deemed appropriate for the purpose of meeting the obligations of minute numbered 242.

(d) Assist water users in the Wellton-Mohawk Irrigation and Drainage District in installing onfarm systems, as a means of reducing saline drainage flows through improved irrigation efficiencies.

(e) In consideration of the purchase of irrigable lands and the associated increased cost of operation and maintenance of the irrigation system of the Wellton-Mohawk Irrigation and Drainage District, appropriately reduce repayment obligations of the district to the United States under existing contracts.

(f) Contract with the Coachella Valley County Water District to provide for reimbursement by the

United States for its use of the water saved through the rehabilitation and betterment of the Coachella Canal as a temporary source of water for meeting the obligations of minute numbered 242.

(g) In consideration of capacity to be relinquished in the All-American and Coachella Canals as a result of the rehabilitation and betterment of the Coachella Canal, appropriately reduce repayment obligations of the Imperial Irrigation District to the United States under existing contracts.

(h) For purposes of the rehabilitation and betterment of the Coachella Canal, acquire to the extent determined by him to be necessary lands or interest in lands within the Imperial Irrigation District on the East Imperial Mesa which receive, or which have been granted rights to receive, water from Imperial Irrigation District's capacity in the Coachella Canal and to dispose of or use such lands or interests therein on terms consistent with the obligations of minute numbered 242. The costs associated with acquiring such lands or interests in such lands shall be included in the total cost of the rehabilitation and betterment of the Coachella Canal.

(i) Acquire on behalf of the United States such lands or interest in lands in the Painted Rock Reservoir

as may be necessary to operate the project in accordance with the obligations of minute numbered 242.

SEC. 2. The projects authorized herein shall be designed and operated separately or in combination with the objective of carrying out the purpose of this Act at the least overall cost to the United States. Unless otherwise herein specified, all costs associated with carrying out the provisions of this Act shall be borne by the United States: *Provided,* That nothing in section 1 (d) of this Act will relieve water users of costs required to be incurred for complying with the Federal Water Pollution Control Act, as amended.

SEC. 3. Replacement of the reject stream from the desalting plant, and of any Wellton-Mohawk drainage water resulting from essential operations, bypassed to the Santa Clara Slough, except at such times when there exist surplus waters of the Colorado River under the terms of the 1944 Water Treaty, is recognized as a national obligation as provided in section 202 of the Colorado River Basin Project Act. Studies to identify feasible measures to provide adequate replacement water shall be completed not later than June 30, 1980. Replacement of the reject stream bypassed to the Santa Clara Slough shall begin on the date such augmentation of the Colorado River occurs.

SEC. 4. There are hereby authorized to be appropriated to the Secretary of State for the use of the United States

Commissioner, International Boundary and Water Commission, such funds as may be necessary to carry out this Act.

SEC. 5. This Act may be cited as the "International Salinity Control Project, Colorado River".

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

APR 24 1974

Dear Mr. Chairman:

This responds to your request for our views concerning S. 3094, "To authorize the measures necessary to carry out the provisions of minute numbered 242 of the International Boundary and Water Commission, concluded pursuant to the Water Treaty of 1944 with Mexico (TIAS 994), entitled 'Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River'", which was proposed by the Administration, and S. 2940, a bill "To authorize the construction, operation, and maintenance of certain works in the Colorado River Basin to control the salinity of water delivered to users in the United States and Mexico."

We recommend that S. 3094 be enacted and that S. 2940 not be enacted.

Because S. 3094 and Title I of S. 2940 are directed at carrying out an international agreement with Mexico, we defer to the Department of State for comment on the international aspects of these proposed measures.

S. 3094 authorizes the implementation of an agreement with the Government of Mexico to resolve the international problem of the salinity of Colorado River waters delivered to Mexico under the Water Treaty of 1944. The principal means of carrying out this agreement is construction of a desalting complex to reduce the saline flows of a major portion of the water returning to the Colorado River as drainage from the Wellton-Mohawk Irrigation and Drainage District in Arizona. Related measures are also contemplated, including lining of a 49 mile reach of the Coachella Canal in southern California, reduction of acreage and improved irrigation efficiency and agricultural practices in the District, and more extensive regulation of the Gila River.

JOHNNY HORIZON 76

Let's Clean Up America For Our 200th Birthday

S. 2940 is directed at the much broader problem of the overall salinity of the Colorado River. Title I directs the Secretary of the Interior to undertake specific measures to deal with the salinity of Colorado River waters delivered to Mexico at the Northerly International Boundary. These include the measures which would be authorized by S. 3094 as well as contingent authorization for development of a protective ground water pumping scheme along the U.S.-Mexico border at an authorized cost of $34 million. With respect to agency jurisdiction for implementation of this proposed program, we do not believe that this Department should be given overall responsibility for ensuring that the obligations of this agreement with Mexico are fulfilled. That responsibility appropriately belongs to the State Department. The necessary coordination of these proposed international measures with Federal domestic programs and projects can be carried out through consultation with this Department and other appropriate Federal agencies, as provided in S. 3094.

Title II of S. 2940 would authorize certain measures upstream of Imperial Dam to deal with related domestic salinity problems. It would direct implementation of the salinity control policy adopted for the Colorado River in the "Conclusions and Recommendations" of the April 1972 Seventh Conference on Colorado River water quality and would require expediting the salinity control program described in the Secretary's report entitled "Colorado River Water Quality Improvement Program, February 1972." It would authorize four salinity control units-Paradox Valley and Grand Valley in Colorado, Crystal Geyser in Utah and Las Vegas Wash in Nevada. The Secretary of the Interior would be required to complete expeditiously and submit to the President, Congress and other agencies specified planning reports on units in the Secretary's 1972 report referred to above. The bill would establish a Colorado River Salinity Control Advisory Council and would specify the principles of cost sharing for units to be constructed pursuant to its provisions. The Secretary would be authorized to increase power rates under the Colorado River Storage Project Act to cover the portion of reimbursable costs of the units authorized by Title II that are allocated to the Upper Colorado River Basin States.

The necessary feasibility studies for authorization of the four units which Title II would require the Secretary to construct have not been completed and we therefore recommend deferral of authorization for those units. We enclose, however, a status report on these and other units which bear on the salinity of the Colorado River. Much of the data and information included in this status report is preliminary and has not been reviewed by other Federal agencies. However, the report does indicate the progress made on this Department's ongoing Colorado River Water Quality Improvement Program.

The Executive Branch currently has under review the policies and principles which should govern measures to deal with the salinity and other water quality matters on the Colorado and other similarly affected rivers. Until that review is complete, we are unable to support those provisions of Title II establishing such policies and principles. Congressional action in this area should be deferred in view of the precedential significance of this legislation and the importance of the unresolved questions. We intend to continue the studies as expeditiously as feasible and to the extent permitted by appropriations.

The Office of Management and Budget has advised that enactment of S. 3094 is in accord with the program of the President and that there is no objection to the presentation of this report.

Sincerely yours,

Jack Horton

Assistant Secretary of the Interior

Honorable Henry M. Jackson
Chairman, Committee on
Interior and Insular Affairs
United States Senate
Washington, D.C. 20510

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ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 26 1974

OFFICE OF THE
ADMINISTRATOR

Dear Mr. Chairman:

This is in response to your request for the views of the Environmental Protection Agency on S. 2940 and S. 1807, bills which would provide for salinity control measures that would enable the United States to meet its obligations under the Mexican Water Treaty of 1944.

Title I of S. 2940 would authorize the Secretary of the Interior, in consultation with the Secretary of State and the Administrator of the Environmental Protection Agency, to construct certain salinity control works and to take other measures as well to meet our treaty commitments. These would include (a) a desalting plant and related facilities to reduce the salinity of drain water from the Wellton-Mohawk division; (b) the necessary extension of the existing bypass drain to carry reject stream from the desalting plant; (c) the lining of a reach of the Coachella Canal; (d) the acquisition of lands above the Painted Rock Dam to permit the retention of increased quantities of water in times of serious flooding; (e) measures to improve irrigation efficiency; and (f) measures to reduce the irrigable acreage in the Wellton-Mohawk division. The cost associated with the implementation of this program would be nonreimbursable except as specifically provided in Title I.

In addition to these projects and measures, Title I of this bill would also provide for protective pumping, under certain circumstances, along the U.S.-Mexican border.

S. 1807 and Title II of S. 2940 are substantially identical and would authorize a program designed to relieve problems caused by the increasing concentrations of dissolved solids in the Colorado River. They would authorize the Secretary of the Interior to construct certain salinity control units and to complete planning reports on several additional irrigation, point, and diffuse source control units.

In addition, they would establish an advisory council composed of representatives of States in the Colorado River Basin. The council would act as liaison between both the Secretaries of Interior and Agriculture and the Administrator and the States, receive reports on the salinity control program, and recommend to the Secretary of the Interior and the Administrator appropriate studies directed at accomplishing the purposes of the Acts.

They also would provide for payment of the Federal share of the cost of construction, operation, maintenance, and replacement of structures; allocation of the remainder among the States; and adjustments in rates charged for energy.

The Secretary would be required to submit biennial reports, beginning on January 1, 1975, to the Congress, the President, and the Advisory Council. These reports would discuss progress made in investigating and constructing salinity control units, the effectiveness of the units, further work needed to meet the objectives of the Act, and special problems that may be impeding progress.

The Environmental Protection Agency is opposed to the enactment of S. 2940 and S. 1807.

In lieu of these bills, the Environmental Protection Agency recommends enactment of S. 3094, the Administration proposal. While the basic thrust of both S. 3094 and Title I of S. 2940 is the same, we nevertheless believe that S. 3094 would be the more appropriate mechanism to implement the international salinity agreement embodied in Minute No. 242 of the International Boundary and Water Commission.

We believe that since an effort is being made here to resolve an international problem, the Secretary of State, rather than the Secretary of the Interior, should be the official responsible for implementing the measures necessary to meet our international obligations. The Administration bill strikes a proper balance in this regard because, although it envisages that the Department of the Interior will assist the Department of State with respect to the actual construction of the desalting plant and implementation of other measures, the Department of State would retain the ultimate authority to insure that the United States meets its treaty obligations.

Turning to S. 1807 and Title II of S. 2940, the Environmental Protection Agency believes that the projects referred to there require additional study, particularly in light of the enactment of the Federal Water Pollution Control Act Amendments of 1972. As a result, we feel that enactment of these bills would be premature at this time.

As you know, these bills would authorize measures necessary to implement the "Conclusions and Recommendations" of the Reconvened Seventh Session of the Colorado River Enforcement Conference, which was held under the authority of the Federal Water Pollution Control Act and chaired by this Agency. The Conference studied the problems of the Colorado River Basin in depth over an extended period of time and concluded that a salinity policy be adopted that would have as its main objective the maintenance of salinity concentrations at or below levels found in the lower main stem of the system. The Conference further concluded that the program described by the Department of the Interior in its report entitled "Colorado River Water Quality Improvement Program," dated February 1972, offered the best prospect for implementing that salinity control objective.

The Environmental Protection Agency supported the conclusions and recommendations of the Conference at that time, and we continue to support them in principle today. At the same time, however, we believe that it would be premature to enact S. 1807 or Title II of S. 2940 which are designed to implement those conclusions and recommendations.

A few months after the enforcement conference made its recommendations in June 1972, the Congress enacted the Federal Water Pollution Control Act Amendments of 1972. In addition to authorizing our Agency to conduct research on agricultural pollution and salinity control problems, these amendments imposed various requirements on pollution dischargers which, we believe, should be considered along with the proposed measures in S. 2940 and S. 1807 to resolve the salinity problem in the Colorado River Basin.

The 1972 Amendments, for example, require permits for point source discharges to navigable waters, including municipalities, industries, and certain irrigation return flows. The 1972 Amendments further require each State to adlpt water quality standards consistent with the requirements of the Act. At the present time, our Agency is working

with the Colorado River Basin States to delineate requirements and procedures for establishing water quality standards in the basin and to develop a plan to implement these standards. The procedures which those States will follow in developing their standards should be available by June 30 of this year, and we expect the development of numeric criteria and a plan of implementation by October 18, 1975.

In addition to the need to consider the impact that the 1972 Amendments will have on improving the water quality in the basin, we believe that enactment of these bills should be deferred for other reasons as well. We understand that the Department of the Interior is not prepared to recommend authorization of the salinity control units specified either in section 202 of S. 2940 or section 201 of S. 1807 at this time. The feasibility studies for these units have not been completed, and although we believe that the Department of the Interior should make every effort to complete them by June 1975, it would be premature to proceed with their authorization at this time. Moreover, insofar as those units concern municipal and industrial pollution sources, we feel that these sources would nevertheless have to meet the permitting and other requirements specified in the 1972 Amendments.

With respect to financing the program outlined in S. 1807 or Title II of S. 2940, we believe that more study is necessary to ascertain the costs and financial responsibilities of the Federal and non-Federal interests that would be associated with solving both the natural and man-made salinity problems in the Colorado River Basin. Presently, there is no estimate of what it would cost to solve this pollution problem on a nationwide basis. I would also like to point out that the reference in section 205(a)(1) of S. 2940 and section 501(a) of S. 1807 to the seventy-five percent funding policy under the 1972 Amendments is misleading because the construction grant provisions of those Amendments provide Federal funds only for assistance in construction of municipal waste treatment plants, and thus do not present a situation analogous to the Colorado River salinity control projects. In short, no such policy is contained in the 1972 Amendments, especially insofar as the projects specified in these bills concern industrial pollution sources.

Finally, section 305(b) of the Federal Water Pollution Control Act requires each State to submit to the Administrator of our Agency a report which will include "a description of the nature and extent of nonpoint sources of pollutants and recommendations as to the programs which must be undertaken to control each category of such sources, including an estimate of the costs of implementing such programs." The Act directs the Administrator, moreover, to submit these reports, together with an analysis prepared by our Agency, to the Congress no later than October 1, 1975.

In view of this State reporting requirement, we recommend deferring consideration of the measures proposed in S. 1807 and Title II of S. 2940. After the States have submitted these reports and we have had an opportunity to analyze them, we should have more information concerning the scope of the salinity problem nationwide as well as what it will cost to adequately address the problem. The timeframe specified by section 305(b) of the Act is also important in regard to the Colorado River Basin. As October 1975 approaches, our Agency, working in conjunction with the Colorado River Basin States, will have adopted numeric salinity criteria and a basinwide salinity control implementation plan. Furthermore, the Department of the Interior's completion of its salinity control feasibility studies by June 1975 will enable those States to consider the studies before they submit their implementation schedules to our Agency in October 1975.

The Office of Management and Budget advises that there is no objection to the submission of this report to the Congress and that enactment of S. 3094 would be in accord with the program of the President.

Sincerely yours,

/s/ Alvin L. Alm

for Russell E. Train
Administrator

Honorable Henry M. Jackson
Chairman, Committee on Interior
and Insular Affairs
United States Senate
Washington, D.C. 20510

DEPARTMENT OF STATE

Washington, D.C. 20520

FEB 7 1974

Honorable Gerald R. Ford
President of the Senate
Washington, D.C.

Dear Mr. President:

There is enclosed a draft bill which the Department of State recommends be enacted to authorize implementation of an agreement with the Government of Mexico to resolve the international problem of the salinity of the Colorado River waters delivered by the United States to Mexico under the Water Treaty of 1944. This treaty provides for the delivery to Mexico annually of 1.5 million acre-feet of Colorado River waters.

There are also enclosed for the information of the Congress in its consideration of this draft bill the supporting documents and reports listed at the close of this letter, as well as a section-by-section analysis of the draft bill. The Environmental Impact Statement, one of the enclosures, was prepared in accordance with the requirements of the National Environmental Policy Act (P.L. 91-190) and this Department's guidelines. Public notice of the availability of this statement was included in the Federal Register of October 5, 1973.

Mr. Herbert Brownell, the President's Special Representative who negotiated the agreement, describes the Colorado River and discusses at some length its history and the history of the salinity problem with Mexico in his enclosed "Report of the President's Special Representative for Resolution of the Colorado River Salinity Problem with Mexico," dated December 28, 1972. Members of the Congress will recall that when the President of Mexico addressed a joint meeting of the House and Senate on June 15, 1972, President Echeverria referred to this problem as the most delicate between the two countries. This was one of the most important issues dealt with

by President Nixon and President Echeverria at their meetings on June 15 and June 16. In their Joint Communique of June 17, 1972, it was announced that the United States would undertake certain actions immediately to improve the quality of the water going to Mexico, and that President Nixon would designate a special representative to find a permanent, definitive and just solution of this problem. The enclosed agreement of August 30, 1973, Minute No. 242 of the International Boundary and Water Commission, is that definitive solution.

This agreement with Mexico brings to an end twelve years of controversy regarding the quality of water the United States may deliver to Mexico. Although the treaty contains no specific provisions relating to the quality of water delivered, it does provide for the settlement of differences with respect to the interpretation or application of the treaty by the International Boundary and Water Commission, subject to the approval of the two Governments. Minute No.242 constituted such a settlement, which the Presidents of the two countries have approved, subject to the enactment by the Congress of legislation authorizing the appropriation of the funds needed to carry out its provisions.

Implementation of the agreement will require a reduction in the salinity of the waters delivered at present to Mexico. Desiring to accomplish this reduction with the least burden on the United States and its water users, the Department of State, on the advice of Mr. Brownell, its technical advisers, and other Departments, has provided in the draft bill for the minimum works and other measures necessary for this purpose.

In this agreement the United States makes three major commitments. First and principally, we agree to adopt measures to assure that no later than July 1, 1974, subject to the authorization by the Congress of funds for the necessary works, the approximately 1,360,000 acre-feet of Colorado River waters delivered to Mexico above its Morelos Diversion Dam will have an

annual average salinity of no more than 115 ± 30 parts per million (ppm) over the annual average salinity of Colorado River waters arriving at Imperial Dam, i.e., those delivered to the lowermost major downstream users in the United States. This means that while Mexico will accept delivery of waters somewhat more saline than those used in the United States, the United States must remove from those waters the adverse effect of the highly saline drain waters pumped and discharged to the river by the Wellton-Mohawk Irrigation and Drainage District of Arizona.

It is proposed to attain this average annual differential by a combination of improvements to reduce drain flows from the Wellton-Mohawk Project and by construction of a desalting plant. When completed, presently scheduled for 1978, the desalting plant would treat a major portion of the Wellton-Mohawk drain water, so that, in combination with the untreated Wellton-Mohawk drain water, it may be delivered to Mexico within the agreed differential. A detailed description of this plant as planned appears in the enclosed Special Report dated September 1973 prepared for the Department by the Department of the Interior.

During an interim period, while desalting facilities are being constructed, the United States would bypass all the Wellton-Mohawk drain water without charge to Mexico against its guaranteed treaty allotment, and would substitute higher quality water that would be delivered to Mexico in place of it. This better water would at first be borrowed from storage reservoirs and, later, be made up in large part of water saved by concrete-lining a 49-mile reach of the Coachella Canal in southern California. The lining would save economically an estimated 132,000 acre-feet of water annually, which would be temporarily available for use by the Federal Government until the amount borrowed from storage is paid back or the Secretary of the Interior reduces deliveries of mainstream Colorado River water to California to 4.4 million acre-feet annually. The water saved will represent a part of California's entitlement from the Colorado River.

The highly saline reject stream from the desalting plant, containing the salts removed from the drain water, would be kept separate and conveyed by a drain directly to the international boundary, and thence through Mexico to the Santa Clara Slough on the Gulf of California. Under the agreement the Government of Mexico would construct, operate, and maintain the part of the drain located in Mexico. As its second major commitment, the United States would assume the cost of building, operating, and maintaining of the part in Mexico, which must be concrete-lined to prevent the highly saline water from infiltrating into groundwaters of Mexico.

In order to keep the construction and operating cost of the desalting plant to a minimum, the volume of drain water from the Wellton-Mohawk District should be reduced. For this purpose the bill would authorize assistance to District water users in improving the efficiency of their operations, and authorize a reduction in the existing authorized irrigable acreage of the District.

The third commitment undertaken by the United States is to support Mexican efforts to obtain appropriate financing on favorable terms for the improvement and rehabilitation of the Mexicali Valley where Mexico uses its Colorado River waters, and to provide on a mutually acceptable basis a grant for those aspects of the rehabilitation program in the Mexicali Valley directly related to salinity, including tile drainage. When a mutually acceptable basis has been arrived at, the Department will submit a report and recommendations to the Congress on this matter.

The Government of Mexico undertakes two major commitments. It accepts in effect as a part of its treaty allotment all drainage inflows to the river below Imperial Dam except untreated Wellton-Mohawk drain waters. This includes the delivery of 140,000 acre-feet annually, consisting largely of drain water, near San Luis on the land boundary and in the boundary section of the river downstream from Morelos Dam. This water may be more saline than that delivered above Morelos Dam.

The Mexican Government also agreed to a mutual limitation of groundwater pumping within five miles of the Arizona-Sonora boundary near San Luis to 160,000 acre-feet annually on each side, pending the conclusion of a comprehensive agreement on groundwater in border areas. Mexico is already pumping at this rate, and as a consequence beginning to draw on waters underlying the United States and to diminish the surface flow to Mexico at San Luis. The agreement was phrased so that the United States could without question pump a like amount on its side to reduce the loss of underground waters and surface flows caused by Mexican pumping. The Department will continue to work with Mexican officials on a comprehensive agreement on groundwater in the border areas.

Finally, the two Governments recognized the agreement as the permanent and definitive solution of the salinity problem. They agreed to consult with each other before undertaking any development of surface or groundwater resources in the border area which might adversely affect the other country.

This agreement has very considerable advantages for the United States. Above all, it removes the uncertainties of the effect the salinity problem might have caused on further development of the Colorado River Basin. As long as the two Governments might have had to resort to international adjudication, a part of the Basin's water would have been in jeopardy. If, however, as is proposed, we draw on the financial and technological rather than on the water resources of the United States to comply with the agreement, we will limit the potential loss of water to the Colorado River Basin to the practical minimum, i.e., essentially to the highly saline reject stream from the desalting plant that is not replaced until feasible ways are found to augment the flows of the Colorado River. By limiting Mexican pumping near the Arizona boundary to the presently installed capacity, the agreement prevents Mexico from increasing its pumping in that area. The agreement also recognizes that the United States may undertake pumping at similar levels to conserve its own groundwaters and to maintain deliveries to Mexico at San Luis.

In respect to our international relations, the agreement removes a problem which has plagued our relations with Mexico for more than a decade. It demonstrates once again

the willingness of the United States to resolve its differences with other countries, as well as our will and ability to find constructive ways to do so. We hope that it will encourage other countries, particularly of this Hemisphere, to try to resolve constructively and amicably the difficult problems persisting between them.

The currently estimated cost of the settlement is considerable. It can be broken down as follows, in thousands of dollars:

I.	Desalting Plant Facilities	
	A. Pretreatment Plant	$16,150
	B. Desalting Plant	37,086
	C. Appurtenant Works	8,844
	Total Desalting Plant Facilities	62,080
II.	Other Associated Facilities	
	A. Bypass Drain	15,370
	B. Siphon at Yuma	3,100
	C. Irrigation Efficiency Improvement Program	2,000
	D. Acreage Reduction & System Improvement	10,500
		30,970
	Total Desalting Complex Costs	93,050
III.	Coachella Canal Lining, California	(21,450) 1/
IV.	Acquisition of Lands at Painted Rock Reservoir, Arizona	5,000 2/
V.	General Supervision, U.S.Section, IBWC	1,525
		99,575

1/ Construction of this project will be carried out by the Department of the Interior pursuant to the authorization provided in the Rehabilitation and Betterment Act (63 Stat. 724). The Department of State proposes to enter into a contract with the Interior Department and the Coachella Valley County Water District for Federal reimbursement of the annual repayment obligations for the temporary Federal use of the water saved by the canal lining.

2/ These lands would be required only if it is determined

While annual operation and maintenance costs cannot be precisely estimated at this time, they are expected to amount to about $9,850,000, excluding $1,360,000 for the repayment obligation for lining the Coachella Canal during the period (about 7 years) when the water saved by the project is made available to the United States for its use.

Mr. Brownell, together with the inter-agency Task Force assisting him, systematically studied all elements of the possible solutions to the problem with Mexico. The alternative proposed herein, which was recommended by them and approved by the President, is considered to be the most practicable solution to this international problem. Every effort will be made, as provided in the draft bill, to design and operate the projects with the objective of carrying out its purpose at the least overall cost to the United States. It is envisaged that the Department will receive assistance from the Department of the Interior for the design and construction of the proposed desalting plant and for carrying out some of the proposed measures in the Wellton-Mohawk Project. However, the Department will retain overall responsibility for these measures as well as for the others to ensure that the obligations of the international agreement are fulfilled.

Under the agreement Mexico will not receive further improvement in its water until the Congress enacts enabling legislation. It was understood in the negotiation of the agreement that every effort would be made to expedite the legislative process. Mexican officials are already concerned that we have required so much time to prepare a

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(continued from Page 6)

that the Corps of Engineers must hold fee title to such lands in Painted Rock Reservoir to regulate the dam during and after periods of serious flooding to enable the United States to comply with its obligations under Minute No. 242.

legislative package for the Congress. It is incumbent on all to move swiftly on all steps relating to the legislation.

The Office of Management and Budget advises that enactment of this legislation is in accord with the President's program.

Sincerely yours,

Stanton D. Anderson
Acting Assistant Secretary
for Congressional Relations
Department of State

John C. Whitaker
Under Secretary
Department of the Interior

Enclosures:

A B I L L

To authorize the measures necessary to carry out the provisions of Minute No. 242 of the International Boundary and Water Commission, concluded pursuant to the Water Treaty of 1944 with Mexico (TIAS 994), entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River."

Whereas Minute No. 242 has been concluded under the authority of the Water Treaty of 1944, and

Whereas, the U.S. Section, International Boundary and Water Commission, is the U.S. agency designated in the Water Treaty of 1944 to undertake the works necessary on the part of the United States to implement the treaty, or other agreements in force between the two governments dealing with boundaries and boundary waters, and

Whereas the measures necessary to implement Minute No. 242 include a desalting complex that extends on both sides of the boundary between the United States and Mexico in addition to works located wholly within the United States.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, That the Secretary of State is authorized, through the Commissioner of the U.S. Section, International Boundary and Water Commission, who shall consult with the Secretary of the Interior and may delegate such authority to the Secretaries of Agriculture, the Army, and the Interior, and the Administrator of the Environmental Protection Agency, to:

(a) Construct, operate, and maintain a desalting complex, including a desalting plant within the boundaries of the United States and a bypass drain for the discharge of the reject stream from the plant and other Wellton-Mohawk drain water to the Santa Clara Slough in Mexico, with the part in Mexico to be constructed by the appropriate agencies of the Government of Mexico with funds transferred through the Commission.

(b) Accelerate cooperative management programs with the Wellton-Mohawk Irrigation and Drainage District for the purpose of reducing saline drainage flows by improving irrigation efficiency. The District shall pay for its share of the costs of such cooperative programs.

(c) Acquire to the extent determined by him to be necessary, lands or interest in lands within the Wellton-Mohawk Division, Gila project, to reduce the 75,000 irrigable acres authorized by the Act of July 30, 1947 (61 Stat. 628), known as the Gila River Re-authorization Act, and to dispose of or use such lands or interests therein on terms consistent with the objective of this Act. The initial reduction in irrigable acreage shall be limited to approximately 10,000 acres, provided that additional acreage may be acquired, as may be deemed appropriate for the purpose of meeting the obligations of Minute No. 242.

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(d) Assist water users in the Wellton-Mohawk Irrigation and Drainage District in installing onfarm systems, as a means of reducing saline drainage flows through improved irrigation efficiencies.

(e) In consideration of the purchase of irrigable lands and the associated increased cost of operation and maintenance of the irrigation system of the Wellton-Mohawk Irrigation and Drainage District, appropriately reduce repayment obligations of the District to the United States under existing contracts.

(f) Contract with the Coachella Valley County Water District to provide for reimbursement by the United States for its use of the water saved through the rehabilitation and betterment of the Coachella Canal as a temporary source of water for meeting the obligations of Minute No. 242.

(g) In consideration of capacity to be relinquished in the All-American and Coachella Canals as a result of the rehabilitation

and betterment of the Coachella Canal, appropriately reduce repayment obligations of the Imperial Irrigation District to the United States under existing contracts.

(h) For purposes of the rehabilitation and betterment of the Coachella Canal, acquire to the extent determined by him to be necessary lands or interest in lands within the Imperial Irrigation District on the East Imperial Mesa which receive, or which have been granted rights to receive, water from Imperial Irrigation District's capacity in the Coachella Canal and to dispose of or use such lands or interests therein on terms consistent with the obligations of Minute No. 242. The costs associated with acquiring such lands or interests in such lands shall be included in the total cost of the rehabilitation and betterment of the Coachella Canal.

(i) Acquire on behalf of the United States such lands or interest in lands in the

Painted Rock Reservoir as may be necessary to operate the project in accordance with the obligations of Minute No. 242.

Sec. 2. The projects authorized herein shall be designed and operated separately or in combination with the objective of carrying out the purpose of this Act at the least overall cost to the United States. Unless otherwise herein specified, all costs associated with carrying out the provisions of this Act shall be borne by the United States; Provided, That nothing in Sec. 1(d) of this Act will relieve water users of costs required to be incurred for complying with the Federal Water Pollution Control Act, as amended.

Sec. 3. Replacement of the reject stream from the desalting plant, and of any Wellton-Mohawk drainage water resulting from essential operations, bypassed to the Santa Clara Slough, except at such times when there exist surplus waters of the Colorado River under the terms of the 1944 Water Treaty, is recognized as a national obligation as provided in section 202 of the Colorado River Basin Project Act. Studies to identify feasible measures to provide

adequate replacement water shall be completed not later than June 30, 1980. Replacement of the reject stream bypassed to the Santa Clara Slough shall begin on the date such augmentation of the Colorado River occurs.

Sec. 4. There are hereby authorized to be appropriated to the Secretary of State for the use of the U.S. Commissioner, International Boundary and Water Commission, such funds as may be necessary to carry out this Act.

Sec. 5. This Act may be cited as the "International Salinity Control Project, Colorado River."

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

Mexico, D.F.,
August 30, 1973.

MINUTE NO. 242

PERMANENT AND DEFINITIVE SOLUTION TO THE INTERNATIONAL PROBLEM OF THE SALINITY OF THE COLORADO RIVER.

The Commission met at the Secretariat of Foreign Relations, at Mexico, D.F., at 5:00 p.m. on August 30, 1973, pursuant to the instructions received by the two Commissioners from their respective Governments, in order to incorporate in a Minute of the Commission the joint recommendations which were made to their respective Presidents by the Special Representative of President Richard Nixon, Ambassador Herbert Brownell, and the Secretary of Foreign Relations of Mexico, Lic. Emilio O. Rabasa, and which have been approved by the Presidents, for a permanent and definitive solution of the international problem of the salinity of the Colorado River, resulting from the negotiations which they, and their technical and juridical advisers, held in June, July and August of 1973, in compliance with the references to this matter contained in the Joint Communique of Presidents Richard Nixon and Luis Echeverría of June 17, 1972.

Accordingly, the Commission submits for the approval of the two Governments the following

RESOLUTION:

1. Referring to the annual volume of Colorado River waters guaranteed to Mexico under the Treaty of 1944, of 1,500,000 acre-feet (1,850,234,000 cubic meters):

   a) The United States shall adopt measures to assure that not earlier than January 1, 1974, and no later than July 1, 1974, the approximately 1,360,000 acre-feet (1,677,545,000 cubic meters) delivered to Mexico upstream of Morelos Dam, have an annual average salinity of no more than 115 p.p.m. ± 30 p.p.m. U.S. count (121 p.p.m. ± 30 p.p.m. Mexican count) over the annual average

(Continued on Sheet 2)

COMISION INTERNACIONAL DE LIMITES Y AGUAS
ENTRE MEXICO Y ESTADOS UNIDOS

México, D.F.,
30 de agosto de 1973.

ACTA NUM. 242

SOLUCION PERMANENTE Y DEFINITIVA DEL PROBLEMA INTERNACIONAL DE LA SALINIDAD DEL RIO COLORADO.

La Comisión se reunió en la Secretaría de Relaciones Exteriores, en México, D.F., a las 17:00 horas del 30 de agosto de 1973, en cumplimiento de las instrucciones que recibieron los dos Comisionados de sus respectivos Gobiernos, a fin de incorporar en una Acta de la Comisión las recomendaciones conjuntas que hicieron a sus respectivos Presidentes el Secretario de Relaciones Exteriores de México, Lic. Emilio O. Rabasa, y el Representante Especial del Presidente Richard Nixon, Embajador Herbert Brownell, y que fueron aprobadas por los Presidentes, para una solución permanente y definitiva del problema internacional de la salinidad del Río Colorado, como resultado de las negociaciones que, con sus asesores técnicos y jurídicos, tuvieron en junio, julio y agosto de 1973, en cumplimiento de lo que sobre esta materia expresaron los Presidentes Luis Echeverría y Richard Nixon en su Comunicado Conjunto del 17 de junio de 1972.

Consecuentemente, la Comisión somete a la aprobación de los dos Gobiernos la siguiente

RESOLUCION:

1. Con referencia al volumen anual de las aguas del Río Colorado garantizado a México por el Tratado de 1944, de 1,850,234,000 metros cúbicos (1,500,000 acres-pies):

   a) Los Estados Unidos adoptarán medidas para dar seguridades de que no antes del 1° de enero de 1974, y no después del 1° de julio de 1974, los 1,677,545,000 metros cúbicos (1,360,000 acres-pies), aproximadamente, que se entregan a México aguas arriba de la Presa Morelos, tengan una salinidad media anual que no sobrepase en más de 121 p.p.m. ± 30 p.p.m., normas de México, (115 p.p.m. ±

(Continúa en la hoja 2)

(Continued from Sheet 1)

salinity of Colorado River waters which arrive at Imperial Dam, with the understanding that any waters that may be delivered to Mexico under the Treaty of 1944 by means of the All American Canal shall be considered as having been delivered upstream of Morelos Dam for the purpose of computing this salinity.

b) The United States will continue to deliver to Mexico on the land boundary at San Luis and in the limitrophe section of the Colorado River downstream from Morelos Dam approximately 140,000 acre-feet (172,689,000 cubic meters) annually with a salinity substantially the same as that of the waters customarily delivered there.

c) Any decrease in deliveries under point 1(b) will be made up by an equal increase in deliveries under point 1(a).

d) Any other substantial changes in the aforementioned volumes of water at the stated locations must be agreed to by the Commission.

e) Implementation of the measures referred to in point 1(a) above is subject to the requirement in point 10 of the authorization of the necessary works.

2. The life of Minute No. 241 shall be terminated upon approval of the present Minute. From September 1, 1973, until the provisions of point 1(a) become effective, the United States shall discharge to the Colorado River downstream from Morelos Dam volumes of drainage waters from the Wellton-Mohawk District at the annual rate of 118,000 acre-feet (145,551,000 cubic meters) and substitute therefor an equal volume of

(Continued on Sheet 3)

(Continúa de la hoja 1)

30 p.p.m., normas de los Estados Unidos), a la salinidad media anual de las aguas del Río Colorado que lleguen a la Presa Imperial, entendido que las aguas que se entreguen a México por conducto del Canal Todo Americano de conformidad con el Tratado de 1944, se considerarán como si se hubieran entregado aguas arriba de la Presa Morelos para el propósito de calcular esta salinidad.

b) Los Estados Unidos continuarán entregando a México en la línea divisoria terrestre en San Luis y en el tramo limítrofe del Río Colorado, aguas abajo de la Presa Morelos, aproximadamente 172,689,000 metros cúbicos (140,000 acres-pies) anuales, con una salinidad substancialmente igual a la de las aguas habitualmente entregadas ahí.

c) Cualquiera disminución en las entregas a que se refiere el apartado b) de este punto 1 será compensada por un aumento igual en las entregas a que se refiere el apartado a) de este punto 1.

d) Cualesquiera otros cambios substanciales en los volúmenes de agua antedichos en los lugares indicados deberán ser convenidos por la Comisión.

e) La ejecución de las medidas a que se refiere arriba el apartado a), está sujeta a los requisitos de la autorización de las obras necesarias a que se refiere el punto 10.

2. La vigencia del Acta 241 se dará por concluida con la aprobación de la presente Acta. Desde el 1º de septiembre de 1973 hasta que se pongan en vigor las disposiciones del apartado a) del punto 1, los Estados Unidos descargarán al Río Colorado, aguas abajo de la Presa Morelos, volúmenes de las aguas de drenaje del Distrito de Wellton-Mohawk a razon de 145,551,000 metros cúbicos (118,000 acres-pies) anuales y los

(Continúa en la hoja 3)

(Continued from Sheet 2)

other waters to be discharged to the Colorado River above Morelos Dam; - and, pursuant to the decision of --- President Echeverría expressed in -- the Joint Communique of June 17, --- 1972, the United States shall dis- - charge to the Colorado River down- - stream from Morelos Dam the drainage waters of the Wellton-Mohawk Dis- -- trict that do not form a part of -- the volumes of drainage waters re- - ferred to above, with the under- --- standing that this remaining volume will not be replaced by substitution waters. The Commission shall con- - tinue to account for the drainage -- waters discharged below Morelos Dam as part of those described in the -- provisions of Article 10 of the ---- Water Treaty of February 3, 1944. --

3. As a part of the measures referred - to in point 1(a), the United States shall extend in its territory the -- concrete-lined Wellton-Mohawk bypass drain from Morelos Dam to the Arizo- na-Sonora international boundary, -- and operate and maintain the por- -- tions of the Wellton-Mohawk bypass - drain located in the United States.

4. To complete the drain referred to in point 3, Mexico, through the Commis- sion and at the expense of the Uni- ted States, shall construct, operate and maintain an extension of the --- concrete-lined bypass drain from the Arizona-Sonora international bound- ary to the Santa Clara Slough of a - capacity of 353 cubic feet (10 cubic meters) per second. Mexico shall -- permit the United States to dis- --- charge through this drain to the --- Santa Clara Slough all or a portion of the Wellton-Mohawk drainage wa- - ters, the volumes of brine from such desalting operations in the United - States as are carried out to imple- ment the Resolution of this Minute, and any other volumes of brine which Mexico may agree to accept. It is - understood that no radioactive ma- - terial or nuclear wastes shall be --

(Continued on Sheet 4)

(Continúa de la hoja 2)

sustituirán con volúmenes iguales - de otras aguas que serán descarga- dos al Río Colorado aguas arriba - de la Presa Morelos; y, de conformi dad con la decisión del Presidente Echeverría, expresada en el Comuni- cado Conjunto del 17 de junio de -- 1972, los Estados Unidos descarga- rán al Río Colorado, aguas abajo de la Presa Morelos, las aguas de dre- naje del Distrito de Wellton-Mohawk que no forman parte de los volúme- nes de agua de drenaje arriba cita dos, entendido que ese volumen res- tante no será reemplazado por otras aguas de sustitución. La Comisión continuará contabilizando las aguas de drenaje que se descarguen aguas abajo de la Presa Morelos como parte de las que se describen en las esti pulaciones del Artículo 10 del Tra tado de Aguas del 3 de febrero de - 1944. ----------

3. Como parte de las medidas a que se refiere el apartado a) del punto 1, los Estados Unidos prolongarán en - su territorio el dren de desvío de Wellton-Mohawk, revestido de concre to, desde la Presa Morelos hasta la línea divisoria internacional entre Sonora y Arizona, y operarán y man- tendrán las partes del dren de des- vío de Wellton-Mohawk ubicadas en - los Estados Unidos. ----------

4. Para completar el dren a que se re- fiere el punto 3, México, por conduc to de la Comisión, y a expensas de los Estados Unidos, construirá, ope rará y mantendrá una prolongación - del dren de desvío, revestido de con creto, desde el límite internacional entre Sonora y Arizona hasta el Este ro de Santa Clara, con una capacidad de 10 metros cúbicos (353 pies cúbi cos) por segundo. México permitirá a los Estados Unidos descargar por este dren al Estero de Santa Clara todas o una parte de las aguas de - drenaje de Wellton-Mohawk, los volú menes de salmuera resultantes de las operaciones de desalación que se ha gan en los Estados Unidos para cum- plir con la Resolución de esta Acta, y cualesquiera otros volúmenes de - salmuera que México convenga en --- aceptar. Queda entendido que no se

(Continúa en la hoja 4)

(Continued from Sheet 5)

discharged through this drain, and that the United States shall acquire no right to navigation, servitude or easement by reason of the existence of the drain, nor other legal rights, except as expressly provided in this point.

5. Pending the conclusion by the Governments of the United States and Mexico of a comprehensive agreement on groundwater in the border areas, each country shall limit pumping of groundwaters in its territory within five miles (eight kilometers) of the Arizona-Sonora boundary near San Luis to 160,000 acre-feet (197,358,000 cubic meters) annually.

6. With the objective of avoiding future problems, the United States and Mexico shall consult with each other prior to undertaking any new development of either the surface or the groundwater resources, or undertaking substantial modifications of present developments, in its own territory in the border area that might adversely affect the other country.

7. The United States will support efforts by Mexico to obtain appropriate financing on favorable terms for the improvement and rehabilitation of the Mexicali Valley. The United States will also provide non-reimbursable assistance on a basis mutually acceptable to both countries exclusively for those aspects of the Mexican rehabilitation program of the Mexicali Valley relating to the salinity problem, including tile drainage. In order to comply with the above-mentioned purposes, both countries will undertake negotiations as soon as possible.

8. The United States and Mexico shall recognize the undertakings and understandings contained in this

(Continued on Sheet 5)

(Continúa de la hoja 5)

descargarán por este dren materiales radioactivos ni desperdicios nucleares, y que los Estados Unidos no adquirirán derechos de navegación, ni a servidumbres de cualquiera índole a causa de la existencia del dren, ni otros derechos legales, excepto los que expresamente se citan en este punto.

5. Mientras se llega a la celebración por los Gobiernos de México y los Estados Unidos de un convenio de alcance general sobre aguas subterráneas en las áreas fronterizas, cada país limitará el bombeo de las aguas subterráneas en su propio territorio, dentro de los 8 kilómetros (5 millas) de la línea divisoria entre Sonora y Arizona y cerca de San Luis, a 197,358,000 metros cúbicos (160,000 acres-pies) anuales.

6. A fin de evitar problemas futuros, México y los Estados Unidos se consultarán recíprocamente antes de emprender, en el área fronteriza de sus respectivos territorios, cualquier nuevo desarrollo de aguas superficiales o de aguas subterráneas, o de emprender modificaciones substanciales de sus desarrollos actuales, que pudieran afectar adversamente al otro país.

7. Los Estados Unidos apoyarán las gestiones de México para obtener financiamiento apropiado y en términos favorables para el mejoramiento y rehabilitación del Valle de Mexicali. Los Estados Unidos también proporcionarán asistencia no reembolsable, sobre una base mutuamente aceptable a ambos países, exclusivamente para aquellos aspectos del programa mexicano de rehabilitación del Valle de Mexicali relacionados con el problema de la salinidad, incluyendo drenaje tubular. A fin de cumplir con los propósitos arriba mencionados, ambos países emprenderán negociaciones tan pronto como sea posible.

8. México y los Estados Unidos reconocerán que las medidas y entendimientos contenidos en esta Resolución

(Continúa en la hoja 5)

(Continued from Sheet 4)

Resolution as constituting the permanent and definitive solution of the salinity problem referred to in the Joint Communique of President Richard Nixon and President Luis Echeverría dated June 17, 1972.

9. The measures required to implement this Resolution shall be undertaken and completed at the earliest practical date.

10. This Minute is subject to the express approval of both Governments by exchange of Notes. It shall enter into force upon such approval; provided, however, that the provisions which are dependent for their implementation on the construction of works or on other measures which require expenditure of funds by the United States, shall become effective upon the notification by the United States to Mexico of the authorization by the United States Congress of said funds, which will be sought promptly.

Thereupon, the meeting adjourned.

Commissioner of the United States

Commissioner of Mexico

Secretary of the United States Section

Secretary of the Mexican Section

(Continúa de la hoja 4)

constituyan la solución permanente y definitiva del problema de la salinidad a que se refiere el Comunicado Conjunto del Presidente Luis Echeverría y del Presidente Richard Nixon, fechado el 17 de junio de 1972.

9. Las medidas requeridas para poner en práctica esta Resolución serán emprendidas y terminadas en la fecha más próxima factible.

10. La presente Acta requiere la aprobación específica de ambos Gobiernos por canje de notas. Entrará en vigor en la fecha de su aprobación; entendido, sin embargo, que las disposiciones cuyo cumplimiento depende de la construcción de obras o de otras medidas que requieran la erogación de fondos por parte de los Estados Unidos, entrarán en vigor al notificar los Estados Unidos a México la autorización del Congreso de los Estados Unidos para disponer de dichos fondos, la cual será procurada prontamente.

Con lo anterior se levantó la sesión.

Comisionado de México

Comisionado de los Estados Unidos

Secretario de la Sección de México

Secretario de la Sección de los Estados Unidos

SECTION-BY-SECTION ANALYSIS

This draft bill is strictly limited to the measures believed necessary to enable the United States to carry out the definitive settlement of the salinity problem concluded with Mexico on August 30, 1973. That agreement, incorporated in Minute No. 242 of the International Boundary and Water Commission, was concluded pursuant to Article 24 of the 1944 Water Treaty, which provides that the Commission "shall have, in addition to the powers and duties otherwise specifically provided in this Treaty, the following powers and duties:

* * * * * * *

(d) To settle all differences that may arise between the two Governments with respect to the interpretation or application of this Treaty, subject to the approval of the two Governments..." The treaty also provides in the same article that the Commission shall have the power and duty "To construct the works agreed upon or to supervise their construction and to operate and maintain such works or to supervise their operation and maintenance, in accordance with the respective domestic laws of each country." The Protocol to the treaty, an integral part of it, provides that "The works to be constructed or used on or along the boundary, and those to be constructed or used exclusively for the discharge of treaty stipulations, shall be under the jurisdiction of the Commission or of the respective Section...", but that "In carrying out the construction of such works the Sections of the Commission may utilize the services of public or private organizations in accordance with the laws of their respective countries." The Protocol further provides regarding works "...which are situated wholly within the territory of the country of that Section, and which are to be used only partly for the performance of treaty provisions, such jurisdiction shall be exercised, and such functions, including the construction, operation

and maintenance of the said works, shall be performed and carried out by the Federal agencies of that country which now or hereafter may be authorized by domestic law to construct, or to operate and maintain, such works."

Because the works and other measures authorized by this bill are proposed with the objective of fulfilling the obligations undertaken by the United States in the settlement with Mexico, the bill would authorize the U. S. Section of the Commission to construct, operate and maintain the works required. The U. S. Section would exercise general control and supervision to ensure fulfillment of the agreement, with the actual construction, operation, and maintenance responsibilities for some of the proposed measures carried out by other Federal agencies, principally the Department of the Interior, in order to use most efficiently existing resources and technical capabilities within the Federal Government.

It is stipulated in the agreement that "It shall enter into force upon ...[approval of both Governments by exchange of Notes]; provided, however, that the provisions which are dependent for their implementation on the construction of works or on other measures which require expenditure of funds by the United States, shall become effective upon the notification by the United States to Mexico of the authorization by the United States Congress of said funds, which will be sought promptly." The Department interprets this provision to mean that when the Congress enacts authorizing legislation, the agreement will come fully into force, subject of course to any conditions appearing in the individual provisions of the agreement.

Section 1(a) provides for the construction, operation, and maintenance of a desalting complex to enable the United States to comply with the terms agreed upon in Minute No. 242, which will result in the delivery by the United States to Mexico above the latter's main diversion structure,

Morelos Dam, of Colorado River waters of a quality similar to that delivered to the next upstream major users in the United States. Specifically, the desalting complex is intended to assure that waters delivered to Mexico upstream of Morelos Dam will have an average annual salinity of no more than 115 parts per million (ppm), plus or minus 30 ppm, over the average annual salinity of Colorado River waters arriving at Imperial Dam, located about 27 miles upstream, which is the last major point of diversion on the Colorado River in the United States.

The desalting complex includes: (1) a desalting plant to reduce the salinity of drain water from the Wellton-Mohawk Division of the Gila Project, Arizona, including a pretreatment plant for settling and filtration of the drain water to be desalted; (2) the appurtenant works including the intake pumping plant system, product waterline, power transmission facilities and permanent operating facilities; (3) associated facilities including roads and a railroad spur; (4) the extension of the existing bypass drain to carry the reject stream from the desalting plant and other Wellton-Mohawk drainage waters through the United States and Mexico to the Gulf of California; and (5) the replacement of a metal flume in the existing main outlet drain extension with a concrete siphon. Tentatively, the desalting plant is to be designed to treat 144,000 acre-feet per year of 3100 ppm Wellton-Mohawk drain water to result in 101,000 acre-feet of 240 ppm usable product and 43,000 acre-feet of 9600 ppm reject water. The plant is to be designed to operate at 90% of design capacity. Using advanced technology commercially available, it will effect recovery initially of at least 70% of the drain water as product and with a minimum reduction of at least 90% of the dissolved solids in the feed water.

A considerable quantity of electrical power and energy will be required to operate the desalting complex. Sources of electrical power supply will be sought that will not diminish the supply of power to preference customers from the Federal Parker-

Davis Projects, since this project is proposed for international purposes and, therefore, is not subject to the privileges of Reclamation Law.

Product water would be blended with the remaining 31,000 acre-feet per year of the Wellton-Mohawk drain water to produce a stream of 132,000 acre-feet per year of water of the same quality as that at Imperial Dam, now 850 ppm, which can be introduced into the Colorado River and delivered to Mexico within the salinity differential established in the salinity agreement. The optimum location and size of the desalting plant will be determined in the design stage.

After the desalting complex is in operation, there may become available surplus capacity in the desalting plant over that needed for the purposes of this Act. In that event it may be possible to use some of the product water from the plant for domestic water supply without inhibiting the U. S. Section's ability to meet obligations under the international agreement. The desalted water used for municipal and industrial water supply in the United States would be exchanged for other water at appropriate prices, terms and conditions, with the revenues from such exchange deposited in the U. S. Treasury as miscellaneous receipts.

The reject stream from the desalting plant would be kept separate and conveyed southward by a new concrete-lined drain to the international boundary and thence through Mexico to the Santa Clara Slough on the Gulf of California. If construction can begin in fiscal year 1975, the complex should be completed and operational by the end of 1978.

Sections 1(b), (c), (d), and (e) would authorize a combination of measures to reduce the quantity of drain water pumped from the Wellton-Mohawk Irrigation and Drainage District and treated by the desalting plant and thereby reduce the plant's size and cost. The objective is to reduce the quantity

of the District's drain water from about 220,000 acre-feet per year to not more than 175,000 acre-feet per year to enable a 20% reduction in the required desalting capacity. This is to be achieved by the optimum combination of improvments in irrigation efficiencies and a reduction in the authorized irrigated area of the Wellton-Mohawk Division. A cooperative program to improve efficiency is already under way in the District sponsored by the Departments of the Interior and Agriculture and EPA. Sections (b) and (d) of the bill would authorize acceleration and expansion of that program, to include assistance to water users in the District in installing onfarm system improvements to advance irrigation efficiency in order that its potential might be realized in time to enable a reduction in the size and cost of the desalting plant. These improvements will include advanced management practices such as the use of scientific methods for determining irrigation scheduling, and onfarm system improvements including ditch lining, changes in field layout and size, use of sprinklers, or automated irrigation methods. To the extent such work or modification produces local benefits, the water users will bear the costs thereof. No Federal expense would be incurred to pay the costs that water users would have to pay in any event to satisfy the requirements of the Federal Water Pollution Control Act, as amended, or to provide direct benefits to individual water users.

Pursuant to that Act, the Environmental Protection Agency is expected to establish effluent limitation guidelines and require permits for certain irrigation return flows. Some drainage flows from the Wellton-Mohawk Project, therefore, may be required to receive a certain measure of treatment, utilizing the best pollution control technology available at that time, before they can be returned to the river. It is not intended that the measures proposed in this bill for international purposes will relieve the irrigation district of any obligations it may incur as a result of future domestic water pollution control policies.

Further, to reduce the volume of saline drain water required to be processed by the desalting plant, section (c) authorizes a reduction in the existing authorized 75,000 irrigable acres in the Wellton-Mohawk Division through Federal purchase or exchange of lands. Initially, about 10,000 acres would be acquired, of which 3800 acres are undeveloped Federal lands and 6200 acres are State and private lands, of which 2500 acres are developed. If it is determined that the irrigable acreage must be reduced below 65,000 acres, additional developed acreage is authorized to be acquired. All such acquisitions would be at Federal expense, and the existing repayment obligation allocable to eliminated irrigation acreage would be declared non-reimbursable.

Section (e) provides for an appropriate reduction in the repayment obligation of the District due to the United States to take into consideration such increase that the purchase and hence reduction in the authorized irrigable acreage may have in the cost per acre of operation and maintenance of the irrigation system.

Section (f) relates to the plan to construct a new concrete-lined canal or to line a 49-mile reach of the existing Coachella Canal in southern California, to effect a savings of about 132,000 acre-feet per year, now lost by seepage, for temporary use by the Federal Government. Water for the Coachella Valley County Water District is diverted from the Colorado River at Imperial Dam and conveyed to the Coachella Valley through the All-American Canal and the Coachella Canal. These facilities were completed by the Bureau of Reclamation in 1948 and supply irrigation water for about 67,000 acres in the Coachella Valley. Conveyance losses from the first 49-mile reach of unlined canal currently average about 141,000 acre-feet annually. The savings of an estimated 132,000 acre-feet annually to be effected by a lined canal represents a part of California's entitlement from the Colorado River.

The Federal use of the saved waters would consist (1) until the desalting plant comes on stream, of supplying a part of the water that must be delivered to Mexico in substitution for bypassed Wellton-Mohawk drainage; and (2) after the desalting plant is operational, of restoring to the Colorado River Basin the water borrowed from the Basin's storage reservoirs as substitution water for Mexico from the time the agreement enters into force to the time the desalting plant is completed.

Because it is envisaged that the Federal Government would use the saved water during the early years of operation of the lined canal, but in no event beyond the time when California would want to use the saved water, the cost of lining should be shared by the Federal Government and the Coachella Valley County Water District on the basis of each entity's use of the water. Under section (f) the U. S. Section and the Bureau of Reclamation would be able to join with the Coachella District in a contract providing for that District to reimburse the Federal Government for the lining over a 40-year period, and for the U. S. Section to relieve the District of reimbursement during that period when the Federal Government makes use of the water to implement the terms of Minute No. 242 and this bill.

Section 1(g) provides for a reduction in the repayment obligation of the Imperial Irrigation District to take into consideration that the District can relinquish its rights to the capacity of 1000 cubic feet per second in the existing 49-mile reach of the Coachella Canal and in the All-American Canal. This would enable the Federal Government to reduce the capacity of the reconstructed lined section of the Coachella Canal from 2500 cubic feet per second to 1500 cubic feet per second, and thereby realize a material saving in the cost of the reconstruction. The Imperial Irrigation District would be compensated through modification of its repayment contract.

Under Section 1(h), as a further consideration relating to the reduction in the capacity of the

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Coachella Canal and the resulting saving in the reconstructed lined section, the Federal Government may acquire the approximately 3800 acres of undeveloped private lands which could have been served by the 1000 cubic feet per second canal capacity in the existing Coachella Canal. The cost associated with the acquisition of these lands will be included as a part of the total costs of the Coachella Canal lining, and Federal reimbursement will be based on the terms of the repayment contract, since both the Federal Government and the Coachella District will benefit from savings in construction costs due to the retirement of these lands.

The estimated total installation cost of lining the Coachella Canal, including right-of-way costs and land costs, amounts to $21,450,000. The Department of the Interior is authorized to perform this work, and funds will be requested as a part of its appropriation.

Section 1 (i) authorizes the acquisition of lands in the reservoir of the existing Painted Rock Dam on the Gila River, as may be necessary, to enable its operation to fulfill the agreement with Mexico in Minute No. 242. This dam was constructed by the Corps of Engineers solely for the control of floods. There was acquired essentially a flowage easement, and the operating procedures envisioned the capture of flood flows, their temporary regulation, and early release. However, this operation results in the infiltration of water into the groundwater at the Wellton-Mohawk District and an increase in the amount of drainage that must be pumped from the District and discharged to the Colorado River. This increase can be largely, if not entirely, overcome by retaining floodwaters in the Painted Rock Reservoir and making smaller releases over a period of many months. To enable this modification in operations, Section 1(i) authorizes the acquisition of such additional interest in lands in the reservoir as may be necessary to prevent impairment of operations under

the agreement with Mexico. Acquisition would be made only after the existing legal rights of the Federal Government in the said lands are clarified.

Section 2 is intended to require reduction to a minimum of the costs associated with the bill. For example, it is necessary to achieve the most cost-effective combination of reduction in Wellton-Mohawk drain waters and size of the desalting plant. The most cost-effective means may be to reduce the quantity of drain water from the District somewhat below 175,000 acre-feet annually, permitting a smaller desalting plant. Further, investigations are proposed to increase the efficiency of the desalting plant to enable a smaller and less costly plant. The lands in Painted Rock Reservoir would be acquired only if necessary to perform its operation in a manner to ensure compliance with the agreement with Mexico. This section also provides that the Federal Government shall bear all costs associated with carrying out the provisions of the Act, except as specified in the Act, and except that the water users will not be relieved of costs required for compliance with the Federal Water Pollution Control Act, as amended.

Section 3 relates to the reject stream from the desalting plant and other normal Wellton-Mohawk drain waters bypassed to the Santa Clara Slough on the Gulf of California and not replaced from other sources. Section 202 of the Colorado River Basin Project Act (82 Stat. 886) provides that the satisfaction of the requirements of the Mexican Water Treaty from the Colorado River constitutes a national obligation which shall be the first obligation of any water augmentation project authorized for the Basin. This section of the bill ensures that the reject stream and other normal Wellton-Mohawk drain waters bypassed to the Santa Clara Slough will be included in this replacement obligation. The other normal Wellton-Mohawk drain waters would comprise only those essential to avoid crop damage. Periods of surplus waters are excepted because when there is surplus water, the reject stream and the bypassed drain water would not constitute a loss to the Colorado River Basin. Under

the Water Treaty a period of surplus waters exists when, as determined by the U. S. Section of the Commission, the waters of the Colorado River are in excess of the amount necessary to supply uses in the United States and the guaranteed Mexican allotment of 1.5 million acre-feet annually. This section provides that studies to identify feasible measures to provide adequate replacement water shall be completed not later than June 30, 1980, and that replacement of these waters shall begin when augmentation of the Colorado River begins. As stated earlier, water borrowed from reservoir storage on the Colorado River during the interim period when Wellton-Mohawk drain waters are bypassed, and until completion of the desalting plant, will be paid back by the Federal Government by use of the water saved by lining of a part of the Coachella Canal.

Section 4 authorizes appropriation of such sums as may be necessary to carry out this Act. There is initially requested an appropriation of $94,575,000 for the construction and other measures authorized by this bill. This estimate is based on 1973 prices. In approximate figures, the desalting plant and associated facilities would cost $80,550,000, of which $45,900,000 would be for the plant and appurtenant works, $16,150,000 would be for the pretreatment function, and $18,500,000 would be for support facilities, including the drain to the Gulf of California. The estimated cost of acreage reduction and onfarm irrigation improvements is $10,500,000, with an additional $2,000,000 allowed for the irrigation efficiency program. General supervision is estimated at $1,525,000.

The estimate of $5,000,000 for the possible acquisition of lands at Painted Rock Dam is not included in the total figure because at this time it is not known if and when the funds will be required.

The estimated cost of the Coachella Canal lining is $21,450,000. It is not included in this authorization because it is separately authorized to the

Department of the Interior, and that Department will seek this amount in its annual appropriation.

Section 5 provides a title for this bill.

DEPARTMENT OF STATE
Washington, D.C. 20520

APR 25 1974

Honorable Henry M. Jackson
Chairman
Committee on Interior and
Insular Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

The Secretary has asked that I reply to your letters of February 28 requesting reports on S. 2940, entitled "A Bill To authorize the construction, operation, and maintenance of certain works in the Colorado River Basin to control the salinity of water delivered to users in the United States and Mexico," and on S. 1807, entitled "A Bill To authorize the Secretary of the Interior to execute a program of salinity control for the Colorado River, and for other purposes."

Inasmuch as there is great similarity between the latter bill and Title II of S. 2940, the Department will comment on both bills in a single report.

The Department of State transmitted to the Congress on February 7 the Administration's draft bill that would authorize the works and measures required to implement the agreement concluded with Mexico on August 30, 1973 and entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River." You introduced this bill by request, and it is now identified as S. 3094.

The Department strongly recommends enactment of S. 3094 in lieu of S. 2940. S. 3094 is the result of an extensive inter-agency review, and presents the most practicable means of fulfilling the international obligations of the agreement with Mexico,

with special consideration being given to minimizing any possible adverse impacts on U. S. water users' within the Colorado River Basin.

S. 2940 differs from S. 3094 in three major respects.

S. 2940 would assign jurisdiction over the works proposed for implementation of the agreement with Mexico to the Department of the Interior. S. 3094 would assign responsibility for carrying out this international program to the U. S. Section of the International Boundary and Water Commission. The U. S. Section of the Commission is the appropriate Federal agency, because the proposed works are being constructed for implementation of the agreement and of the 1944 Water Treaty, under which the agreement was concluded. The works are located on or along the boundary, a part of them actually crossing the boundary. The Water Treaty provides that "The works to be constructed or used on or along the boundary, and those to be constructed or used exclusively for the discharge of treaty stipulations, shall be under the jurisdiction of the Commission or of the respective Section, in accordance with the provisions of the Treaty. In carrying out the construction of such works the Sections of the Commission may utilize the services of public or private organizations in accordance with the laws of their respective countries." The assignment of jurisdiction should therefore properly go to the U. S. Section, with the U. S. Section calling on other Federal agencies to assist it as appropriate in the execution of the work. This the Section proposes to do as indicated in S. 3094.

Section 103 of Title I of S. 2940 would authorize a system of wells along the U. S.-Mexico boundary for the purpose of counteracting the effect of a Mexican border well field on U. S. groundwaters and surface flows. The agreement with Mexico recognizes that the United States may install such a well field, but does not obligate the United States to do so. The cost is estimated at $34 million. This well field would be costly and is not required by the agreement with Mexico. The Department recommends that the Committee defer consideration of the authorization of a border well

field at this time and until further studies can be undertaken by the Department of the Interior and this Department on this matter.

Title II of S. 2940, as well as S. 1807, would initiate an extensive domestic water quality improvement program, which significantly increases the total cost of the bill. The Department concurs in the objective to control the salinity of the Colorado River above Imperial Dam, but understands that the Department of the Interior and the Environmental Protection Agency have not completed their studies and cannot recommend specific policies or projects at this time. More important for the Department of State, considering the serious international concern and purpose here involved, we believe that those measures necessary to implement the international salinity agreement should not be considered within the context of policies governing domestic programs but authorized separately. We therefore recommend that this proposed domestic program be considered separately at such time when the appropriate Federal agencies are able to provide the adequate supporting information to the Congress.

The Department wishes to thank the Chairman and Members of the Committee for proceeding expeditiously on this proposed legislation. Many of the provisions of the agreement are dependent on authorization of works or other measures, and full implementation depends on the appropriation and expenditure of funds. It is urged that S. 3094 be enacted as quickly as practicable.

The Office of Management and Budget advises that there is no objection to the submission of this report to the Congress, and that enactment of S. 3094 would be in accord with the program of the President.

Sincerely yours,

Linwood Holton
Assistant Secretary for
Congressional Relations

Senator CHURCH. I would like to call on Senator Bible, for any opening comment he would like to make.

STATEMENT OF HON. ALAN BIBLE, A U.S. SENATOR FROM THE STATE OF NEVADA

Senator BIBLE. Thank you very much, Mr. Chairman.

I am a cosponsor on one of the bills before you with my distinguished friend from Arizona. I guess Arizona, Nevada, and California have lived with this type of project forever, actually.

I first became acquainted with it during the time I was attorney general of Nevada and worked with the people in California and worked with the people in Arizona. At one time the Arizonians and Californians wouldn't speak to each other, when Neillie Bush put a boat on the Colorado and told the Californians to go back to their business. But we have come a long way since then.

I am glad I participated in the Colorado-Arizona water suit before the Supreme Court. Without getting nostalgic on this, we have come such a long, long way. We still have a long way to go, working together in unity, I think this problem can be resolved.

I am pleased to join Senator Fannin in the bill which I think will accomplish the purpose.

It is a rather lengthy statement. I am going to ask that it be incorporated in full in the record. The members of the press have been furnished with the full statement and I simply want to highlight the provisions.

Title 2 seems to be causing, as I understand it, most of the problems insofar as the administration is concerned. But I think that is an integrally important and absolutely mandatory point of this legislation that that is the one that authorizes the construction of programs alluded to by Senator Tunney, and that is the Paradox Valley in Colorado, The Crystal Geyser in Utah, the Grand Valley Project in Colorado, and the Las Vegas Wash Project in my own State of Nevada.

These four projects would rid the river of some 400,000 tons of salt annually and a little later on our own representative of the government of Nevada will testify as to the Nevada portion of this project which is contained in title 2.

I was amazed to find that the Las Vegas Valley Wash developed as much salt as it did. I knew we developed a lot of other things in Nevada. I didn't realize we developed that much salt. But he will testify in detail about that in a few moments, and he will present the viewpoint not only of the Colorado River Commission of Nevada, but the Governor of Nevada, a very close and dear friend of mine who heartily endorses S. 2940.

The problems in a nutshell, as I see it, with the administration proposal are that they seem to vest the jurisdiction in the secretary of state. I have great confidence in former Attorney General Brownell and his great wisdom and ability to grapple with difficult problems. It seems to me this should be vested in the control of the Secretary of Interior who ever since the Colorado River was born has had jurisdiction of the waters of the Colorado, and I also think that this problem must be dealt with, not on a nation to nation problem,

but it must be dealt with in addition, and I don't fault that. It must be dealt with additionally on a basinwide problem and that is really the thrust of what is said in this long statement of mine.

In the interest of time, Mr. Chairman, I ask that it be incorporated in full in the record.

Senator CHURCH. Thank you, Senator Bible. The statement will be incorporated in full in the record.

I am surprised that you are surprised about the amount of salt in Nevada. Ever since I was a young boy I have been hearing about those salted mines.

Senator BIBLE. Some of them produced enough to save the Nation.

[The prepared statement of Senator Bible follows:]

PREPARED STATEMENT OF HON. ALAN BIBLE, A U.S. SENATOR FROM THE STATE OF NEVADA

Mr. Chairman and Members of the Subcommittee, I am pleased to have this opportunity to participate in the work of your Subcommittee as it begins its consideration of measures to overcome the salinity problems of the Colorado River.

It has been well said, I think, that the Colorado River is the Pacific Southwest's single most valuable material resource. It is, without question, the well spring of life, development, and progress throughout the seven Colorado River Basin States, including my State of Nevada. The water of the river supports life itself and is absolutely essential to both the present and future welfare and vitality of industry and agriculture throughout the Basin States. The welfare of Nevada and of her sister States is so closely tied to the welfare of the river itself that it comes as no surprise that anything affecting the quantity or quality of the Colorado's water is of paramount importance to all concerned.

I have been pleased, therefore, to join with my good friend and distinguished colleague Senator Fannin of Arizona in cosponsoring S. 2940, the proposed Colorado River Salinity Control Act now before the Subcommittee. S. 2940 is an enlarged sequel to S. 1807 (also before the Subcommittee), which I also had the privilege of cosponsoring with Senators representing all of the Colorado River Basin States. S. 1807 was introduced prior to the signing of Minute 242 to the Mexican Water Treaty of 1944, the so-called "Brownell Agreement" dealing with the salinity of the Colorado water entering Mexico under the Treaty. The salinity control programs identified in S. 1807 are included in our later bill S. 2940.

Minute 242—the negotiated agreement with the Government of Mexico—is designed to assure that the Colorado River water which enters Mexico will have an "annual average salinity of no more than 115 parts per million (plus or minus 30 ppm) over the annual average salinity of Colorado River water which arrives at Imperial Dam". Although the 1944 Treaty contains no specific provisions with respect to salinity, there is no question that the quality of the water as it enters Mexico has been a vexing international problem for many years.

Minute 242 is designed to settle that problem and certainly the effort by the State Department to do so and maintain our friendly relations with our Mexican neighbors is laudable. However, that agreement is designed to resolve a long-standing dispute between the two nations; it does nothing whatsoever to clean up the waters used in the United States or to reduce the salts entering the river above Imperial Dam. The Colorado River has experienced and will continue to experience increases in salinity which will adversely affect both the Basin States water users and Mexico as well. What is needed now is a *basinwide* program to control the salinity of the river. Ambassador Brownell in his December, 1972, report to the President recommended: "Timely decisions in regard to implementation of specific actions to control salinity increases in the Colorado River Basin." If the Federal Government does not act to control the increase of salinity above Imperial Dam we may well be courting continuing problems with Mexico and water users in the United States will face severe adverse economic impacts in the years ahead.

I understand that the seven Basin States, the Environmental Protection Agency, and the Department of the Interior have agreed on the long-range salinity objective for the Colorado River. They involve maintaining the salinity of the lower mainstream at or below present levels while the Basin States continue to develop their apportioned waters. The short-range goal envisages the removal of 400,000 tons of salt annually from the river system.

S. 2940 proposes a comprehensive approach to this total problem. Title I authorizes facilities and improvements designed to settle the Mexican issue. At the same time, Title II would authorize a broad and necessary program of salinity management facilities throughout the Basin to improve the quality of water on behalf of Basin State users. Title II authorizes the construction of four programs: (1) Paradox Valley, Colorado; (2) Crystal Geyser Project, Utah; (3) Grand Valley Project, Colorado; and (4) Las Vegas Wash Project, Nevada. These four projects would rid the river of some 400,000 tons of salt annually and would meet the initial goal of the Environmental Protection Agency for the Colorado River. Their estimated cost would be about $125 million—75% of which would be borne by the Federal Government. The remainder would be repaid regionally, with the costs to be allocated in a manner determined by the Secretary of the Interior. This division of cost responsibility recognizes the national obligation involved in our international agreement with the Government of Mexico.

S. 2940 is the outgrowth and culmination of many years of concerted study and cooperative effort by the Committee of Fourteen, representing the Governors of the seven Colorado River Basin States, the Bureau of Reclamation and the Environmental Protection Agency. It represents the collective best judgment of the Basin States as to the steps that must be taken if we are to successfully combat the salinity problems of this major international river system. Central to that judgment is the proposition that the approach to this situation must be a BASINWIDE approach—a conclusion I heartily endorse. The Colorado is a river system. Its problems must be treated on a systemwide basis. As I have said, any other approach will only court deeper problems in the years ahead with our good neighbors in Mexico and our own essential requirements throughout the Basin States.

As one of the directly affected Basin States, my State of Nevada strongly supports S. 2940. Our distinguished Governor and my good friend the Honorable Mike O'Callaghan strongly endorses the legislation. I am also familiar with the extensive efforts not only by the State of Nevada but by our affected local governments as well in cooperating in basinwide studies and in the development of state and local programs to improve the quality of the Colorado's waters. The Southern Nevada Community is well along in the design of facilities which will materially reduce Nevada's contribution to pollution of the river. In anticipation of cooperative action by the Federal Government, they are committed to an approximate $65 million investment in municipal waste treatment facilities. Indeed, I think the Clark County, Nevada, municipal water treatment program is well on the way to becoming a model for other communities. The work the Nevada authorities have done in this area is an outstanding illustration of fruitful and productive local, state, and federal cooperation. The federal commitment called for by S. 2940 is needed to further advance that process.

Finally, Mr. Chairman, I want to say a few words about S. 3094, the Administration proposal. While I support the goal of the Administration program, which is to settle the Mexican situation, I have serious problems with their bill. In the first place, I have real difficulty with the proposal that the Secreary of State be vested with jurisdiction over actions involving salinity control of the Colorado River. I believe that these essential water resources programs be kept within the control of the Secretary of the Interior and under the overview of the Senate and House Committees on Interior and Insular Affairs. To fragment the administrative and legislative responsibilities for the Colorado River, as proposed by the Administration, would serve no useful purpose and makes no sense at all to me.

I have stressed my belief that the salinity problems of the Colorado River must be approached *Basinwide*. The Administration bill falls far short of meeting this essential objective. It makes no provision at all for controlling salinity above Imepiral Dam. It fails to recognize that the salt problem of the river is a systemwide problem and that the control program to be implemented on the Colorado must also be systemwide in scope. If we are to obviate future

problems with Mexico, and at the same insure equitable treatment of the Basin States, then S. 3094 is definitely not the answer. As I have said, both our present and our long-range requirements in the Colorado River Basin call for the kind of comprehensive action program proposed in S. 2940.

Senator CHURCH. Senator Fannin.

STATEMENT OF HON. PAUL J. FANNIN, A U.S. SENATOR FROM THE STATE OF ARIZONA

Senator FANNIN. Mr. Chairman, I want to take this opportunity to publicly thank you for your expeditious scheduling of these bills on the Colorado River Salinity problem. I am very pleased to appear with such distinguished Senators as Senator Bible and Senator Halleck and Senator Tunney. I know of their great interest. We certainly have a common problem and we are all working together on this problem.

This issue is of paramount concern to the peoples of the arid west who survive mainly because of the availability of water. Our entire country and our neighbor Mexico now have a vested interest in the speedy resolution of the matters we are addressing today.

At the outset I want to subscribe to the position taken by the Committee of Fourteen who we will hear from later this morning. The full chronology of the situation will be outlined in testimony so I won't belabor the facts. What I do want to stress is that all seven of the Colorado Basin States adhere to the principle that the resolution of this matter of salinity on the Colorado must be approached with two objectives in mind.

First, that salinity of the Colorado is a basinwide problem which necessitates implementation of specific salinity control measures calculated to reduce the largest contributors to salinity—natural runoff and natural point sources. Title II of S. 2940 specifically addresses itself to this salinity control program.

Second, that the basin States already facing a fully apportioned river must not be made to suffer loss of water because of a water quality commitment never agreed to nor contemplated by the 1944 treaty with Mexico.

In August of 1972, I sent a letter to President Nixon imploring him not to acquiesce to a set quality standard based on the salinity of river water above Imperial Dam. The question of quality was a serious one in the 1944 treaty hearings before the Senate. The supporters of the treaty pointed out that about half of the 1.4 million acre-feet a year allocation to Mexico would be comprised of return and other flows entering the river below Imperial Dam including discharges from the desilting basins. We acquiesced to the efforts of the executive branch to resolve the Wellton-Mohawk problem by executive agreements—Minute 218 and Minute 241 which resulted in delivery of almost 118,000 acre-feet more than required by the treaty.

The President's decision to guarantee a quality of water delivered to Mexico under Minute 242 makes the Federal Government responsible for assuring that the salinity problem be resolved. The building of the desalting plant and the lining of the Coachella Canal by themselves cannot resolve the issue. In addition to these efforts we must commit

the necessary resources for the salinity control program that will prevent loss of water to the basin States and safeguard the water from increased salinity.

Thank you again, Mr. Chairman, for your support and attention in this matter.

I would ask unanimous consent that the statements of Senators Hansen, Goldwater, and Dominick be placed in the record.

Senator CHURCH. The statements to which you have referred will be incorporated in the record at this point, and thank you Senator.

[The prepared statements of Senators Hansen, Goldwater, and Dominick follow:]

Senator Clifford P. Hansen
Senate Interior and Insular
Affairs Committee
April 26, 1974

Mr. Chairman, although my name is included as co-sponsor of S. 1807, I must say I support this bill and the more recent bill, S. 2940, with some reservations. I have supported this legislation because the salinity control program seems to be the only course of action open to Congress.

Under the 1944 Treaty with Mexico there was no stipulation as to the quality of water to be delivered via the Colorado River from the United States to Mexico. However, according to minute 242, which was recently negotiated by Mr. Brownell, the United States must now deliver approximately 1.5 million acre-feet to Mexico with a salinity not to exceed 115 plus or minus 30 ppms over the annual average salinity of the Colorado River waters which arrive at Imperial Dam.

I, as well as the State Engineer of Wyoming and many other Wyoming people, am not happy with the recent Brownell agreement, which guarantees this quality of water to Mexico. We feel the State Department, in effect, may have given away some of the Colorado Basin States' water.

We particularly feel that a State like Wyoming may suffer the most since relatively few reclamation projects have been completed in Wyoming. Consequently, most of Wyoming's contribution to the salinity content of the Colorado originates from natural run-off and not from reclamation projects. Most of the salinity arises in states which already have developed reclamation projects.

However, when a use for Wyoming's share of Upper Basin water arises, Wyoming will want to develop reclamation projects to utilize its share. We fear, however, at that time, the salinity content in the Colorado River may be so high, due to projects already underway in the more developed states, that any salinity added from Wyoming's new projects will not be allowed. Desalinization costs may be argued to have become prohibitive if too many reclamation projects dump salt into the Colorado. In short, the cost of desalinization may be considered disproportionate to the benefit to be derived from the new projects. The projects may then be prohibited. Wyoming may still have a right to the water but may not be able to use it in reclamation projects. In effect, then, Wyoming will have lost its water rights.

The provisions of Title II of S. 2940 relative to measures upstream from Imperial Dam are most important to Wyoming. Section 202 authorizing construction of four salinity control units and section 203 directing the Secretary to expedite completion of reports of 12 additional units are of special significance. If the water is not desalinized now by section 202 units, costs to desalinate water contributed by future Wyoming projects may become prohibitive. The inclusion of section 202 units now will amortize the costs and lighten the burden later when more projects are developed. Without these provisions I could not support the bill.

I support S. 2940 and S. 1807 but I do so with the reservation that the number and full use of Wyoming's water rights may be decreased or hampered by this legislation. I sincerely hope this interference will not transpire. I strongly recommend that the Committee include in its report language to prevent loss of water rights to any Colorado Basin State due to this legislation.

Mr. Chairman, you will note the absence of our State Engineer from the hearings. I would like to ask that my remarks and a letter from him be included in the record.

THE STATE OF WYOMING

State Engineer's Office

STATE OFFICE BUILDING CHEYENNE, WYOMING 82002

March 29, 1974

The Honorable Clifford P. Hansen
United States Senate
New Senate Office Building
Washington, D. C. 20510

Dear Cliff:

I am informed that hearings will be held before the Senate Interior Committee on April 26 concerning the various bills relating to problems of salinity control on the Colorado River. As you probably know, I have not been enthusiastic in my support for any of these bills, and in explanation of my views, I am enclosing herewith a copy of a letter I recently wrote to Congressman Roncalio on this subject.

To be perfectly candid, it is my view that the United States State Department has given the Mexicans far too much in the recent negotiations concerning the Colorado River. By so doing they have seriously impaired the ability of all water users in the Colorado River Basin to utilize water from that source. There is little question that the Mexicans accepted water of any quality when they were guaranteed 1.5 million acre-feet of water per year under the 1944 Treaty, and there is dubious justification for now agreeing with Mexico that they are entitled to water of a quality which is equivalent to that enjoyed by users in the United States. The State Department concessions to Mexico will ultimately reduce Wyoming's allocation of Colorado River water, and will also make it more difficult for us to utilize any of the waters originating in that river system.

Although we have gone along with the other Colorado River states in support of, or perhaps I should say in not opposing, the currently proposed legislation on Colorado River salinity control programs, we do not intend to appear at the Senate hearings and indicate our support for this legislation. It would be my personal preference that the states should collaborate to challenge the authority of

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the United States State Department to make concessions of the nature involved in the current situation with Mexico, which in reality are extensions and modifications of the Treaty rather than agreements to implement the provisions thereof. I feel confident that the states could challenge the authority of the State Department to enter into minute 242 because of the fact that it involves an enlargement of the amount of water to be delivered to Mexico as well as limiting the use that can be made of Colorado River waters in the United States. There is some support for this view among the Colorado River states, and whether or not such action is taken will depend on the outcome of the legislation to be considered by your Committee on April 26.

In the interest of comity between the seven Colorado River states, I would not suggest that you oppose this legislation and in fact would think that you may want to support the version of the legislation which would give the Department of the Interior authority to proceed with the salinity control programs. But aside from the comity issue, it is my view that Wyoming would be best served by taking action to declare the recent agreement between Mexico and the United States invalid.

One additional factor which makes the desirability of going along with the other Colorado River states less attractive is the fact that EPA is in the process of imposing numerical salinity standards on the Colorado River at the present time. They have informed the states that we must come up with a plan for adopting numerical standards sometime this summer, and by October of 1975 the states must have adopted numerical salinity standards and an implementation plan for enforcing these standards. Much of our activity in the Colorado River system on subjects such as the salinity control programs has been directed at the objective of delaying numerical salinity standards. Once these standards are imposed, the desirability of programs such as the salinity control program becomes much less attractive. As far as Wyoming is concerned, our contribution of salinity to the river system is mainly from natural sources, and there will be little likelihood we can reduce our salinity contribution significantly regardless of what is done. The main concern on this subject is the possibility that numerical standards could make it impossible for us to utilize additional water from this river system and could even impair our ability to use water under existing rights. Wyoming will need to be vigilant in protecting

her position on these subjects as negotiations proceed toward adoption of numerical salinity standards, and this process may be even more important than the process of negotiating the interstate compacts on the river system was in past years.

Please forgive the rambling nature of my remarks, but I thought you might be interested in my viewpoints on this particular legislation prior to the hearings which are scheduled for next month. Please let me know if I can provide you with anything further on this subject.

With best personal regards,

Sincerely,

Floyd

Floyd A. Bishop
State Engineer

cc: Governor Hathaway
Dan Budd
Myron Goodson
Art Williamson

FAB/ssb

Enclosure

STATEMENT OF
SENATOR BARRY GOLDWATER
BEFORE
SUBCOMMITTEE ON WATER AND POWER RESERVES
SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE
COLORADO RIVER WATER QUALITY IMPROVEMENT

APRIL 26, 1974

Mr. Chairman, I am pleased to appear before your Committee to testify on the bills you are considering dealing with salinity of the Colorado River. For many years this matter has been of great concern to the seven states that depend on this great river, and also to our good neighbors in Mexico. It demands early and permanent resolution.

Last year I joined my Senate colleagues in the seven states in introducing S.1807, the Colorado River Water Quality Improvement Program, authorizing certain salinity control projects in the Upper Colorado River Basin States.

Since then, as we know, agreement has been reached between this country and Mexico to assure that the waters delivered to Mexico will not be more than 115 parts per million more saline than the water used by Americans north of the international boundary.

Minute 242, as this agreement is known, grants major concessions to Mexico. S.3094, the Administration bill, would implement the minute and achieve harmony with Mexico, but would not by itself adequately protect interests in the United States.

The combined purposes of both implementing the Mexican agreement and taking care of the salinity problem in the seven Colorado River Basin States are treated by S.2940. This bill guarantees that the seven states will not be left holding the bag for the additional acre feet of water, kilowatts of power and dollars required to implement and sustain Minute 242.

Additionally, I should mention that S. 3094 fails to recognize that over the years the Colorado River has experienced an appreciable increase in salinity and that this increase will continue, as the energy and land resources of this water short region are developed, unless a major basin-wide salinity control program is implemented.

Obviously additional increases in salinity will affect water users in Mexico as well as in the Colorado River Basin States. In fact, unless the rise in the river salinity is checked, I am told the economic detriment in the United States alone will increase by about $80 million annually and that our relations with Mexico will be adversely affected.

Mr. Chairman, as you know, potential solutions to the increasing salinity of the river have been under study by the Bureau of Reclamation and the Environmental Protection Agency for many years. The program of salinity control that results from that work would benefit water users in the United States as well as those in Mexico and should be implemented at the same time that the measures called for in Minute 242 are undertaken exclusively for the benefit of Mexico. This is exactly what S.2940 would achieve. S.2940 specifically calls for the authorization of four salinity control projects. These projects would accomplish the near-term objective of the Environmental Protection Agency and the Colorado River Basin States and would achieve an important first stage of a basin-wide salinity control program.

S.2940 is the kind of comprehensive and permanent approach to the salinity problems of the Colorado River which is needed, and I urge the Committee's prompt and favorable consideration of this legislation.

Statement of Senator Peter H. Dominick
Before the Subcommittee on Water and Power Resources
Committee on Interior and Insular Affairs
United States Senate
April 26, 1974

Mr. Chairman. It is a pleasure to appear before this Subcommittee and add my support to S. 2940, a bill which I have cosponsored and which supports a program of salinity control for the Colorado River System which is of paramount importance to my State of Colorado, the other six Basin States--Arizona, California, New Mexico, Nevada, Utah and Wyoming--and our neighbors in Mexico. Last year, I cosponsored S. 1807, which, if enacted, would have authorized a program of physical works and accelerated investigations to reduce the amount of total dissolved solids in the river.

I will leave the details of why the Colorado River is suffering from an overdose of salts, how it got that way, and the detrimental effects of salinity on users of water in the United States and Mexico to other more technical witnesses.

It is evident that as additional consumptive uses of water are made from the river system, the salinity of the remaining waters will increase to the point that will have serious economic and social consequences unless a salinity control program is initiated and implemented as rapidly as reasonably possible. The problem of increasing salinity of rivers in the world's history has degraded areas and nations to hunger, poverty, and economic ruin because the problem either was not recognized or because nothing was done about it. On the Colorado River this cannot be permitted to happen. We do recognize the problem, we know how to handle it, we have the will and incentive to do something about it.

The problem in the Colorado River Basin is not one of recent origin. It was recognized and references made to it in literature as early as 1903. By 1930, people in the Lower Basin and California were fully aware of the fact that salinity of the river would increase to higher and higher levels as more and more water is diverted and consumed. In 1956, when the Congress authorized construction of the Colorado River Storage Project, it included a directive in the law to the Secretary of the Interior to collect data and make analyses relating to the salinity of the Colorado River. Similar provisions were included in the Congressional Acts in 1962 that authorized the Navajo Indian Irrigation and San Juan-Chama Projects and the Fryingpan-Arkansas Project.

The former Federal Water Quality Administration began detailed studies directed at finding solutions to the salinity problem in the early 1960's. The results of these studies were published in December 1971 by the Environmental Protection Agency in a document entitled "The Mineral Quality Problem in the Colorado River Basin." The seven Colorado River Basin States, concerned about the consequences of rising salinity, urged the Department of the Interior to develop a basin-wide salinity control program. The Bureau of Reclamation at the direction of the Secretary of the Interior formulated the program described in a February 1972 report called "Colorado River Water Quality Improvement Program." The projects and measures, studies, and investigations to be authorized by Title II of S. 2940 are from this water quality improvement program.

Historically, development of the waters of the Colorado River System has been governed by interstate compacts, the international treaty with Mexico, Congressional Acts, court decisions, water and power contracts, and administrative decisions. Few of these have dealt specifically with the quality of the water.

In February and April 1972, the Environmental Protection Agency convened the Seventh Session of the "Federal State Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries." Testimony was presented at this conference by Federal, State, and local

officials. The conferees, official representatives of the seven Basin States and the Environmental Protection Agency, unanimously adopted conclusions and recommendations pertaining to the salinity problems of the Colorado River. These conclusions and recommendations were approved in June 1972 by the Administrator of EPA. One of the key recommendations was that the Bureau of Reclamation's salinity control program, which will be initiated by Title II of S. 2940, be accelerated so as to annually remove 400,000 tons of salt from the river system starting by 1977. The Conference also recommended that "a salinity policy be adopted for the Colorado River System that would have as its objective the maintenance of salinity concentrations at or below levels presently found in the lower main stem. In implementing the salinity policy objective for the Colorado River system, the salinity problem must be treated as a basin-wide problem that needs to be solved to maintain Lower Basin water salinity at or below present levels while the Upper Basin continues to develop its compact-apportioned waters." The conferees also recognized that the salinity control program described by the Department of the Interior in its report entitled "Colorado River Water Quality Improvement Program" offers the best prospect for implementing the salinity control objective that they had adopted.

The 1944 Mexican Water Treaty provides for a delivery of a guaranteed annual quantity of 1.5 million acre-feet of water to Mexico from the Colorado River System. There are no specific provisions with respect to salinity. To the contrary, Minute No. 242 of the International Boundary and Water Commission, signed by the United States and Mexican Commissioners on August 30, 1973, gives Mexico a guaranteed quality of water relative to Imperial Dam.

In 1972 and 1973, Mexico noticed that the Environmental Protection Agency and the seven States of the Colorado River Basin had entered into an agreement in April 1972 under which efforts would be made under a Colorado River Water Quality Improvement Program to maintain the salinity of the Colorado River at Imperial Dam at levels as of 1972, while the Upper Division

States, my State of Colorado and her sister States, New Mexico, Utah, and Wyoming, would proceed with developing their compact apportionments of water use. Mexico was then not satisfied with previous agreements and operations under Minutes No. 218 and No. 241, which were supposed to solve the salinity problem between the two nations, and again objected. Mexico demanded that the quality of water delivered to Mexico should be as good as that delivered to Lower Basin water users in the United States.

For all practical purposes, the negotiators of Minute No. 242 ignored the most pertinent and important points of advice of representatives of the seven Colorado River Basin States. Under Minute No. 242, which is supposed to constitute a "permanent and definitive solution of the international problem of the salinity of the Colorado River," the United States would be required to (1) adopt measures no later than July 1, 1974 to deliver to Mexico upstream from Morelos Dam 1,360,000 acre-feet of water of the 1,500,000 acre-feet treaty allotment with the salinity of no more than 115 ppm, plus or minus 30 ppm, over the annual average salinity of water at Imperial Dam; (2) from September 1973 until the United States adopts such measures, discharge 118 acre-feet of Wellton-Mohawk project drainage waters to the river downstream from Morelos Dam and substitute therefor an equal volume of other waters from reservoirs in the United States; (3) pay the cost of extending the concrete-lined Wellton-Mohawk by-pass drain from Morelos Dam to the Santa Clara slough near the Gulf of California in Mexico, and to operate and maintain that portion of it in the United States; (4) limit pumping of ground water within five miles of the Arizona-Mexico border to 160,000 acre-feet of water per year, pending an agreement on ground water (Mexico is already pumping 160,000 acre-feet per year and refuses to have it counted toward deliveries by the United States under the Treaty); (5) support the efforts of Mexico to obtain financing for improvement and rehabilitation of Mexicali Valley; and (6) provide non-reimbursable assistance to Mexico for those aspects of rehabilitation of Mexicali Valley related to the salinity problem,

including tile drainage. In contrast, the Imperial Valley Irrigation District across the border in the United States at its own expense has installed tile drains and lateral linings costing $50.8 million to date, while its landowners have spent $15.9 million lining farm ditches.

Among the measures that the Administration has recommended to the Congress to implement Minute No. 242 would be the world's largest desalination complex to remove salt from the Wellton-Mohawk Project drain waters, lining of 49 miles of the Coachella Canal, and the purchase of thousands of acres of land on Yuma Mesa in order to reduce the irrigable acreage in the United States that was supposed to receive water under previous laws. Without considering interest during construction, the capital costs would be at least $139 million, and the operation and maintenance of the desalination plant is estimated to cost about $10 million per year. All of the benefits of these expenditures go to Mexico.

As I see it, the proposal of the Department of State embodied in S. 3094, the Administration's Bill before this Committee, is a give away to another country of water assets of the Colorado River Basin States and millions of dollars of the nation's money in capital costs of facilities, not to mention a multi-million dollar obligation annually for operation and maintenance and replacement costs saddled on the backs of future generations of Americans in perpetuity.

I also have some serious misgivings about Minute No. 242. If Minute No. 242 does not constitute a new treaty, the best that can be said for it is that it is a serious amendment of an existing treaty. It incorporates ground water, which is not covered in the original treaty. It changes, at least for an indefinite period, the amount of water to be delivered to Mexico. It probably would cause the Secretary of the Interior to violate the reservoir operating criteria of the Colorado River Basin Project Act of 1968. These reservoir operating criteria resulted after very complex and difficult negotiations among the seven Colorado River Basin States, and are of particular

benefit to Colorado and her sister Upper Basin States. Minute No. 242 also gives a water quality guarantee to Mexico which was specifically omitted from the original treaty and for all practical purposes precluded by the language saying that the water to be delivered to Mexico "shall be made up of the waters of said river whatever their origin." In addition, Minute No. 242 provides for an unilateral, unspecified amount of foreign aid commitment without prior approval of the Congress, which may be a violation of the Treaty itself. Should Minute No. 242 go before the United States Senate for ratification before it can be implemented? Certainly it goes far beyond the definition of a Minute describing operations under a substantive agreement.

The Administration Bill, S. 3094, to authorize the measures necessary to carry out the provisions of Minute No. 242 is also pending in the Congress. S. 3094 does not include a salinity control program for the benefit of the United States citizens using Colorado River water. It does not recognize the salinity problem as one that is basin wide, and as one that requires a basin-wide solution. I certainly cannot support S. 3094 or any other proposed legislation that does not provide benefits of salinity control to my State of Colorado and the other States of the Colorado River Basin, as well as to the Republic of Mexico.

Because of lack of support by the Administration for legislation to authorize implementation of a Colorado River Basin Salinity Control effort for the seven Basin States, H.R. 12165 was introduced into the House and S. 2940 introduced in the Senate. Title I of either of these Bills would implement Minute No. 242 of the International Boundary and Water Commission, and in Title II provide for a salinity control program upstream from Imperial Dam for the benefit of citizens in the Colorado River Basin States.

The solution of the salinity problem of the Colorado River has become even more urgent since the enactment of Public Law 92-500, the Federal Water

Pollution Control Act amendments of 1972. Because the Environmental Protection Agency has identified salinity as a pollutant subject to the provisions of that law, a new element has been introduced into the problem. In order to maintain salinity of the river's water at satisfactory levels, a salinity control program is mandatory if the States of the Basin are to continue to progress through utilization of the water that has been legally apportioned to them under interstate compacts. The Colorado River Basin States have recognized this new factor. They recently established the Colorado River Basin Salinity Control Forum as an interstate organization to cooperate with the Environmental Protection Agency. This "Forum" is comprised of water quality and water resource officials of the seven States. It has met several times with the Environmental Protection Agency's officials in attempts to reach agreement on a plan to establish water quality standards and control of salinity.

Four projects will be authorized for construction by Title II of S. 2940. Investigations and studies of other potential projects and procedures will also be authorized. The four projects will achieve the near term objective of the Environmental Protection Agency and the seven States by preventing the rise of salinity in the lower main stem of the river while Colorado and her sister Upper Basin States continue to use water for alleviating the energy shortage, and until other measures can be investigated and implemented. It should be pointed out that considerable quantities of water will be needed soon in the processing of oil shale, the gasification of coal, and the production of other forms of energy in the Upper Colorado River Basin.

It is recognized that the Bureau of Reclamation has not yet completed its feasibility level studies on the four projects in Title II. Sufficient work has been accomplished to identify that these are worthwhile projects that should be constructed. We all know that there is sufficient lead time in the governmental process so that the Bureau will have plenty of time to complete its feasibility reports before actual construction is commenced, but a start is mandatory now.

Title II of S. 2940, together with certain amendments that will be offered to Title I, will protect the interests of the seven Colorado River Basin States against the adverse impacts of the implementation of Minute No. 242 by itself. The time has arrived to commence work on a major Colorado River Basin Salinity Control Program that will benefit the water users in the United States as well as those in Mexico. The four initial projects of the Colorado River Salinity Control Program to be authorized in Title II is estimated to be about $125 million. The estimated annual operating cost is $550,000. These projects would remove between 500,000 and 600,000 tons of salt annually, reducing the salinity of the river's water for the benefit of users in both the United States and Mexico. By comparison, as pointed out above, the program to implement Minute No. 242 which would only maintain a fixed salinity differential between Imperial Dam and the Mexican diversion point near the border, and which would be of benefit to Mexico only, would cost at least $139 million and have an annual operating cost for the desalination plant alone of about $10 million.

Experts knowledgeable in the field admit that without the control of upstream salinity, the United States will be faced with a new salinity problem with Mexico as salinity levels increase with continued development. Without this type of control, water users in the United States will suffer significant economic impacts. The proposed legislation, S. 2940, entitled the Colorado River Basin Salinity Control Act of 1974, which is now under consideration by this Committee, meets the challenge of rising salinity that will adversely affect the citizens of the United States unless it is controlled. S. 2940 will also assist in achieving a permanent solution to the controversy with Mexico over the salinity of the Colorado River.

Attached to my testimony is a resolution adopted by the Upper Colorado River Commission. This resolution summarizes my views as well as those of the four Upper Division States of the Colorado River Basin on S. 2490 and S. 3094.

I strongly recommend that S. 2940 be favorably reported to the Congress and that it be enacted as modified by amendments that will be submitted by representatives of the States when they testify.

Thank you for the opportunity to present my views on this important legislation.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
re:
COLORADO RIVER BASIN SALINITY CONTROL LEGISLATION

WHEREAS, on April 27, 1972, at the Federal-State Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries the conferees unanimously recommended that: (a) a salinity policy be adopted for the Colorado River system that would have as its objective the maintenance of salinity concentrations at or below levels presently found in the lower main stem, and (b) in implementing that policy objective the salinity problem must be treated as a basinwide problem that needs to be solved to maintain Lower Basin water salinity at or below present levels while the Upper Basin continues to develop its compact-apportioned waters; and

WHEREAS, the conferees also recognized that the salinity control program as described by the Department of the Interior in its report entitled "Colorado River Water Quality Improvement Program," dated February 1972 represents part of a practicable plan for implementing the salinity control objective; and

WHEREAS, by letter of June 9, 1972 to the Secretary of the Interior, the Administrator of the Environmental Protection Agency concurred with the conferees, endorsed the proposed salinity control program, and offered the assistance of his agency to the extent of available resources; and

WHEREAS, Bills (H. R. 12165 and S. 2940) are pending orders of business in the Committees on Interior and Insular Affairs of the House of Representatives and Senate of the United States Congress; and

WHEREAS, Title I of said Bills (H. R. 12165 and S. 2940) would authorize the Secretary of the Interior to construct certain works downstream from Imperial Dam on the Colorado River in the Lower Basin for the implementation of minute numbered 242 of the International Boundary and Water Commission, United States and Mexico, entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River"; and

WHEREAS, Title II of said Bills (H.R. 12165 and S. 2940) is based upon recommendations of the State-Federal, water-quality conferees and the report of the Department of the Interior's "Colorado River Water Quality Improvement Program," and would provide for salinity control measures to be authorized in the United States upstream from Imperial Dam to benefit both United States and Mexican uses of Colorado River waters; and

WHEREAS, Bills prepared by the executive branch of the Federal government (H. R. 12834 and S. 3094) to authorize measures near the Mexican border to implement minute numbered 242 of the International Boundary and Water Commission are pending orders of business in the Committees on Interior and Insular Affairs of the House of Representatives and Senate of the United States Congress; and

WHEREAS, the Environmental Protection Agency will soon publish its "Proposed Salinity Control Policy and Requirements and Procedures for Establishment of Salinity Standards and Plan of Implementation for Salinity Control" in the Federal Register; and

WHEREAS, the plan for implementation of salinity control in the Colorado River Basin must involve the "Colorado River Water Quality Improvement Program" of the Federal government in Title II of the Bills H.R. 12165 and S. 2940; and

WHEREAS, the enactment into law by the Congress of the administration Bills (H.R. 12834 and S. 3094) may provide only a temporary solution to the salinity problem with Mexico if the States of the Colorado River Basin are to continue to develop their compact-apportioned Colorado River water to the limit of their entitlements:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission, convened in adjourned regular session at Salt Lake City, Utah on April 9, 1974 that it endorses and supports H.R. 12165 and S. 2940, and urges the Congress of the United States to enact said legislation into law;

BE IT FURTHER RESOLVED that the Members of the House of Representatives and the Senate of the United States Congress from the seven Colorado River Basin States, Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming are hereby petitioned to actively support the enactment of H.R. 12165 or S. 2940 and to oppose H.R. 12834 and S. 3094 or other legislation that is purported to implement minute numbered 242 of the International Boundary and Water Commission, United States and Mexico, without providing for a program to control the salinity of the Colorado River system upstream from Imperial Dam;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted by the Executive Director of the Upper Colorado River Commission to the President of the United States, Secretary of the Interior, Secretary of State, Administrator of the Environmental Protection Agency, members of the United States Congress from the Colorado River Basin States, members of the Committees on Interior and Insular Affairs of the House of Representatives and the Senate of the U. S. Congress, the Governor of each of the Colorado River Basin States, and to other interested entities.

CERTIFICATE

I, IVAL V. GOSLIN, Executive Director of the Upper Colorado River Commission, do hereby certify that the above Resolution was adopted by the Upper Colorado River Commission at an Adjourned Regular Meeting held in Salt Lake City, Utah on April 9, 1974.

WITNESS my hand this 10th day of April, 1974.

Ival V Goslin

Ival V. Goslin
Executive Director

Senator CHURCH. Senator Haskell.

STATEMENT OF HON. FLOYD K. HASKELL, A U.S. SENATOR FROM THE STATE OF COLORADO

Senator HASKELL. I have a written statement that I would like permission to insert in the record, but briefly I would like to compliment you, Senator Church, for calling these hearings, and I would like to join with Senator Bible and Senator Fannin in expressing that this is an agreement that must be entered into satisfactorily to all the States which I am sure it can be, as well as an international agreement, and again I appreciate your calling these hearings.

Senator CHURCH. Thank you very much, Senator. I know the subject is one of very real importance to your State.

[The prepared statement of Senator Haskell follows:]

PREPARED STATEMENT OF HON. FLOYD K. HASKELL, A U.S. SENATOR FROM THE STATE OF COLORADO

Mr. Chairman, the Colorado River is a major water resource which supports the societies and economies of parts of seven States and a portion of Mexico.

The complex body of law which has evolved to divide the water of the River among the basin States and between the United States and Mexico attests to the significance of the River. Throughout the history of the basin's development, conflicts over water have often been bitter, and negotiations have been intense and protracted.

Now, the increasing salinity of the River, resulting from both natural sources and from the activities of man, presents a new threat. In the lower basin and in Mexico high salinity already contributes to economic losses. Throughout the basin, the problem of salinity threatens to limit further beneficial uses which have been planned and which were contemplated in the interstate agreements.

The Mexican Government has assigned high priority to the resolution of the controversy over the salinity of water deliveries to Mexico. President Echeverria, when he addressed this Congress during his 1972 visit, particularly emphasized the importance of this matter to relations between the two countries.

The States of the Colorado River Basin have adopted a cooperative and constructive attitude toward the efforts of General Brownell and the Federal task force in seeking a settlement with Mexico. The States recognize the need to reduce the uncertainties which salinity problems pose for everyone using the River. The negotiations resulting in the recent agreement with Mexico have not been delayed by the controversy and contention which has characterized many earlier negotiations of water agreements.

The States now unanimously support the enactment of legislation to carry out the agreement, although it will place significant new obligations upon the American water users of the Colorado River.

The work proposed by the Administration, however, will *only* provide the salinity control necessary to comply with the agreement with Mexico. It does not represent a comprehensive salinity control program, nor will it resolve the problems which plague lower basin American water users or alleviate the threats of curtailment of water uses throughout the basin.

There are opportunities to control salinity by the management of concentrated sources, both natural and manmade, in the basin above Imperial Dam. Several of these opportunities have been investigated sufficiently for a judgment to be made of their feasibility. Others deserve further study.

In May of 1973, I cosponsored S. 1807, a bill to authorize a program of construction and further planning of salinity control methods in the Colorado Basin. That bill was drafted before the Administration transmitted its proposal concerning the Mexican Treaty agreement.

A new bill, S. 2940, has now been introduced by Senator Fannin and Bible. It incorporates both the measures recommended by the Administration regarding the agreement with Mexico and the substances of the upstream salinity control program which was proposed in S. 1807.

In my opinion, the two matters are closely related. The Colorado River is

one system. The salinity problem is important to all of the water users, Mexican and American alike. If the Congress is going to consider the Federal response to the salinity problems in this legislation, it should consider the whole problem.

Therefore, I urge my colleagues on the Committee to view S. 2940, the comprehensive measure, as the proposal before us today and as the appropriate vehicle for Congressional consideration. I urge the Committee to approach the salinity problem in its entirety and to develop a Congressional response which will materially assist all of those who depend upon the Colorado River for sustenance.

Senator CHURCH. Our first witness this morning is the Honorable John Tunney, the Senator from California.

STATEMENT OF HON. JOHN V. TUNNEY, A U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator TUNNEY. Thank you, Mr. Chairman.

I certainly appreciate the opportunity to appear before you today to discuss this legislation which you are considering, my bill and Senator Jackson's bill and Senator Fannin and Senator Bible's bill. I particularly appreciate the opportunity to urge your favorable consideration of legislation authorizing the Secretary of the Interior to execute a program of salinity control for the Colorado River and endorse the general program to resolve our long-standing dispute with Mexico over salinity of the Colorado River at the border.

Excessive salinity in the Colorado River presents a unique pollution problem. Much of this salinity results from natural causes, thus the regulations of the Water Pollution Control Act will not stop it. The Colorado River and its tributaries flow through many highly saline shale formations and as they move across these areas a great deal of salt is picked up. In addition, throughout the Basin there are numerous salt springs and other underground sources of highly saline water which contribute hundreds of thousands of tons of salt to the river annually.

Man has not caused these problems. Yet they are detrimental to his efforts to make use of the waters and they must be controlled. Of course, there are also manmade sources in the Colorado, the principal problem arising on agricultural lands where irrigation water tends to leach salts from the soil and carry them into the mainstream of the river.

The Colorado River is important to my State of California and to much of the West. For many years as a Congressman representing the Imperial and Coachella Valleys I have represented agricultural and urban areas which have suffered most severely from the impact of Colorado River salinity. The Imperial and Coachella Valleys are two of our Nation's most important farming areas solely because irrigation water is available from the Colorado River. These two valleys produce millions of dollars worth of crops each year and are of particular importance to the Nation's markets during the long winter months when much of America's agriculture is out of production.

I have been working with many concerned Californians now for some time in seeking solutions to these problems. On May 14, 1973, together with my colleagues from the seven Colorado River Basin States, I introduced S. 1807, which recommends a long-range approach to the salinity problem on the Colorado, the benefits of

which will extend not only to the United States users but also to Mexico. When this legislation was introduced we did not have a fully formulated program for resolution of the controversy with Mexico. Therefore, provisions to seek the more immediate solutions demanded were not included in the bill. I will speak later to the program proposed for that problem.

The studies prepared by the Colorado River Board of California, the Environmental Protection Agency, and the Bureau of Reclamation all have said that unless positive steps are taken salinity levels in the river will rise to such a degree that farming could be badly impaired and costs to homes and urban users will skyrocket.

The Bureau of Reclamation in its 1972 report, "Colorado River Water Quality Improvement Program," estimated that the salinity at Imperial Dam, the diversion point for almost 4 million acre-feet of water serving both California and Arizona farms, could increase from its present level of just under 900 parts per million of salt to in excess of 1,300 parts per million. The Bureau estimated even higher salinities under some conditions. The extensive programs being undertaken today in the Imperial Valley, such as the laying of drains and other measures to present these concentrated salinities brought by Colorado River water from ruining their lands, may not be effective against these higher salinities.

In the coastal plain of southern California these waters have created salt build-ups in our underground basins in addition to problems caused by delivery of water to homes and industries with close to 750 parts per million of totally dissolved solids.

In April 1972 the Environmental Protection Agency and the States of the Colorado River Basin agreed on a program to begin to resolve the problem of salinity in the Colorado. That program is set out in title 1 of S. 1807.

Let me quickly summarize the result of that conference.

One, the members agreed that the salinity policy for the Colorado River should have as its objective the maintenance of salinity levels at or below the present levels found in the Lower Basin.

Two, the salinity control program described by the Bureau of Reclamation in its 1972 report, "Colorado River Water Quality Improvement Program," offers the best prospect for implementing the objective in No. 1.

Three, to achieve the policy, the long-range program of the Bureau of Reclamation shall be directed toward achieving reduction of salinity concentrations that would otherwise exist at Imperial Dam to meet present-day levels.

This program was developed in cooperation with all of the States of the Colorado River Basin so that present water users could be protected while at the same time permitting all Colorado River Basin States to develop their full allotment of water from the Colorado River.

As this committee is aware, there has been an unprecedented era of cooperation and mutual effort among the seven States of the Colorado River following more than a half century of controversy and bitterness. This bill represents one more step in this new approach along the Colorado, and I am delighted to be able to cooperate in that effort. Unless we undertake an effective program to halt further deterioration, restrictive steps could be taken under Public Law 92–500 which could destroy this harmony.

Since the date on which I introduced S. 1807, the United States has reached agreement with the Republic of Mexico on a permanent solution to the salinity of the Colorado River at the border between the United States and Mexico. There is a great deal of history to this controversy and I will not attempt to describe it to you, as I understand later witnesses will give you more information. Suffice it to say that the program which was negotiated by the Honorable Herbert Brownell under instructions from President Nixon is one I believe to be just and equitable and, with proper protection from the United States users of Colorado River water, one I believe should be implemented.

I would like first, Mr. Chairman, to describe to you the program considered by the counterpart of your committee in the House of Representatives for the control of salinity for Colorado River water users within the United States.

Title 1 of S. 1807 gives recognition to the problems caused to the Lower Basin States of Arizona, California, and Nevada due to the increasing salinity of the Colorado and to the desirability of international comity with Mexico. Congress would declare its intent to institute a salinity control program based upon the policy adopted at the 1972 pollution control conference which I described earlier. The Secretary of the Interior would also be directed to implement the program generally as described in the Bureau of Reclamation's 1972 report, "Colorado River Water Quality Improvement Program."

Title 2 of the bill would authorize for immediate construction, as initial units of the salinity control program, the La Verkin Springs unit, Paradox Valley unit and the Grand Valley irrigation unit. These three projects would prevent the addition of close to 400,000 tons of salt per year and meet the initial objectives of the pollution conference.

In the legislation currently considered in the House, the projects currently proposed for construction are the Paradox Valley unit and the Grand Valley irrigation unit noted in my bill together with the Crystal Geyser unit and the Las Vegas Wash salinity control unit.

The Paradox Valley project is on the Dolores River in western Colorado and transversing this valley the river picks up over 200,000 tons of dissolved salts a year. The Grand Valley project, also located in western Colorado, would attempt to block the addition of between 200,000 and 280,000 tons of salts per year caused by poor irrigation practices and inefficient water delivery systems.

The Crystal Geyser near the Green River in Utah adds some 3,000 tons of salt annually to the river and the Las Vegas Wash unit presently adds over 200,000 tons annually to the river.

Title 3 of S. 1807 lists the salinity control projects identified in the Bureau of Reclamation's 1972 report which appeared to be feasible on a reconnaissance-level basis. The Secretary is directed to expedite the planning reports on them and submit them to the Basin States, and, after comment, to the President, concerned Federal departments and agencies, and the Congress. It also would authorize additional research in salinity control and direct the Secretary of the Interior to cooperate with the Secretary of Agriculture in carrying out this research.

Title 4 creates a Colorado River Salinity Control Advisory Council composed of no more than three members appointed by the Governor of each of the Colorado River Basin States. The Council is to advise the Secretary of the Interior and allows for participation by representatives from the Basin States in the salinity program.

Title 5 provides for the allocation and repayment of costs. In the allocation of costs, recognition is given to the great Federal responsibility in the Colorado River Basin due to the Basin's interstate and international character. The Federal Government owns the majority of the lands upon which most of the salts originate. Recognition is also given to the Federal Water Pollution Control Act Amendments of 1972 and the policy contained therein with respect to reducing pollution in the United States.

Consistent with this, 75 percent of the total costs of construction, operation, and maintenance of each unit of the salinity control project are declared to be nonreimbursable, and the remaining 25 percent are to be allocated to the Upper Colorado River Basin Fund and the Lower Colorado River Basin Development Fund.

Title 6 of the bill directs the Secretary to submit biennial reports and includes the usual provisions to protect existing interest and recognizes the existing law of the river.

Since the introduction of my bill on May 14, 1973, legislation has been introduced by our colleagues, Senators Bible and Fannin, as members of the Interior and Insular Affairs Committee, together with similar legislation introduced in the House of Representatives by members of the Subcommittee on Water and Power Resources. Apart from the language necessary to provide for implementation of Minute 242 of the International Boundary and Water Commission, that legislation is substantially the same as S. 1807.

The heart of that agreement was approved by the United States and Mexican Commissioners to the International Boundary and Water Commission on August 30, 1973. Minute 242 provides that the water delivered to Mexico in the Colorado River upstream of Morelos Dam shall have an annual average salinity of no more than 115 parts per million, plus or minus 30 parts per million over the salinity of waters at Imperial Dam, just upstream.

In order to implement this agreement, the United States is proposing, as an interim measure, lining portions of the Coachella Canal, which will result in substantial savings of water which can be delivered to Mexico on an interim basis. As a permanent solution we propose the construction of a major brackish water desalting plant, which will substantially reduce the salinities in drainage waters now delivered to Mexico under the treaty.

As I stated earlier, I believe that with the proper protection, minute 242 should be implemented by the authorization of the necessary works by Congress. The Mexican representatives accepted that agreement as a permanent solution, and I believe that this Congress should honor our commitment.

Finally, Mr. Chairman, I would like to say that I think we ought to be prepared to move ahead with the project upstream to provide for better quality water in the lower part of the Colorado Basin at the same time that we proceed with the prjoects to assist Mexico get better quality water. It does not seem to me to be any reason why we cannot move in harness in these two objectives.

Senator CHURCH. Thank you very much, Senator, for your statement. I think it fairly sets out the case.

You make the point that there is an era of cooperation now of the seven States of the Colorado River Basin. This committee over the years has worked to create a legislative foundation that has made that possible, and I note that today we have representatives of the committee from the Colorado Basin area and they are vitally interested in this legislation.

I want to do all I can do to help the Colorado River Basin clean up its water as long as you don't reach up into Idaho for any of ours. It is in that spirit that I would now like to recognize the Senators from the Colorado River Basin who are here this morning.

I understand that Senator Tunney is needed at another committee meeting and there is no reason why he has to stay longer. We appreciate your statement.

Senator TUNNEY. Thank you very much.

Senator CHURCH. We have four witnesses who are really here to testify on behalf of the administration. In the interest of time I would like the four of them to appear together as a panel. I think you are already at the table anticipating as much.

The witnesses are the Honorable Herbert Brownell, who is Special Representative of the President in the negotiations with Mexico, the Honorable William G. Bowdler, the Deputy Assistant Secretary of State of Inter-American Affairs, the Honorable J. F. Friedkin, the U.S. Commissioner on the International Boundary and Water Commission, and the Honorable Jack O. Horton, Assistant Secretary of the Interior for Land and Water Resources.

Gentlemen, if you each have a statement to make, I would suggest that you proceed to make those opening statements and then we can question you as a panel.

General Brownell.

STATEMENTS OF HON. HERBERT BROWNELL, SPECIAL REPRESENTATIVE OF THE PRESIDENT; HON. WILLIAM G. BOWDLER, DEPUTY ASSISTANT SECRETARY OF STATE OF INTER-AMERICAN AFFAIRS; HON. J. F. FRIEDKIN, U.S. COMMISSIONER ON THE INTERNATIONAL BOUNDARY AND WATER COMMISSION; AND HON. JACK O. HORTON, ASSISTANT SECRETARY OF THE INTERIOR FOR LAND AND WATER RESOURCES

Mr. BROWNELL. Mr. Chairman and members of the committee, it is a pleasure for me to appear before you, along with Ambassador Bowdler, Secretary Horton, and Commissioner Friedkin, with regard to legislation which would implement the agreement on the salinity of Colorado River waters entering Mexico reached between the United States and Mexico last August.

My own opening remarks will be brief because I know you are quite familiar with the topic before us and will doubtless want to spend most of our time on specific questions. I will limit what I have to say in this prepared statement primarily to the nature of the agreement reached with Mexico; its advantages to the United States; and some discussion of alternative solutions to the problem which we considered but rejected. I believe that Ambassador Bowdler will cover more specifically the significance of the agreement in

our relations with Mexico and will present the administration's position on the two principal bills under consideration. Commissioner Friedkin, who has served us both with great distinction as technical adviser, will concentrate on the works required for implementation of the agreement.

Last May, President Nixon asked me to attempt to negotiate an agreement with Mexico based on recommendations which I had submitted to him the previous December regarding the resolution of the problem of the salinity of the Colorado River water going to Mexico under the 1944 Water Treaty. Negotiations with Mexico were completed in late August, resulting in the signature, as has already been referred to here this morning, on August 30 of Minute Number 242 of the International Boundary and Water Commission by Commissioners Friedkin for the United States and Herrera Jordan for Mexico, and the simultaneous exchange of diplomatic notes between Ambassador McBride and Foreign Secretary Rabasa bringing the Minute into force, subject in part to the enactment of enabling legislation, which is now under consideration by you.

Copies of my report of last December 28 to President Nixon and of Minute 242 have already been provided to the committee.

The principal provisions of the agreement with Mexico as embodied in Minute Number 242 are:

1. With regard to U.S. undertakings: Commitment by the United States to an average annual salinity differential between Imperial Dam water and that delivered to Mexico at its main diversion point, Morelos Dam, of not more than 115 ppm, subject to certain variations, for virtually all of Mexico's guaranteed Treaty waters, beginning when the appropriation of funds for the necessary works is authorized by Congress.

Agreement by the United States to pay for the extension of the lined drainage channel from its present terminus below Morelos Dam to a distance of 53 miles to the Gulf of California to be used for Wellton-Mohawk drainage, the desalting plant reject stream, and other purposes which may be mutually agreed to by the United States and Mexico.

Agreement by the United States to support Mexican efforts to obtain appropriate financing on favorable terms for the improvement and rehabilitation of the Mexicali Valley, and to provide on a mutually acceptable basis grants for aspects of the Mexican rehabilitation program in the Mexicali Valley directly related to salinity, including tile drainage.

2. With regard to Mexican undertaking:

Specific acceptance by Mexico of the 140,000 acre-feet of water customarily delivered, annually, but up to now without formal agreement, on the Arizona land boundary at San Luis.

Implicit acceptance by Mexico of pumped drainage, so long as the specified salinity differential is not exceeded.

Acceptance by Mexico of the agreement as the permanent and definitive solution of the Colorado River salinity problem.

3. With regard to mutual undertakings:

Mutual limitation of groundwater pumping within 5 miles of the Arizona-Mexico border to 160,000 acre-feet annually on each side.

Agreement to consult with each other prior to undertaking any development of surface or groundwater resources in the border area which might adversely affect the other country.

I believe the agreement that has been reached to be a good one with considerable advantages for the United States, both internally and in our foreign relations.

Within the United States, it:

Limits the loss of water as a consequence of the settlement to the practical minimum. It solves the problem by spending money, not water.

Removes the uncertainties of the effect of the salinity problem with Mexico on the further development of the Colorado River Basin States, a very important consideration.

Permits a significant degree of protection of U.S. groundwaters against Mexican pumping pending the reaching of a general groundwater agreement between the two countries.

Through the construction of the world's largest desalting plant, provides a decided boost to desalting technology which cannot but have significant effect elsewhere in the United States and, indeed, in the world.

Conserves U.S. water resources by confirming Mexican acceptance of a considerable quantity of drainage waters as a part of Treaty deliveries.

Provides benefits in terms of more predictable water deliveries and more assured availability of water in the future to the water users of the Coachella Valley County Water District of California.

Provides for achievement of greater efficiency in the use of water through the efforts to this end which will be made in the Wellton-Mohawk Irrigation and Drainage District.

For our international relations, it:

Redeems the pledge President Nixon made to President Echeverria, as well as the promise of his two predecessors, to search for a permanent and definitive solution to this problem which had, as you recall, plagued our relations with Mexico for over 12 years.

Contributes to an improved future for the residents of the Mexicali Valley.

Thus removes what Mexico has termed the most delicate problem between the two countries.

Demonstrates our will and ability to find innovative ways to resolve bilateral problems in our relations with Latin American countries, a consideration which I would not underestimate.

And, shows that through mutual efforts undertaken with good will on both sides, difficult problems between the nations of this Hemisphere can be resolved constructively and amicably.

Article 10 of Minute No. 242 provides that a number of principal provisions of the agreemnt shall become effective upon notification of the authorization by the U.S. Congress for appropriation of funds for the construction of works needed to implement those provisions. The bill which you have before you would provide that authorization.

Now to turn to alternative solutions to the Mexican problem which were considered but not adopted. They give you a better grounding for the reasons for the provisions we did adopt.

One obvious alternative was to let the issue be resolved by adjudication. Both the Mexican and the United States governments decided for a negotiated rather than an adjudicated settlement because adjudication would have delayed a real, practical solution to the problem with inevitable uncertainties, obvious chances of acrimony, and costs in either water or money to offset the effects of the salinity of Wellton-Mohawk drainage.

With regard to actions which might be required within the United States to resolve the salinity problem, the review conducted by my Task Force from September to December 1972 focused on the salinity of Wellton-Mohawk Irrigation District drainage as the core issue. It revealed three broad types of possible solutions:

1. elimination of the sources; 2. substitution of Imperial Dam quality water for the Wellton-Mohawk drainage; or 3. desalting of the Wellton-Mohawk drainage. There were many subpossibilities under these general headings. But in the end the most practical permanent solution was found to be the desalting of the Wellton-Mohawk drainage, preceded by interim substitution while the desalting plant was being constructed.

The Wellton-Mohawk Irrigation District might simply have been brought out, and an accompanying commitment made to no further development below Imperial Dam which would significantly affect the salinity of Colorado River water delivered to Mexico. However, the financial cost of buying out Wellton-Mohawk would have been as much, or more, than the cost of the desalting solution; and the social and political costs of the dislocation and resettlement of the farmers of the Welton-Mohawk District would have been extraordinary.

Nevertheless, it was found that there were fruitful possibilities for reducing the effect of Wellton-Mohawk drainage through limitation of Wellton-Mohawk acreage and improved efficiency of use of water in the Wellton-Mohawk District so that the amount of drainage to be desalted would be reduced. Therefore, work is proceeding on both of these fronts in close consultation with Wellton-Mohawk.

Substitution waters could come from two basic sources; storage or augmentation. Use of augmentation waters would have been somewhat more palatable in principle than use of storage waters, but use of waters from either source was basically undesirable in such a water-short area unless it could be shown that storage facilities could be expected to be so filled in the future that in any event there must be wastage of water through spillage. This could not be shown; and, moreover, in the end no augmentation possibility could be shown to be feasible at this time on a permanent basis at reasonable cost.

The three augmentation possibilities that seemed at one time or another to offer the greatest prospects for success were water salvage through the lining or relocation and lining of the Coachella Canal was, in fact, found to be feasible for a temporary period at reasonable cost; and arrangements are being made to use such water during the interim until the desalting plant is completed. However, this water will not be available permanently.

Northern California water would not be available permanently either. Moreover, no firm offer of this water was received from State of California authorities despite several soundings; and even if there had been a firm offer there were indications that the cost would have been high.

Weather modification seemed technically promising, but there were too many unanswered legal and environmental questions regarding water from this source for there to be any assurance of its availability.

Other augmentation possibilities that were considered and rejected included:

Large-scale desalting of seawater. Rejected because the technology was not sufficiently advanced and the cost estimates were very high.

Water importation from the Columbia River or from Idaho. Rejected as unacceptable to the Columbia River Basin States.

With this, I shall conclude my prepared statement. I will be pleased to answer any questions you may have.

Senator CHURCH. Your statement is an excellent one and ended on a high note. Let's proceed with the other statements before we go to questions.

Mr. Bowdler.

STATEMENT OF HON. WILLIAM G. BOWDLER, DEPUTY ASSISTANT SECRETARY OF STATE OF INTER-AMERICAN AFFAIRS

Mr. BOWDLER. Mr. Chairman, members fo the committee, I am happy to have the opportunity to appear before you with Mr. Herbert Brownell and Commissioner Friedkin and Assistant Secretary Horton to recommend enactment of legislation to implement the agreement Mr. Brownell concluded with Mexico last August to resolve the Colorado River salinity problem.

As Mr. Brownell pointed out, that problem has been one that has been with us for 12 years. Under the 1944 Water Treaty the United States delivers to Mexico annually 1.5 million acre-feet of Colorado River water. In 1961 highly saline drainage water pumped in the Wellton-Mohawk Irrigation and Drainage District of Arizona began to enter the river. About the same time completion of storage works in the United States resulted in reducing flows to Mexico to about the treaty requirement. This combination of highly saline drainage and less excess water practically doubled the salinity of the water received by Mexico—from about 800 parts per million to 1500 ppm.

The Mexican Government protested that water of that salinity was not acceptable under the Water Treaty, and that its water was being contaminated contrary to International law. The United States began at once taking emergency measures to reduce the salinity, and the two Governments joined in studies to find a solution.

In 1965 they concluded Minute No. 218 through the International Boundary and Water Commission. Under this agreement the United States gradually reduced further the salinity of the water delivered to Mexico, but in 1972 the salinity of that water was still, on an annual average, about 400 parts per million higher than that being delivered to U.S. users just across the boundary, and considerably higher than what it had been in 1961.

In June 1972, President Echeverria of Mexico visited Washington. He spoke before the Congress and with President Nixon. He asked for water of the same quality as that delivered to U.S. users on the border. The Department of State and the Department of the Interior advised the President that Mexico was entitled to water of a better quality than that it was receiving.

The President, then Secretary Rogers, and Dr. Kissinger were all deeply conscious of the effect the problem was having on our relations with Mexico. Our closest friends in Mexico found themselves hard pressed to explain why the United States continued to expect Mexico to accept water with so much more saline than that which our adjoining U.S. farmers were using. Mexican officials had suggested international adjudication of the issue. This procedure would have entailed delays and the outcome would have been uncertain.

Mexico alleged extensive damages where Colorado River water was used for irrigation. Whenever an issue arose in our relations with Mexico, whenever opportunities appeared for cooperation between the two Governments, when our parliamentarians met in joint meetings, as they do every year, the salinity problem invariably confronted our spokesmen. Determined to put an end to this controversy, President Nixon ordered an immediate improvement in the water being delivered, and appointed Mr. Brownell as his Special Representative to recommend a solution.

Assisted by an interagency Task Force, Mr. Brownell began an intensive review of the problem and a study of possible solutions. On December 28, 1972, he submitted to the President the report of which the committee has copies. With the President's approval, Secretary Rogers presented the recommended solution to President Echeverria in May 1973. That proposal became the basis of the agreement which Mr. Brownell concluded last August and which he has just described and assessed for you. The Department of State concurs in his views, and commends the agreement to the Congress with deep satisfaction.

We now turn to the Congress for implementation of this agreement. Many of its provisions are dependent on the construction of works or on other measures requiring the expenditure of funds. The agreement specifies that these provisions will not become effective until the Congress authorizes the funds for them. The Department has accordingly submitted to the Congress the administration's draft bill which would authorize the minimum works and other measures necessary for performance by the United States of its commitments under the agreement.

The chairman of the full committee, Senator Jackson, graciously introduced this bill by request, S. 3094. The Department's letter to the President of the Senate, dated February 7, describes and analyzes the bill in detail and I will not attempt to repeat that analysis. Commissioner Friedkin, the U.S. Commissioner on the International Boundary and Water Commission, accompanies me and will describe the proposed works and other measures for you shortly.

S. 2049 is also before the committee. The Senators who introduced this bill regrettably did not have the Department's draft at that time. Speaking from the international standpoint, the Department recommends that the administration bill be accepted in substitution

for S. 2940. The administration bill would authorize all the works and measures required for the implementation of the agreement with Mexico.

S. 2940 differs from the administration bill in three important respects. Section 103 of title I of S. 2940 would authorize a border well field entailing an added estimated cost of possible $34 million.

Second, title II of S. 2940 would initiate an entirely new water quality improvement program above Imperial Dam, adding even more significantly to the amount being authorized for appropriation.

These two undertakings are not required by the agreement, and are not parts of the President's program at this time. They are essentially domestic rather than international programs. It would seem that if the committee wishes to take up such domestic matters, it might more appropriately do so in separate pieces of legislation.

Third, S. 2940 would assign jurisdiction over the proposed works and measures to the Department of the Interior. The administration bill would assign jurisdiction to the U.S. Section of the International Boundary and Water Commission. The U.S. Section is a Federal agency long experienced in construction having an international relationship. Its principal function is the implementation of the 1944 Water Treaty, including the construction and operation of those works necessary to manage waters in accordance with the treaty. The salinity agreement, concluded pursuant to the treaty, requires the construction of such works. The treaty itself provides that "works constructed or used exclusively for the discharge of treaty stipulations, shall be under the jurisdiction of the Commission or of the respective Section." In carrying out the construction of such works, the Sections may, the treaty provides, utilize the services of public or private organizations in accordance with the laws of their respective countries.

Therefore, because the proposed works and measures are along, or on, or actually crossing the international boundary, and because they are intended almost exclusively for the discharge of treaty obligations, the administration bill assigns jurisdiction to the U.S. Section. The Section would plan to utilize the Department of the Interior in the performance of most of the work.

Throughout the 12 years of controversy with Mexico, the Department of State and the Department of the Interior have worked in close consultation with the Colorado River Basin States. At the State Department's suggestion their seven Governors reconstituted a Committee of Fourteen to represent them in this consultation. The counsel provided by the Committee has been of great value. Similarly the Committee has worked with Mr. Brownell and contributed to his success in finding a solution. I take this opportunity to express publicly the Department's gratitude to the members of the Committee and their respective Governors.

I repeat that I am grateful for this opportunity to appear before the subcommittee. I shall be glad to join Mr. Brownell, Secretary Horton, and Commissioner Friedkin in answering questions that you may have.

Senator CHURCH. Thank you very much, Mr. Ambassador.

We will move on now to the next statement by Commissioner Friedkin.

STATEMENT OF HON. J. F. FRIEDKIN, U.S. COMMISSIONER ON INTERNATIONAL BOUNDARY AND WATER COMMISSION

Mr. FRIEDKIN. Thank you, Mr. Chairman, members of the committee. I appreciate this opportunity to appear before you in technical support of the proposal for implementation of the salinity agreement with Mexico, discussed by Mr. Brownell and Mr. Bowdler.

My purpose is to summarize the works required to implement the agreement with Mexico, as provided in the bill S. 3094, and to review how these works would operate. The works were described in reports presented to the Congress; namely, Mr. Brownell's report to the President of December 28, 1972, and the Department of State's letter of February 7 to the President of the Senate, including the accompanying section-by-section analysis of S. 3094.

With your permission, I believe it would be helpful for Mr. McNeally of our staff to point to the locations on the map as I refer to them in the text.

Senator CHURCH. I agree.

Mr. FRIEDKIN. The principal undertaking by the United States in the agreement with Mexico, as was stated by Mr. Brownell, is the commitment to an average annual salinity differential between Imperial Dam water, delivered to U.S. users, and that delivered to Mexico at its main diversion point, Morelos Dam, of not more than 115 p/m, subject to certain variations for virtually all—90 percent—of Mexico's guaranteed treaty waters beginning when the appropriation of funds for the necessary works is authorized by the Congress.

To carry out this undertaking, section 1(a) of the bill provides for the construction, operation, and maintenance of a desalting complex to be located in the Uma area. This complex consists of: (1) Desalting plant facilities to reduce the salinity of drain water from the Wellton-Mohawk Division of the Gila project, Arizona, including a pretreatment plan for settling and filtration of the drain water to be treated, the appurtenant works including the intake pumping plant system, product waterline, power transmission facilities, and permanent operation facilities; and (2) other associated facilities including extension of the existing bypass drain from its present terminus near Morelos Dam to carry the reject stream from the desalting plant and other Wellton-Mohawk drainage waters through United States and Mexican territory to the Santa Clara Slough on the Gulf of California, a distance of about 53 miles. It would also require replacement of a metal flume in the existing main outlet drain extension with a concrete siphon.

The desalting plant, as now planned, is to be designed to treat 144,000 acre-feet per year, or 82 percent of the Wellton-Mohawk drain water of 3,100 p/m to result in 101,000 acre-feet of 240 p/m usable product water and 43,000 acre-feet of 9,600 p/m reject water. The plant is to be designed to operate at 90 percent of design capacity. Using advanced technology commercially available, it will recover initially at least 70 percent of the drain water as product water and will provide a minimum reduction of at least 90 percent of the dissolved solids in the feed water. It will be by far the largest desalting plant of its kind in the world.

The product water from the desalting plant would be blended with the remaining 31,000 acre-feet per year of the Wellton-Mohawk drain water not treated to produce a stream of 132,000 acre-feet per year of about the same quality as that at Imperial Dam, now about 850 p/m, which can be introduced into the Colorado River and delivered to Mexico within the salinity differential established in the agreement with Mexico. The optimum location and size of the desalting plant will be determined in the design stage.

The reject stream from the desalting plant which will have a salinity of about 10,000 p/m must be kept separate and is to be conveyed by an extension of the existing concrete-lined bypass drain, southward about 16 miles to the international boundary and thence through Mexico a distance of 37 miles to the Santa Clara Slough on the Gulf of California. If construction can begin in fiscal year 1975, the complex should be completed and operational by the end of 1979.

About 35 MW of electrical power will be required to operate the desalting complex. This is about one-tenth of 1 percent of the total installed power capacity scheduled in 1980 in the Lower Colorado region. Sources of electrical power supply will be found that will not diminish the supply of power to preference customers from the Federal Parker-Davis projects, since this salinity control project, proposed for international purposes, cannot legally draw upon power allocations to preference customers.

In the future there may become available surplus capacity in the desalting plant over that needed for the purposes of the act. In that event, it may be possible to use some of the product water from the plant for domestic water supply without inhibiting the U.S. ability to meet obligations under the international agreement. The desalted water used for municipal and industrial water supply in the United States would be exchanged for other water at appropriate prices, terms, and conditions, with the revenues from such exchange deposited in the U.S. Treasury as miscellaneous receipts.

In order to keep the size of the desalting plant and hence construction and operating costs at a minimum, section 1 (b), (c), (d), and (e) of the bill would authorize a combination of measures to reduce the quantity of drain water pumped from the Wellton-Mohawk Irrigation and Drainage District. The objective is to reduce the quantity of the district's drain water from about 220,000 acre-feet per year to not more than 175,000 acre-feet per year to enable a 20-percent reduction in the required desalting capacity. This is to be achieved by the optimum combination of improvements in irrigation efficiencies and a reduction in the authorized irrigated area of the Wellton-Mohawk Division.

A cooperative program to improve efficiency is already underway in the district sponsored by the Departments of the Interior and Agriculture and EPA. Sections 1 (b) and (d) of the bill would authorize acceleration and expansion of that program, to include assistance to water users in the district in installing onfarm system improvements to advance irrigation efficiency in order that its potential might be realized in time to enable a reduction in the size and cost of the desalting plant.

These improvements will include advanced management practices such as the use of scientific methods for determining irrigation scheduling, and onfarm system improvements including ditch lining, changes in field layout and size, use of sprinklers or automated irrigation methods. To the extent such work or modification produces local benefits, the water users will bear the costs thereof. No federal expense would be incurred to pay the costs that water users would have to pay in any event to satisfy the requirements of the Federal Water Pollution Control Act, as amended.

Section 1(c) would authorize a reduction in the existing authorized 75,000 irrigable acres in the Wellton-Mohawk Division through Federal acquisition. Initially, about 10,000 acres would be required, of which 3,800 acres are undeveloped Federal lands and 6,200 acres are State and private lands, of which 2,500 acres are developed. If it is determined that the irrigable acreage must be reduced below 65,000 acres, additional developed acreage would be acquired. All such acquisition would be at Federal expense, and the existing repayment obligation allocable to eliminated irrigation acreage would be declared nonreimbursable.

Section 1(e) provides for an appropriate reduction in the repayment obligation of the district to take into consideration such increase that the purchase and hence reduction in the authorized irrigable acreage may have in the per acre cost of operation and maintenance of the irrigation system.

During the interim period until 1979, while desalting facilities are being designed and constructed, the United States would bypass all the Wellton-Mohawk drain water without charge to Mexico against its guaranteed treaty allotment, and would substitute therefor higher quality water for delivery to Mexico. The higher quality water would at first be borrowed from storage reservoirs and, later, be made up in a large part of water saved by a new concrete-lined canal for a 49-mile reach of the existing Coachella Canal in southern California. The lining would save economically an estimated 132,000 acre-feet of water annually, which would be temporarily available —about 8 years—for use by the Federal Government until the amount borrowed from storage is paid back, unless before then, the Secretary of the Interior reduces deliveries of mainstream Colorado River water to California to 4.4 million acre-feet annually.

Referring to the Coachella Canal, section 1(f) relates to the plan for construction by the Secretary of the Interior under existing authorization, of the new concrete-lined canal for the 49-mile reach of the existing Coachella Canal. It provides for a contract with Coachella Valley County Water District under which the district would reimburse the Federal Government for the lining, with the Federal Government crediting the district for the Government's use as a temporary source of water for meeting the obligations of minute No. 242.

Water for the Coachella Valley County Water District is diverted from the Colorado River at Imperial Dam and conveyed to the Coachella Valley through the All-American Canal and the Coachella Canal. These facilities were completed by the Bureau of

Reclamation in 1948 and supply irrigation water for about 67,000 acres in the Coachella Valley. Conveyance losses from the first 49-mile reach of unlined canal currently average about 141,000 acre-feet annually. The savings of an estimated 132,000 acre-feet annually to be effected by the lined canal represents a part of California's entitlement from the Colorado River.

Section 1(g) provides for a reduction in the repayment obligation of the Imperial Irrigation District in consideration of relinquishment by that district of its rights to the capacity of 1,000 cubic feet per second in the existing 49-mile reach of the Coachella Canal and in the All-American Canal. This will enable the Federal Government to reduce the capacity of the new lined section of the Coachella Canal from 2,500 cubic feet per second in the existing canal to 1,500 cubic feet per second, and thereby realize a material saving in the cost of the reconstruction.

Section 1(h) provides as a further consideration relating to the reduction in the capacity of the Coachella Canal and the resulting saving in the new lined section, that the Federal Government may acquire the approximately 3,800 acres of undeveloped private lands which could have been served by the 1,000 cubic feet per second canal capacity in the existing Coachella Canal.

The cost associated with the acquisition of these lands will be included as a part of the total costs of the Coachella Canal lining, and Federal reimbursement will be based on the terms of the repayment contract, since both the Federal Government and the Coachella District will benefit from savings in construction costs due to the retirement of these lands.

The estimated total installation cost of lining the Coachella Canal, including right-of-way costs and land costs, amounts to $21,450,000. The Department of the Interior will request funds for this work as a part of its appropriation.

Section 1(i) would authorize the acquisition of lands in the existing Painted Rock Dam and reservoir project on the Gila River, as may be necessary, to enable its operation in a manner consistent with the agreement with Mexico in minute No. 242.

The dam, located about 60 miles upstream from the Wellton-Mohawk Irrigation and Drainage District, was constructed by the Corps of Engineers solely for the control of floods. For this purpose there was acquired essentially a flowage easement, for lands in the reservoir, and the original operating procedures envisioned the capture of flood flows, their temporary regulation, and early release. However, this operation results in the infiltration of water into the groundwater in the Wellton-Mohawk District and an increase in the amount of drainage that must be pumped from the district and discharged to the Colorado River. The need for discharging pumped waters to the Colorado River and to Mexico, can be largely, if not entirely, overcome by retaining floodwaters in the Painter Rock Reservoir and making smaller releases over a larger period.

To enable this modification in operation, section 1(i) would authorize the acquisition of such additional interest in lands in the reservoir as may be necessary to fulfill the agreement with Mexico. Acquisition would be made only after the existing legal rights of the Federal Government in the said lands are clarified.

Section 2 is to require reduction to a minimum of the costs associated with the bill. For example, there should be achieved the most cost-effective combination of reduction in Wellton-Mohawk drain waters and size of the desalting plant.

The most effective means may be to reduce the quantity of drain water from the district somewhat below 175,000 acre-feet annually, permitting a smaller desalting plant.

Further, investigations are proposed to increase the efficiency of the desalting plant to enable a smaller and less costly plant.

Lands in Painted Rock Reservoir would be acquired only if found necessary to perform the operations in a manner to ensure compliance with the agreement with Mexico.

This section also provides that the Federal Government shall bear all costs associated with carrying out the provisions of the act, except as specified in the act, and except that the water users will not be relieved of costs required for compliance with the Federal Water Pollution Control Act, as amended.

Section 3 relates to the highly saline reject stream from the desalting plant and other normal Wellton-Mohawk drain waters bypassed to the Santa Clara Slough on the Gulf of California. Section 202 of the Colorado River Basin Project Act provides that the satisfaction of the requirements of the Mexican Water Treaty from the Colorado River constitutes a national obligation which shall be the first obligation of any water augmentation project authorized for the basin. This section of the bill ensures that the reject stream and other normal Wellton-Mohawk drain waters bypassed to the Santa Clara Slough will be included in this replacement obligation. The other normal Wellton-Mohawk drain waters would comprise only those essential to avoid crop damage.

Periods of surplus waters are excepted because when there is surplus water, the reject stream and the bypassed drain water would not constitute a loss to the Colorado River Basin. Under the Water Treaty a period of surplus water exists when, as determined by the U.S. section of the Commission, the waters of the Colorado River are in excess of the amount necessary to supply users in the United States and the guaranteed Mexican allotment of 1.5 million acre-feet annually. This section of the bill further provides that studies to identify feasible measures to provide adequate replacement water shall be completed not later than June 30, 1980, and that replacement of these waters shall begin when augmentation of the Colorado River begins.

Section 4 would authorize appropriation of such sums as may be necessary to carry out this act. There is initially requested an appropriation of $94,575,000 for the construction and other measures authorized by this bill. This estimate is based on 1973 prices. In approximate figures, the desalting plant facilities are estimated to cost $62,080,000, including pretreatment works. Other associated facilities including the drain to the Santa Clara Slough, replacement of the Yuma siphon, the irrigation efficiency program, acreage reduction and system improvement, are estimated to cost $30,970,000. General supervision is estimated at $1,525,000.

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The estimate of $5,000,000 for the possible acquisition of lands at Painted Rock Dam is not included in the total figure because at this time it is not known if and when the funds will be required.

The estimated cost of the Coachella Canal lining amounting to $21,450,000, is not included in this authorization because it is separately authorized to the Department of the Interior and that Department will seek this amount in its annual appropriation.

Mr. Chairman, this concludes my summary of the necessary works. I would be glad to try to answer any question you may have.

Senator CHURCH. Thank you very much, Mr. Commissioner.

I think we will move to Secretary Horton's statement before we go to questions.

STATEMENT OF HON. JACK O. HORTON, ASSISTANT SECRETARY OF THE INTERIOR FOR LAND AND WATER RESOURCES

Mr. HORTON. Mr. Chairman, it is my privilege to appear before you and the members of the subcommittee to present the views of the Department of the Interior on legislation that would authorize the construction, operation and maintenance of certain salinity control measures on the Colorado River.

Mr. Brownell, Ambassador Bowdler and Commissioner Friedkin have already examined the international aspects of the legislation. The Department of the Interior will address itself this morning to the provisions of title 2 of S. 2940 which is Senator Fannin's bill and Senator Bible's bill.

We concur in the enactment of S. 3094 and are standing prepared to assist the Department of State in the implementation of those provisions of S. 3094 which we may be called upon to do by the Department of State. The executive branch now has under priority investigation those principles and policies governing salinity measures and other water quality measures on the Colorado River. Until that review is completed the provisions of title 2 of S. 2940 and Senator Tunney's bill, S. 1807, which establishes policies and principles cannot be supported by the executive branch.

These investigations identified in section 202 are also not completed and for that reason the authorization should be deferred. Moreover, congressional action with respect to salinity control should be deferred in view of the precedential significance of S. 2940, and the importance of the unresolved questions.

Examples of some of the major unresolved questions that we believe require further review and consideration are: (1) The impact of the 1972 amendments to the Federal Water Pollution Control Act on the conclusions and recommendations of the Seventh Colorado River Enforcement Conference which have been incorporated in title II of S. 2940.

The Environmental Protection Agency is presently working with the States to establish water quality standards consistent with the requirements of the act and develop a plan to implement these standards; and (2) An assessment of natural or nonpoint source pollution problems elsewhere in the Nation.

As you know, increases in salinity are affecting the water quality of other rivers such as the Rio Grande, Arkansas, Red, and San Joaquin. As required by the Federal Water Pollution Control Act, the States are now determining the nature and extent of nonpoint sources of pollutants which will be submitted to EPA for its review. An analysis of this pollution problem will be submitted to the Congress no later than October 1, 1975.

It is our understanding that EPA has submitted a report to the committee on S. 2940. This report covers in more detail these problems and the need for deferring consideration of title II until further study.

The major overriding issue on the Colorado River involves the interrelated matter of deteriorating water quality and inadequacy of water supply to meet present and future uses. As use of the water has increased, the salinity condition has become more and more important. The salinity comes from many sources. Nearly half of the salinity concentration in Lake Mead can be attributed to natural sources and the other half to the activities of man. The natural sources include mineral springs and salt dissolved by precipitation moving through salt-bearing soils and shales. The man-induced sources include: irrigation, reservoir evaporation, municipal and industrial use, and exports out of the basin's headwaters.

The average annual salinity concentration at the headwaters is less than 50 mg/1 while at Imperial Dam it is now 850 mg/1. By the year 2000 the salinity in the lower reach is expected to increase to 1,160 mg/1 if no salinity control measures are instituted and water resource development continues. The increased salinity levels in the lower river reaches have adverse economic impacts upon the agricultural, municipal, and industrial sectors; however, there is little adverse impact now or anticipated on instream uses such as recreation, hydroelectric power generation, and fish and wildlife.

Salinity will affect future development of upper basin resources. While lower basin development is nearly completed, considerable upper basin development remains possible. Further development may, however, lead to salinity levels which would do unacceptable damage, primarily in the lower basin. The problem cannot be divorced from planned future development of the basin's water resources and the resulting water demands.

The onset of the energy crisis is expected to result in accelerated consumptive use of Colorado River water in order to support oil shale development, electric power generation, and coal development and conversion. The anticipated developments are expected to affect directly water quality and consequently emphasize the need to implement an effective salinity control program.

In recognition of such effects from proposed upstream developments, the Secretary of the Interior was directed to make water quality studies and to devise plans for salinity improvements. The authority for the investigation is derived from public laws relating to the Colorado River storage project and participating projects, the San Juan-Chama and Navajo Indian irrigation projects, and the Fryingpan-Arkansas project.

These acts provide authority to the Department of the Interior for basinwide planning of a salinity program, the Colorado River water quality improvement program. This is a 10-year investigational program aimed at evaluating the means by which the objective of controlling the rise in salinity levels can be most efficiently attained from the standpoint of cost effectiveness and time.

Under the program, several near-term elements have been under intensive study. Current technology and management techniques were examined for salinity control potential and five categories of control were selected for intensive study. These are: (1) River system management, (2) point source control, (3) diffuse source control, (4) irrigation source control, and, (5) return flow utilization. Related aspects, not a direct part of this program, include weather modification, seawater desalting, and desalting geothermal brines—as dilution sources.

The program is developing alternative plans involving control of salinity from point, diffuse, and irrigation sources. Other corollary elements include improvements in management of the river system, improvements in irrigation efficiency beyond those currently contemplated from irrigation management services programs, utilization of saline flows, reformulating water projects to minimize salt loading, salt precipitation phenomena in large reservoirs, salinity control on watersheds, and reducing evapotranspiration through treatment and management of vegetation.

Measures such as weather modification, seawater desalting, development of geothermal resources, and desalting at the points of diversions to meet quality requirements of the intended uses will be considered as the technology develops. The measures being considered and those yet to be studied are essential to optimizing the use and development of the basin water for the greatest economic, social, and environmental benefits of all concerned.

The point sources being studied include La Verkin Springs and Crystal Geyser in Utah, Las Vegas Wash in Nevada, Blue Springs and Littlefield Springs in Arizona, and Dotsero Springs, Glenwood Springs, and Paradox Valley in Colorado. The diffuse sources under investigation are the Price, San Rafael, and Dirty Devil Rivers in Utah, McElmo Creek in Colorado, and Big Sandy River in Wyoming.

Major salt loadins to the Colorado River from irrigated areas are contributed by the Grand Valley Basin in Colorado, the Colorado River Indian Reservation in California and Arizona, the Lower Gunnison Basin Colorado, the Uinta Basin in Utah, and the Palo Verde Irrigation District in California. Here active assistance is now being provided to farmers to achieve conservation in the use of water. Investigations are also underway to determine measures required to improve the water systems.

We are viewing salinity control as a related fact of an evolving comprehensive plan for managing the water resources of the Colorado River Basin. The program was structured from congressional direction, findings of the Seventh Enforcement Conference of the Environmental Protection Agency, recommendations of the seven

basin States, and the prior studies of various State and Federal agencies.

The continuing interest and assistance rendered by the concerned entities has been helpful and encouraging. The State water agencies, U.S. Department of Agriculture, land grant universities, and several other agencies of the Department of the Interior—Bureau of Land Management, Office of Saline Water, Geological Survey, and the Office of Water Resources Research—are actively contributing toward solution of this all encompassing and complex problem. The Colorado River water quality improvement program has received considerable attention and continued support of this Department. The investigational program will continue as expeditiously as feasible and to the extent permitted by appropriations.

A status report has been prepared describing the field investigations, research, and the various alternatives now under study. A summary of that report entitled "Status Report—Colorado River Water Quality Improvement Program, January 1974" is attached to this statement. And I draw your attention to this document, copies of which have been provided, and we can provide more if necessary.

That completes the statement from the Department of the Interior.

[The summary of the status report and the report of the President's Special Representative referred to above follow:]

SUMMARY OF STATUS REPORT

COLORADO RIVER WATER QUALITY IMPROVEMENT

PROGRAM - JANUARY 1974

The Colorado River Water Quality Improvement Program (CRWQIP) is developing alternative plans involving the control of salinity from point, diffuse and irrigation sources. Other elements include improvements in management of the river system, improvements in irrigation efficiency beyond those currently contemplated from irrigation management services programs, utilization of saline flows, reformulating water projects to minimize salt loading, salt precipitation phenomena in large reservoirs, salinity control on watersheds, and reducing evapotranspiration through treatment and management of vegetation. The effort is supported by research in economics, law, mathematical modeling, geochemistry, soil science, and desalting processes as related to salinity control. Measures such as weather modification, sea water desalting, development of geothermal resources, and desalting at the points of diversions to meet quality requirements of the intended uses will be integrated into the program as the technology develops.

The CRWQIP is being coordinated with and participated in by local, State, and Federal agencies. Important program inputs are being made by the State water agencies, State Agricultural Experiment Stations, Land Grant Universities, Agricultural Research Service, Soil Conservation Service, and agencies of the Interior Department particularly the Bureau of Land

Management, Geological Survey, Office of Water Resources Research, and the Office of Saline Water. Several local irrigation districts are cooperating in the programs on irrigated land and are providing direct assistance in the endeavor to improve irrigation efficiency.

Economic and Other Analytic Studies

The investigational program is supported by several over-all research efforts. These include such subject as economics of salinity, mathematical modeling of the hydro-salinity system of the river, improving efficiency of irrigation, legal and institutional relationships to salinity control, suppresion of evapotranspiration, and selected desalting processes such as ion exchange and natural freezing. Some studies are being conducted by the program staff others by the USDA, Land Grant Universities and State agencies.

Economic research has shown that annual losses may range from $194,000 to $395,000 per mg/l increase in salinity at Imperial Dam. To estimate benefits, an annual economic loss value of $230,000 per mg/l increase was used even though studies of economic impacts are continuing to derive better estimates. Using $230,000 per mg/l increase, the research disclosed that total damages atributable to salinity in 1973 are about $53 million. These damages accrue within the Colorado River Basin area of the United States. The losses are derived from damages occurring in the agricultural, municipal and industrial sectors of the economy. By the year 2000, using the same criteria, these damages

to the total regional economy could reach $124 million per year . . . if no salinity control measures are instituted and water resource development continues.

The CRWQIP is investigating prospects of achieving salinity reduction through use of the saline return flows. Such waters could be used for thermal powerplant cooling, oil shale development, and coal gasification. The studies will involve return flows from:

(1) the lower reach of the river, (2) the San Juan Basin, and (3) the Grand Valley area.

To coordinate and evaluate other aspects of the program, several special studies were conducted. One study on the economic impact of increased salinity on the multiple water uses was completed and additional work in this area is continuing. A legal and institutional review to identify the constraints on the program and the legal setting within which salinity control measures can be more effectively pursued is nearing completion. Two computerized mathematical models have been developed to assist in analyzing the hydro-salinity system of the river. A study of desalting Colorado River flows using the ion exchange method at points of diversion to use has been completed.

The program has contributed to the financing of several research projects concerned with onfarm irrigation efficiencies, desalting by natural freezing, economics of water quality, and modeling for predicting salt and nutrient loading. Future research considerations include evaluation of the salt precipitation phenomenon in reservoirs, application of geothermal effluent to agriculture, and correlating irrigation return flow quality to irrigation efficiencies.

Planning Status - Section 202 Units

Paradox Valley Unit, Colorado

Paradox Valley contributes about 200,000 tons of salt per year to the Dolores River in southwestern Colorado. One alternative would reduce this contribution about 180,000 tons per year resulting in a reduction of the salinity concentration at Imperial Dam of about 16 mg/l. Based on data developed at this time, this alternative provides for pumping from a system of wells along the Dolores River to prevent the brine from entering the river. The pump discharge would be collected and conveyed by pipeline to a reservoir which would be constructed to provide surface area for evaporation and salt storage for several hundred years. Investigations were started in FY 1972 and a feasibility report is scheduled for completion in FY 1975.

Grand Valley Basin Unit, Colorado

The total quantity of salt contributed by the Grand Valley Basin is about 600,000 tons annually. Alternatives under investigation include various irrigation system improvements and collection and disposal of saline return flows.

Currently, irrigation services . . . advising farmers when and how much water to apply to their crops . . . is underway to improve irrigation efficiences. These services were started in 1972 on 46 separate farms spread throughout the irrigated area. In 1973, the program was expanded to 120 farms covering 7,200 acres. The irrigation management services are scheduled for continuation through fiscal year 1977 at which time the water users are expected to assume control of the operation.

The system improvement studies are scheduled for culmination in an appraisal report in fiscal year 1975. These studies do not include onfarm improvements such as lining farmers' ditches. The combination of water systems improvement and irrigation management services could result in a reduction of about 200,000 tons of total dissolved solids to the Colorado River and a salinity concentration reduction of about 19 mg/l at Imperial Dam.

Crystal Geyser Unit, Utah

The Crystal Geyser, a privately owned, abandoned oil test well near Green River, Utah, contributes 200 acre-feet of water and 3,000 tons of salt to the Green River annually. Control of this source could reduce the salinity at Imperial Dam by about 0.3 mg/l. The saline water erupts in the form of a geyser at 5-hour intervals due to carbon dioxide accumulations.

The feasibility investigation of this unit was conducted by Brigham Young University through a contract with the Bureau of Reclamation. A feasibility report and environmental assessment are in the final stages of completion. One alternative would be to build a wall or dike around

the points of eruption to collect the discharges and then convey the water by pipeline to an evaporation pond.

Las Vegas Wash Unit, Nevada

Las Vegas Wash serves as a surface drain for all domestic, municipal, and industrial wastewaters from Las Vegas Valley. The average annual discharge from the wash to Lake Mead is about 38,000 acre-feet which carries approximately 208,000 tons of dissolved solids. Because of the rapidly increasing population of the valley, the annual discharges of water and salt are expected to increase in the next few decades.

One alternative plan for reducing the salinity contributions of Las Vegas Wash ground water consists of an interception facility, a delivery system, a treatment plant, a brine discharge and evaporation system, and a surface flow bypass system. About 138,000 tons of salt per year would be removed by this desalting alternative. A concentration reduction of about 13 mg/l would thus be achieved at Imperial Dam. Another alternative would use the same collection and bypass facilities but would have a pumping system and evaporation ponds for total in valley evaporation of the ground water in lieu of a desalting plant. This alternative plan would provide for removal of 131,000 tons/year. While the annual equivalent cost for this plan is lower, up to 15,400 acre-feet of water would be lost through evaporation.

Planning Status - Section 203 Units

Irrigation Source Control - Irrigation source control activities are underway on the Lower Gunnison area, Colorado; Unita Basin, Utah; Colorado River

Indian Reservation, Arizona-California; and the Palo Verde Irrigation District, California. These encompass 481,000 irrigated acres which contribute about 1,740,000 tons of salt per year to the river. The ongoing planning suggests that perhaps a reduction of 430,000 tons per year could be achieved through the irrigation management services (IMS) program and the improvement of the water systems.

Point Source Control

La Verkin Springs, Utah; Littlefield Springs, Arizona; and the Glenwood-Dotsero Springs in Colorado are important natural contributors of salinity to the river system. Together they add 626,000 tons of salts to the river each year. Alternatives are under study for all three sources.

The La Verkin Springs are located on the Virgin River in southwestern Utah. The springs discharge about 8,300 acre-feet of water and 109,000 tons of salt each year. A feasibility study has been prepared that shows 103,000 tons of this salt could be removed annually which would reduce total dissolved solids concentrations at Imperial Dam by about 9 mg/l.

The feasibility report on the La Verkin Springs Unit is undergoing an inhouse review at the present time. One alternative could consist of the diversion of normal riverflows around the area of the springs. The springs' flows could be pumped to a reyerse osmosis desalting plant. The product water would be returned to the Virgin River, and the brine would be pumped to an evaporation pond near Hurricane, Utah.

The Littlefield Springs discharge along the Virgin River near Littlefield, Arizona. These springs have a combined outflow of about 6 cfs and contribute about 17,000 tons of dissolved solids to the river system annually. Feasibility investigations of this unit started in 1973 and are scheduled to be completed in FY 1976. Alternative plans have not yet been identified.

The Glenwood-Dotsero group of springs discharge to the Colorado River at opposite ends of Glenwood Canyon in Colorado. These springs are estimated to contribute 25,000 acre-feet of water and 500,000 tons of salt to the river annually. The removal of 200,000 tons of salt each year would result in the salinity concentration at Imperial Dam being reduced by about 19 mg/l. The investigations were started in 1972 and 18 separate saline springs were identified. Alternatives under consideration include deep well injection, plugging springs, collection and evaporation, and several desalting options. The feasibility studies are scheduled for completion in FY 1979.

Diffuse Source Control

Major diffuse sources in the Colorado River Basin include the Price, San Rafael, and Dirty Devil Rivers in Utah; McElmo Creek in Colorado, and the Big Sandy River in Wyoming. There is a paucity of data regarding these sources. Current efforts are directed toward data collection and research. Alternatives have not been fully evaluated at these sources.

The Price, San Rafael, and Dirty Devil Rivers originate in the mountains of the Wasatch and Aquarius Plateaus and are tributary to the Green and Colorado Rivers in east-central Utah. The estimated total dissolved solids

contributed by the Price, San Rafael, and Dirty Devil Rivers are 240,000, 190,000, and 200,000 tons, respectively. The estimated annual removal of salt by various measures is 100,000 tons on the Price River and 80,000 tons each for the San Rafael and Dirty Devil Rivers. One alternative is to selectively remove the higher concentrated flows and evaporate or desalt them.

McElmo Creek is tributary to the San Juan River near the Colorado-Utah State line. Although the creek's drainage area is only 350 square miles, the salt loading is estimated to be 115,000 tons per year. Perhaps 40,000 tons could be removed by selective withdrawal and evaporation or desalting. Studies being made so far include measurements of return flow from irrigated areas near Cortez, Colorado, and possible impoundment and evaporation of Mud Creek, a tributary of McElmo Creek.

Big Sandy River in Wyoming contributes approximately 180,000 tons of dissolved solids annually to the Green River. Most of this salt enters the Big Sandy from numerous seeps in a particular reach of the river. It is estimated that about 80,000 tons could be removed by treatment of the more saline flows when the stream discharge is low. Because of the low winter temperatures in the region, it may be possible to apply natural freezing methods to treat the water. Water would be pumped from the Big Sandy River, sprinkled to produce ice piles, and then separated by natural freezing and thawing. A pilot plant is currently in operation to test this concept.

REPORT OF THE PRESIDENT'S SPECIAL REPRESENTATIVE FOR RESOLUTION OF THE COLORADO RIVER SALINITY PROBLEM WITH MEXICO

Herbert Brownell
December 28, 1972

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I. DESCRIPTION AND HISTORY OF THE COLORADO RIVER[1/]

A. Physical Characteristics

The Colorado River is a major North American river, extending some 1,450 miles from the snowcapped Rocky Mountains of north central Colorado to the Gulf of California in Mexico. It has a watershed of 242,000 square miles in the United States, draining parts of seven Western States, plus 2,000 square miles of watershed in Mexico. Its major tributaries include the Green River in Utah and Wyoming, the Gunnison River in Colorado, the San Juan River in Utah and New Mexico, and the Little Colorado and Gila Rivers in Arizona. It is undoubtedly the Pacific Southwest's most valuable material resource.

Runoff is dominantly from snowpack in the high Rockies of Colorado and Wyoming. Flows are erratic, both seasonally and annually. Approximately two-thirds of the annual runoff occurs in the April through July period. The largest virgin runoff of record was 24 million acre-feet recorded at Lee Ferry, Arizona, in 1917 and the lowest, only 5.6 million acre-feet in 1934. The River is the major source of water for irrigating nearly a million acres of land below Parker Dam and for supplying municipal and industrial needs of nearly 10 million people in the Los Angeles-San Diego metropolitan area.

Relative to needs, however, waters of the Colorado River are limited in quantity and quality. There is far more potential for agriculture, industry, and population growth than there is water to develop those potentials. From the quality standpoint, the major deficiency is salinity -- too much total dissolved solids. Nearly half of the salinity comes from natural sources such as mineral springs and the salts carried to the stream as precipitation falls on the watershed and moves through and over geologic marine shales and other salty soils before reaching the stream. Drainage from irrigation accounts for

1/ The principal author of this chapter is Maurice Langley, Chief, Division of Water and Land, Bureau of Reclamation, Department of Interior, Washington, D.C.

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approximately 37 percent of the salinity, reservoir evaporation for some 12 percent, municipal and industrial uses for about one percent, and exports out of the basin for about three percent.

B. Chronology

Pre-1900 Highlights

Hernando de Alarcon discovered the Colorado River in 1540 as he sailed up the west coast attempting to rendezvous with Coronado's overland expedition, which was searching for the fabled golden Seven Cities of Cibola. Alarcon explored the river to a point just above its confluence with the Gila River. That same year Cardenas, one of Coronado's lieutenants, reached the south rim of the Grand Canyon in Hopi Indian country.

These explorers observed various Indian tribes diverting water from the river into canals and ditches for the irrigation of crops.

In 1857, the War Department instructed Lieut. J. C. Ives to proceed up the river as far as it was navigable. His steamboat, "The Explorer," was wrecked in the lower end of Black Canyon, just downstream from where Hoover Dam stands today. In reporting on his explorations farther upstream by skiff, he wrote those famous and inaccurate lines so often quoted:

> "The region last explored is, of course, altogether worthless... Ours was the first, and will doubtless be the last party of whites to visit this profitless locality. It seems intended by nature that the Colorado River, along the greater portion of its lonely and majestic way, shall be forever unvisited and undisturbed."

But in 1869, Major John Wesley Powell explored downstream from the Green River in Wyoming to the mouth of the Virgin River in Nevada. Shortly thereafter men of vision started constructing a diversion structure on the

west bank of the river upstream from what is now Blythe, California. The first irrigation water diversions to lands which are now a part of Palo Verde Irrigation District occurred in 1877. Among the water users on the lower Colorado River today, that district holds the earliest priority in water rights.

In 1901, water was first diverted to the Imperial Valley in California, now the largest irrigation district in the United States. Diversions at that time were through a structure near the Northern International Boundary into the Imperial Canal, which followed the course of the old Alamo River, one of the Colorado's old overflow channels, 60 miles through Mexico before re-entering the United States.

Irrigation development along the river in those early days was a difficult and time-consuming task. Bottom land was subject to periodic flooding. It contained growths of mesquite and other vegetation which had to be cleared, and was broken by dunes and gullies that had to be leveled with small scrapers pulled by horses. Construction and maintenance of diversion structures and irrigation canals to bring water from the river to the farms was likewise difficult. During high spring runoff and other periods of flood, the river carried large quantities of sediment which tended to deposit at the diversion structures clogging the headworks and canals. This required major silt removal maintenance. Additionally, when the river flows decreased during summer and early fall it was difficult to make diversions.

Early Reclamation Service Years

Recognizing the need for Federal assistance in planning, constructing, operating, and financing the development of the arid and semi-arid lands of the West, Congress passed the Reclamation Act of 1902, under which the Bureau of Reclamation, then known as the United States Reclamation Service, came into existence.

Authorized in 1904, the Yuma Project in Arizona and California was the first reclamation development on

the lower river. The irrigated lands included approximately 53,000 acres in the Valley Division in Arizona adjacent to the city of Yuma, and 15,000 acres in the Reservation Division in California just across the river to the north from Yuma. Laguna Dam, constructed between 1905 and 1909, served as a diversion structure into the Yuma Main Canal for the Valley and Reservation Division. In 1917, Congress authorized a Mesa Unit of the Yuma Project. A pumping plant lifted water from the Yuma Valley East Main Canal onto the Yuma Mesa, and the first water deliveries were made in 1922. By later action Congress restricted this unit to 3,406 acres, supplied its water through Gila Project works, and identified it as the Yuma Auxiliary Project.

In the spring of 1904, the upper four miles of the Imperial Canal, which carried water through Mexico to the Imperial Valley, became heavily clogged with silt. When the spring flows receded and the typical low flows of late summer and fall followed, it was impossible to get adequate water through the canal for crops in the Mexicali and Imperial Valleys. As an expedient, the canal company cut a bypass channel from the river to a point on the Imperial Canal downstream from the clogged section. As flows were normally low during the winter months, plans were to dredge the canal and close the bypass during the period. Before the cut could be fully dammed, a series of winter flash floods occurred. The fifth of these broke through the river's west bank into the bypass channel. For two years the entire flow of the Colorado ran rampant down the old Alamo River channel, the New River channel, and into the Salton Sink in California, forming what is now the Salton Sea.

The Southern Pacific Railroad, which ran through the Salton Sink area, was forced to move its tracks to higher ground. It invested approximately $3 million and much engineering skill into closing the break. Final closure and restoration of the river to its channel didn't occur until February 10, 1907.

Fearing another breakthrough into the Salton Sink, the Federal Government appropriated $1 million in 1910 for construction of the Ockerson levee along the

west side of the river. Parts of that levee were eroded and costly replacements and maintenance recurred. Flows of the Colorado River continued as in earlier years with spring floods high in sediment and low summer flows high in salinity.

In January 1916, a 200,000 cubic feet per second flood came down the Gila River, breaking through a number of local levees. Water stood four feet deep in the streets of Yuma and the Yuma Project lands were inundated.

Recognizing the need for flood control, carry-over storage, and seasonal regulation of the Colorado River, Reclamation Service Director Davis suggested to Congress in 1918 that a dam be constructed on the river between Arizona and Nevada. His concept envisioned a dam of unprecedented height to form a reservoir of equally unprecedented storage capacity. The proposal for such a dam immediately raised fears in the Upper Basin States that, under the doctrine of prior appropriation, the Lower Basin States would use and thereby appropriate before the Upper Basin States, where a large part of the runoff originated, had an opportunity to protect their rights.

Early Colorado River Compact Years

At a historic meeting at Santa Fe, New Mexico, on November 24, 1922, representatives of the Upper and Lower Basin States and the Federal representative, Herbert Hoover, reached agreement and signed the Colorado River Compact, sometimes referred to as the Santa Fe Compact. The Compact required the Upper Basin to deliver not less than 75 million acre-feet to the Lower Basin each successive 10 years. It made no apportionment to any state. The Compact provided that navigation be made subservient to power, but also made power subservient to irrigation and domestic water uses. All of the states, except Arizona, ratified the Compact prior to its effective date in 1929.

The Colorado River Compact fixed the dividing point on the river between the Upper and Lower Basin at Lee Ferry, Arizona, located one mile below the mouth of

the Paria River. It identified Colorado, New Mexico, Utah, and Wyoming as Upper Basin States and Arizona, California, and Nevada as Lower Basin States. However, the Lower Basin incorporates those parts of the states of New Mexico and Utah from which waters naturally drain into the Colorado River system below Lee Ferry, and also parts of those states outside the drainage area of the Colorado River system which are beneficially served by waters diverted from the system below Lee Ferry. Likewise, the Upper Basin includes a small part of Arizona, a Lower Basin State.

Boulder Canyon Project Authorization

Representative Phil Swing and Senator Hiram Johnson of California introduced their first so-called "Swing-Johnson Bill" in 1922, the same year the Compact was signed. It called for the construction of a high dam on the Colorado River between Nevada and Arizona, and a canal system within the United States to serve the Imperial Valley and other areas on the lower river. The bill was amended and re-introduced a number of times. Finally, the fourth Swing-Johnson bill was approved by Congress and became the Boulder Canyon Project Act of December 21, 1928.

It authorized construction of a dam at Black Canyon or Boulder Canyon and an All-American Canal system to serve the Imperial and Coachella Valleys in California with Colorado River water. It also approved the Colorado River Compact and provided that in the event only six states should ratify the Compact it would become effective provided that California agreed to limit its use of Colorado River water.

All of the Basin States immediately ratified the Compact, except Arizona, which continued to withhold its ratification until 1944.

Specifications for construction of the largest dam in the world, to create the largest artificial lake in the world, were rushed to provide employment during the critical depression years. On March 11, 1931, the United States Government awarded the contract for construction

to Six Companies, Inc., a joint venture of six large Western contractors. It was the largest Federal labor contract up to that time.

In March 1935, the dam reached its full height of 726.4 feet above bedrock and storage started in its 32,471,000 acre-foot reservoir a full two years ahead of schedule. For the first time in history the spring floods on the Colorado River could be controlled.

Construction of the All-American Canal was started in 1934 and completed in 1940. Imperial Dam, the diversion structure for this Canal, was started in 1936 and completed in two years.

Parker Dam, 155 miles downstream from Hoover Dam, was constructed during the period 1934-39 by the Bureau of Reclamation with funds advanced by the Metropolitan Water District of Southern California. It provided a forebay and desilting basin for the District's 242 mile long Colorado River Aqueduct, which in turn was completed in 1941. That aqueduct currently delivers over a million acre-feet of water annually to the Metropolitan Water District. That District serves more than 10 million people in 121 incorporated cities in the Los Angeles-San Diego coastal plain area.

Treaty with Mexico

With this energetic development of the Colorado River within the United States, concern was expressed on both sides of the border that Mexico's rights to the Colorado River be established by treaty. To provide a vehicle for participation by the Basin States in preparations for a treaty, a committee was formed with two representatives from each of the seven Colorado River Basin States -- a forerunner of the present Committee of Fourteen.

Development work below Imperial Dam on the Arizona side of the river brought the first water to the Mesa Unit of the Gila Project in 1943. During the same period the Treaty with Mexico was being negotiated, and

was finally signed on February 3, 1944. Ratifications were exchanged in Washington, D.C., on November 8, 1945.

With respect to the Colorado River, the Treaty allocated and provided for annual delivery to Mexico, except in case of extraordinary drought, of 1.5 million acre-feet of Colorado River water. Delivery was to be regulated within fixed monthly limits and a schedule to be provided by Mexico each year. In any year when there was sufficient excess water in the river, the total regulated amount for that year would be increased to 1.7 million acre-feet, and Mexico might always use any other water arriving in the boundary section of the river.

World War II

Essentially all major construction work on the Colorado River came to a halt for the duration of World War II and for the first year thereafter.

Post World War II Developments

Following World War II, the Upper Basin States were anxious to proceed with developments on a par with the progress being made in the Lower Basin. Before they could do so, it was necessary that the Upper Basin's entitlement under the 1922 Compact be apportioned among the individual states. On October 11, 1948, the states of the Upper Basin entered into the Upper Colorado River Basin Compact. It set aside 50,000 acre-feet for use by Arizona, in that small part of Arizona within the Upper Basin. Of the remainder, it allocated to Colorado 51.75 percent, to Utah 23.00 percent, to New Mexico 11.25 percent, and to Wyoming 14.00 percent.

The Lower Basin States of Arizona, Nevada, and California were not able to reach agreement on an allocation of waters of the Colorado River and in 1952 Arizona filed suit in the Supreme Court to determine that allocation. While that suit was being tried, construction of Reclamation projects continued along the lower river.

During the period 1948-50, Mexico constructed

Morelos Dam on the Colorado River, near the Northern International Boundary with the United States, approximately seven miles due west of Yuma, Arizona. It serves as the major diversion structure for most of Mexico's guaranteed allocation of 1.5 million acre-feet per year.

Immediately after World War II, the Bureau of Reclamation re-evaluated its proposed Gila Project and found that the large expanse of the Yuma Mesa that it had proposed to irrigate was too sandy for efficient utilization of the limited supply of Colorado River water. In contrast, it found that the alluvial soils along the Gila River in the Wellton and Mohawk, Arizona, areas were ideally suited for irrigation. Furthermore, the existing irrigation economy in that area was near bankruptcy because of a failing groundwater supply created by new upstream water use developments.

In 1947, Congress re-authorized the Gila Project, reducing the Wellton-Mohawk Division of that Project to an amount not to exceed 75,000 acres, and the Yuma Mesa Division to an amount not to exceed 40,000 acres. Construction in both divisions then proceeded rapidly. The Bureau of Reclamation delivered the first water to the Wellton-Mohawk Division in 1952.

As in other irrigation projects developed under the Federal Reclamation Act, the Wellton-Mohawk Division is governed by a legal entity, the Wellton-Mohawk Irrigation and Drainage District, which has a status under Arizona state law similar to that of a municipal corporation. A contract between this District and the Secretary of the Interior governs the delivery of Colorado River water.

The 1944 Treaty with Mexico called for a major dam below Hoover Dam to reregulate the flows for delivery to Mexico. Davis Dam, some 67 miles downstream from Hoover Dam, was completed in 1953 for this purpose, and for reregulation of Hoover Dam releases. Lake Mohave, behind Davis Dam, has a capacity of approximately 1.8 million acre-feet and extends upstream to the tailrace of Hoover Dam.

To initiate the development of beneficial use of the water resources to which the Upper Colorado River Basin States were entitled under the 1922 Colorado River Compact, Congress authorized the Colorado River Storage Project on April 11, 1956. That Act authorized the Secretary of the Interior to construct, operate and maintain the Curecanti, Flaming Gorge, Navajo, and Glen Canyon Storage Units. It also authorized certain Upper Basin participating projects. With more complete development of the river, the old Palo Verde rock weir and original inlet structure no longer functioned properly or efficiently. The Bureau of Reclamation replaced it with the Palo Verde Division Dam in 1957.

Beginning of Salinity Problem with Mexico

Runoff during the four years, 1953-56, was among the lowest four consecutive years of record. During 1956 and 1957, deliveries to Mexico were restricted to its minimum, normal, guaranteed Treaty allotment of 1.5 million acre-feet. Then followed two years of above average runoff in 1957-58, and during the years 1958, 1959 and 1960 Mexico was again able to schedule 1.7 million acre-feet, the maximum, annual Treaty allotment. The basin experienced another three consecutive years of low runoff in 1959-61. With the low runoff and decreased storage in Lake Mead there was an increase in salinity of the river water. With the short supply, Mexico was being restricted more nearly to its 1.5 million acre-feet annually in contrast to the large quantities of several additional million acre-feet annually that it had been receiving.

By 1961, after nearly 10 years of irrigation in the Wellton-Mohawk District, the excess water applied initially to leach some of the more saline soils, and annually thereafter to maintain salt balance, had accumulated in the groundwater to the extent that it was approaching the plant root zone in many areas. Drainage through the use of groundwater wells was started.

This drainage water initially contained approximately 6,000 parts per million of total dissolved solids

and entered the Colorado River at the confluence of the Gila and Colorado Rivers east of Yuma, Arizona. This increase in salts in the Colorado River in combination with limited deliveries to Mexico (no excess water for dilution) marked the beginning of the salinity problem with Mexico. Since 1961, all or a part of the Wellton-Mohawk drainage have comprised a part of the 1.5 million acre-feet of water delivered to Mexico annually, thereby increasing significantly the salinity of the river between Imperial Dam and the Northern International Boundary.

Supreme Court Decree in Arizona vs. California

On June 3, 1963, after 11 years of painstaking litigation, the Supreme Court issued its decision in Arizona vs. California, which was followed by a decree on March 9, 1964. The decree provided that, of the first 7.5 million acre-feet of mainstream water in the Lower Basin, California was entitled to 4.4 million, Arizona to 2.8 million, and Nevada to 300,000. The decree also identified and quantified the rights of Indian Reservations and other Federal establishments on the Lower Colorado River.

Initiation of Upper Basin Storage

During litigation on the Lower Colorado River, construction of Glen Canyon Dam proceeded in the Upper Basin. Filling of Lake Powell, back of the dam began on March 13, 1963. The 1963 runoff of the Colorado River was one of the lowest on record. When the March 1, 1964, forecast of April through July runoff was made, prospects for 1964 were quite poor and the decision was made to open the gates on March 25, 1964, and start releasing accumulated storage at Glen Canyon Dam. Otherwise, it appeared that the filling of Lake Powell to an elevation where power could be generated at Glen Canyon Dam would result in the drawdown of Lake Mead so low that power could not be generated at Hoover Dam. It appeared better to release water from Glen Canyon Dam to Lake Mead and at least sustain powerhead at one of the two major dams.

The May 1, 1964, forecast of April through July

runoff was improved over the March 1, forecast and the decision was made on May 11, 1964, to again close the gates at Glen Canyon Dam and continue storage in Lake Powell. By September 1964, there was sufficient storage in Lake Powell for the Glen Canyon powerplant to be placed in operation. In the meantime, Lake Mead had been drawn down below rated head; i.e., 1,123 foot elevation, but power generation was still possible. As neither the Upper nor Lower Basin States had put their full allocations of water to beneficial use, storage in Lake Powell and Lake Mead has increased each year since that time and it has been possible to continue power generation at both locations.

Reregulation on Lower Colorado River

Even with the tight water situation on the river in the early 1960's, it was found that some over-deliveries to Mexico could not be avoided. Parker Dam, the last point on the river for regulation of downstream scheduled orders, is three days water travel time away from Imperial Dam. Rains or sudden cool weather sometimes resulted in scheduled orders not being taken at Imperial Dam and the excess water flowed to Mexico, for which the United States received no credit on delivery schedules. Therefore, a decision was made to build a 12,000 acre-foot regulating reservoir on the California side of the river just upstream from Imperial Dam. This structure, known as Senator Wash Reservoir, was constructed during the period 1964 to 1966 and now provides a regulating reservoir proximate to Mexico, where excess water can be stored or where water can be released in times of shortage.

Minute No. 218 Under Treaty With Mexico

Following increases in salinity of the river in 1961, sharp protests were received from Mexico and a number of practical steps were taken to decrease the peak salinity of water delivered to Mexico. Intensive negotiations culminated on March 22, 1965, in a five-year agreement identified as Minute No. 218. Under that Minute the United States agreed, among other things, to (1) construct a 353 cubic foot per second extension to the Wellton-mohawk Drainage Channel so that the drainage water from

the District could either be bypassed and wasted in the Colorado River below Morelos Dam, Mexico's major point of diversion, or returned to the Colorado River above Morelos Dam and used; (2) bypass all of the Wellton-Mohawk drainage water for at least 90 days each year without reducing Mexico's Treaty entitlement of 1.5 million acre-feet annually and by making up Mexico's scheduled deliveries during that period with water otherwise in the river and to the extent necessary with storage water, the latter averaging about 50,000 acre-feet per year; and (3) the United States also agreed to construct additional drainage wells in the Wellton-Mohawk District so that selective pumping of the most saline wells could be accomplished when Mexico was bypassing Wellton-Mohawk drainage water, and pumping of the best quality wells could be done when Mexico was taking all of the drainage water as a part of its scheduled 1.5 million acre-feet. Minute No. 218 was extended for one year in November 1970, and again in 1971. Operations under the Minute resulted in the quality of the water delivered to Mexico improving from about 1,375 parts per million in 1965 to 1,240 parts per million in 1971.

Colorado River Basin Project Act

By 1965, Lake Mead water surface was back to rated head; i.e., elevation 1,123 feet. Arizona and California compromised their differences in 1966 and 1967 so as to support further Colorado River legislation, and on September 30, 1968, the Colorado River Basin Project Act, known as Public Law 90-537, was passed by Congress. This is the legislation that authorized the Central Arizona Project, as well as certain Upper Basin projects, and will make it possible for Arizona to utilize the water allocated to it by the 1964 Supreme Court Decree.

Section 602 of Public Law 90-537 calls for the Secretary of the Interior to adopt criteria for coordinated long-range operation of the reservoirs on the Colorado River. Such criteria were reviewed at length with the states of the Colorado River Basin and adopted by the Secretary on June 4, 1970.

Public Law 90-537 also requires the Secretary to

transmit to the Congress and the Governors of the Basin States reports on operations of the Colorado River. The first of those reports was issued in January 1972 and covers 1971 operations and 1972 projected operations. A report covering 1972 operations and 1973 projected operations is being prepared currently.

C. Hydrology

Colorado River Flows at Lee Ferry

When the Colorado River Compact was negotiated and agreed to in 1922, the average virgin flow of the Colorado River was recorded as 18 million acre-feet. This was based on flow measurements from 1903 through 1921. However, the average virgin flow based on records through 1968 has been only 15 million acre-feet and the average virgin flow since the Compact is something less than 14 million acre-feet. Progressive 10-year average flows in recent years are even less as illustrated in Figure 1.

Deliveries of Water to Mexico Under 1944 Treaty

Figure 2 lists the year by year scheduled and delivered water to Mexico from 1956 through 1971. Deliveries in earlier years were even larger than those listed. Closer regulation and reduced over-deliveries followed the completion of Senator Wash Regulating Reservoir in 1966.

Current Water Use on the Colorado River

Using current estimates of long-term average flows of the Colorado River, it is believed that the Upper Basin is assured the use of approximately 5.8 million acre-feet annually of the Colorado River while still meeting its Compact obligation for deliveries to the Lower Basin. The Upper Basin's current water use is approximately 3.3 million acre-feet annually.

The Lower Basin's 1971 use, including the slightly more than 1.5 million acre-feet delivered annually to Mexico, required releases from Lake Mead of slightly over

8.2 million acre-feet. Without taking into consideration bank storage at Lake Powell and similar factors, the current uses of water in the Upper and Lower Basins combined are approximately 11.5 million acre-feet annually. Any increase in storage at Lake Powell and Lake Mead requires an annual virgin flow in excess of that amount. The water use in 1971 is summarized in Figure 3.

Potential Colorado River Storage Accumulation

The total active surface storage capacity of major Colorado River Basin reservoirs is about 61,500,000 acre-feet. Of this total 52,000,000 acre-feet are contained in Lake Powell and Lake Mead. At present there are about 37,500,000 acre-feet in surface storage. Taking into account the need to reserve 5,000,000 acre feet of space for flood control purposes, there remains about 19,000,000 acre-feet of unfilled active capacity in the Colorado River reservoir system.

Should the long-term average annual Colorado River virgin runoff of 14,900,000 acre-feet (1906-1972) occur over the next decade, available water supply would exceed projected water uses by about 24,000,000 acre-feet. In this circumstance, and recognizing that there is bank storage in addition to surface storage available, some 3,000,000 acre-feet of water would have to be spilled from the system and passed on to Mexico or the Gulf of California.

However, should the average annual runoff of the next decade equal the average annual runoff of the last decade or of the last four decades (about 13,100,000 acre-feet), then the storage gain would be only 5,600,000 acre-feet and the reservoirs would miss filling by about 13,400,000 acre-feet.

The conclusion to be drawn is that unless Colorado River Basin runoff for the next decade is close to the long-term average, then any water released from the reservoir storage system to substitute for bypassed Wellton-Mohawk irrigation drainage is water that otherwise would be available to meet authorized use in the United States or Mexico's entitlement.

When the Central Arizona Project is completed and begins diversions (1982 at the earliest) then the potential annual water demands on the river will exceed the annual water yield of the system and, except for years of above average runoff, water will be drawn from storage to meet demands. It is evident also that the longer completion of the Central Arizona Project is delayed, the greater are the chances for filling the system storage and consequent spillage.

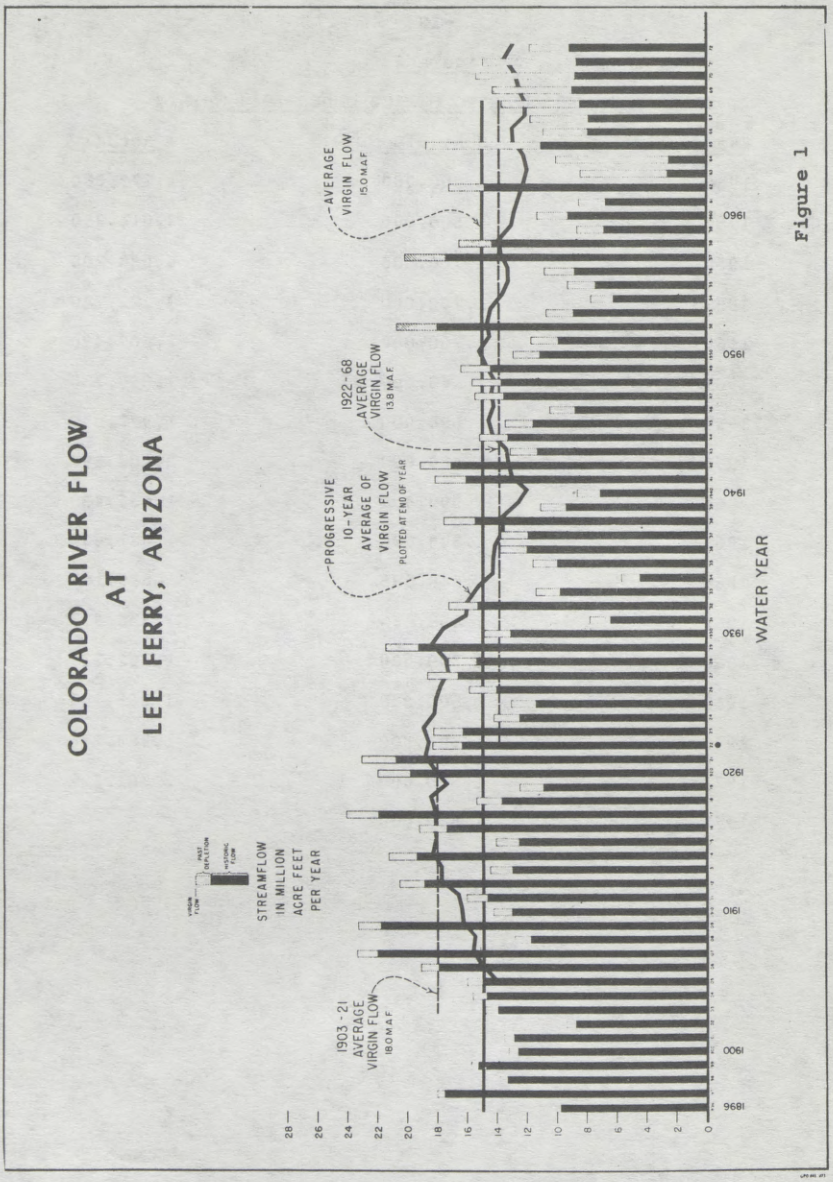

Figure 1

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Figure 2

DELIVERIES OF WATER TO MEXICO UNDER 1944 TREATY

Year	Scheduled	Actual
1956	1,500,000	1,779,880
1957	1,500,000	3,014,890
1958	1,700,000	6,088,280
1959	1,700,000	3,222,740
1960	1,700,000	2,507,430
1961	1,540,000	1,838,730
1962	1,500,000	1,977,030
1963	1,500,000	2,003,890
1964	1,500,000	1,655,430
1965	1,500,000	1,687,661
1966	1,540,535	1,656,147
1967	1,459,465	1,558,977
1968	1,500,000	1,562,737
1969	1,500,000	1,565,784
1970	1,500,000	1,583,186
1971	1,500,000	1,561,622
1972	1,500,000	

Figure 3

WATER USE IN WATER YEAR 1971
(Acre Feet)

Upper Basin

(Acre Feet)	
2,050,000	- Irrigation and M&I
450,000	- Trans-basin diversion
476,000	- Mainstem Reservoir Evaporation
160,000	- Miscellaneous reservoir and stockpond evaporation
3,136,000	

Lower Basin

6,936,000	- Releases from Lake Havasu (Parker Dam) for downstream domestic contractors, Mexican treaty obligation, transit losses and regulatory waste (4,679 acre-feet)
1,209,534	- Metropolitan Water District from Havasu
113,466	- Miscellaneous uses and transit losses between Davis Dam and Parker Dam
8,259,000	- Releases from Lake Mohave (Davis Dam)
-26,000	- River gains between Hoover Dam and Davis Dam
8,233,000	- Releases from Lake Mead (Hoover Dam)
39,780	- Diversions from Lake Mead for Nevada
8,272,780	

II. HISTORY OF THE COLORADO RIVER SALINITY PROBLEM WITH MEXICO

A. The Genesis of the Problem

The 1944 United States-Mexico Treaty for Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande allots to Mexico a guranteed annual quantity of 1,500,000 acre-feet "of the waters of the Colorado River, from any and all sources..." and "... whatever their origin..."

Mexico and the United States have had differing interpretations of these and related treaty provisions as they may affect water quality. As indicated in the previous section, these questions relating to quality did not become a practical issue until 1961, partly because until then Mexico had received excess Colorado River flows. These excess flows diluted more saline return flows with the result that the quality of the water delivered to Mexico was very nearly the same as that used in the lower Colorado River Basin of the United States.

However, in 1961 two events occurred to make quality a serious issue. Pumping of highly saline drainage from the Wellton-Mohawk District began at about the same time that availability of excess waters came virtually to an end. The Wellton-Mohawk pumped drainage had initially a salinity as high as 6,000 parts per million because the pumped waters contained highly saline past accumulations in the undergound aquifer. The effect of these two events was to increase the average annual salinity of waters made available to Mexico in the Colorado River above its main diversion structure from an annual average of about 800 parts per million to nearly 1,500 parts per million.

In November 1961, Mexico formally protested that "the delivery of water that is harmful for the purposes stated in the Treaty constitutes a violation of the Treaty," and that "any contamination of international water by one of the riparian countries that causes damage

or loss to the other riparian party is in itself an act clearly and specifically condemned by International Law..."[1] Concerned over the effects of high salinity on the farms of the Mexicali Valley, Mexico has continued to press its case since then.

B. Steps Taken Toward Resolution of the Problem from 1961 to 1972

In response to Mexican protests, a series of interim measures have been taken since 1961. As a result, the water delivered to Mexico never again reached the peak salinity of that year.

In March 1962, Presidents Kennedy and Lopez Mateos jointly announced that it was urgent to find a mutually satisfactory solution, and that water and soil scientists of the two countries would be called upon to assist the International Boundary and Water Commission in adopting remedial measures within the shortest possible period of time. The Department of State reactivated the Committee of Fourteen, representatives of the seven Colorado River Basin States, to advise it as the earlier Committee had done during the negotiation of the 1944 Water Treaty. When the Presidents met again in June 1962, they noted the measures taken to reduce the salinity of the waters delivered to Mexico, and expressed their determination to reach a "permanent and effective solution" at the earliest possible time on the basis of the scientific studies in progress. As a result of these and other studies, the two Governments reached in 1965 a five-year agreement embodied in Minute No. 218 of the International Boundary and Water Commission.

Pursuant to this Minute, the United States has engaged in selective pumping of the Wellton-Mohawk drainage wells to alleviate salinity at the times most critical to Mexico, and has constructed a conveyance channel to facilitate the segregation and bypassing of the Wellton-Mohawk drainage to the Gulf of California. The United States invested approximately $11 million in these and other related works. In addition, under Minute No. 218,

1/ Note, Embassy of Mexico, No. 4012, November 9, 1961.

the United States released annually approximately 50,000 acre-feet of stored water from above Imperial Dam to meet the Mexico entitlement of 1.5 million acre-feet.

By the end of 1971, the United States operations under Minute No. 218, together with gradual improvement of Wellton-Mohawk drainage, had reduced the average annual salinity of waters made available to Mexico to 1245 parts per million. Meanwhile, Mexico unilaterally bypassed an additional 40,000 to 75,000 acre-feet of Wellton-Mohawk drainage annually because Mexican authorities concluded they could not use waters higher in salinity than 1230 parts per million. The effect was to reduce further the salinity of waters delivered to the Mexicali Valley to 1161 parts per million in 1971.

Minute No. 218 was to have expired in November 1970. With agreement from the Committee of Fourteen, the United States in 1970 offered Mexico a new Minute for at least five years.

The administration of President Diaz Ordaz decided to leave the matter to the administration of President Echeverria, which took office in December 1970. Minute No. 218 was extended for one year.

In 1971 and early 1972, the Governments exchanged several proposals in an attempt to reach an agreement, extending Minute 218 in November 1971 for another year so that the discussions might be continued. After further conversations in the first part of 1972, Mexico requested a prompt, permanent settlement.

C. Terms of Reference of the President's Special Representative and the Organization and Work of his Task Force

The Presidents of the United States and Mexico met in Washington in June 1972. The salinity issue was one of the subjects discussed at that time, and it figured prominently in their Joint Communique issued on June 17, 1972. With this Communique the search for a solution entered another phase. The Communique stated in part:

"Regarding the problem of the salinity of the Colorado River, President Echeverria told President Nixon that Mexico reiterates its position as regards receiving its assignment of original waters from the Colorado River, to which the Treaty of February 3, 1944 refers, and therefore, with the same quality as those derived from the Imperial Dam.

"To this, President Nixon replied that this was a highly complex problem that needed careful examination of all aspects. He was impressed by the presentation made by President Echeverria and would study it closely. It was his sincere desire to find a definitive, equitable and just solution to this problem at the earliest possible time because of the importance both nations attach to this matter.

"As a demonstration of this intent and of the goodwill of the United States in this connection, he was prepared to:

(a) undertake certain actions immediately to improve the quality of water going to Mexico;

(b) designate a special representative to begin work immediately to find a permanent, definitive and just solution of this problem;

(c) instruct the special representative to submit a report to him by the end of this year;

(d) submit this proposal, once it has the approval of this Government to President Echeverria for his consideration and approval.

"President Echeverria said that he recognized

the goodwill of President Nixon and his interest in finding a definitive solution to this problem at the earliest possible time. He added that based on two recent trips to the Mexicali Valley and his talks with farmers there, his Government, while reserving its legal rights, had decided to stop using waters from the Wellton-Mohawk project for irrigation purposes while waiting for receipt of the U.S. proposal for a definitive solution.

"Both Presidents agreed to instruct their Water and Border Commissioners to prepare and sign a Minute containing the above program and commitments as soon as possible."

On July 14, the Commissioners signed a new agreement, Minute No. 241, providing for immediate improvement in the quality of Colorado River water to be delivered to Mexico.

This agreement, superseding Minute No. 218 but running only until December 31, 1972 is estimated to result in an average annual reduction of at least 100 parts per million in the quality of the waters made available to Mexico as compared to 1971. The United States is bypassing Wellton-Mohawk drainage, without charge against Treaty water deliveries to Mexico, at an annual rate of 118,000 acre-feet, more than twice the rate of bypass resulting under Minute No. 218. In place of these waters, amounting to 73,000 acre-feet during the remainder of 1972, the United States is substituting an equal quantity of other waters from above Imperial Dam and from twelve wells on the Yuma Mesa. This substitution will reduce the annual average salinity of the water delivered to Mexico to an estimated 1140 parts per million from the 1245 parts per million experienced in 1971.

For its part, the Government of Mexico requested the United States also to bypass the rest of the drainage from the Wellton-Mohawk District, amounting to a rate of approximately 100,000 acre-feet annually, for which no substitution would be made. This further reduced the salinity of the water diverted by Mexico to about 1000

parts per million, compared to 1161 parts per million in 1971.

In making these special arrangements both governments reserved all rights under the Water Treaty and the general principles of law.

In accordance with the Joint Communique, President Nixon announced on August 16 my designation as his Special Representative for the Resolution of the Salinity Problem with Mexico. Working under the auspices of the White House, I have been assisted by an interagency Task Force consisting of representatives of the Department of State, the Department of the Interior, the United States Section of the International Boundary and Water Commission, the Department of Defense (Corps of Engineers), the Environmental Protection Agency, the Council on Environmental Quality, the Office of Science and Technology, the Office of Management and Budget, and the Domestic Council. The Department of Agriculture has provided valuable technical advice.

Beginning September 7, the Task Force has met weekly to consider systematically all elements of possible permanent solutions to the problem. It has also made a trip over the Colorado River; visited the Wellton-Mohawk District, Yuma Mesa, Imperial Valley and other pertinent border areas; and met three times with the Committee of Fourteen. I have visited Mexico City to confer with President Echeverria, Foreign Relations Secretary Rabasa, Hydraulic Resources Secretary Rovirosa, Governor of the State of Baja California Castellanos and other interested Mexican officials; visited Mexicali Valley, together with agricultural and irrigation technicians to observe conditions there; and met with Governors Love of Colorado and Williams of Arizona, with knowledgeable Congressional representatives and with concerned private citizens.

This period of intensive study and discussion has led me to the following statements of principal issues and recommendations.

III. PRINCIPAL ISSUES

A. Quality Differential Between Imperial Dam Water and That Delivered to Mexico at the Northern International Boundary

Mexican officials have indicated to us that, to Mexico, the principal issue is the difference in quality between the water available to United States users below Imperial Dam (about 850 parts per million for most) and the water delivered to Mexico at the Northern International Boundary, in compliance with the Water Treaty (now averaging about 1140 parts per million under the operation of Minute No. 241). The main source of this difference in quality is the drainage from the Wellton-Mohawk District. Previous attempts on the part of the United States to reach agreement have envisaged a permanent solution based on salt balance in the Wellton-Mohawk District, and all other United States projects below Imperial Dam, the lowest major United States diversion point -- that is, based on a situation in which the same tonnage of salt would be returned to the river in the effluent from the District, as was contained in the diversion to the District. A solution based on Wellton-Mohawk salt balance would yield a quality differential under present circumstances of 270 parts per million between water at Imperial Dam and water delivered to Mexico at the Northern International Boundary. Mexico is unwilling to accept this differential.

B. Cooperation for Development

The differential in salinity is a factor adversely affecting production in Mexicali Valley. This fact is not in question, although the degree of the adverse effect is a matter of debate among technical experts. United States experts estimate the effect to be relatively small at the levels of salinity currently being considered.

There are factors other than salinity which either presently affect production on both sides of the border or which will affect production over the long term.

A definitive solution of the salinity problem should recognize these other factors and include programs to deal with them as effectively as possible. For maximum benefit to the people of both the United States and Mexico, these programs should, through cooperative efforts, efficiently use the expertise available in both countries.

The other factors here referred to are farm management and irrigation practices; the salinity of water in the Colorado River system as a whole; and the potential for augmentation of presently available water resources through such measures as a desalting plant and geothermal development. Production levels in Mexicali Valley comparable to those in Imperial Valley cannot be achieved unless improved management and irrigation practices accompany improved water quality. Mexico has major programs already under way at a cost of about $150 million for improved management and irrigation in the Mexicali Valley, partially supported by loans from the International Bank for Reconstruction and Development and the Inter-American Bank. Both United States and Mexican experts believe that additional measures, including in particular the installation of tile drainage, together with a balance between water supply and acres irrigated, will be necessary in part of Mexicali Valley.

The salinity of the Colorado River system as a whole above Imperial Dam will increase significantly in coming years with expected expansion of water uses unless adequate measures are taken to stem this increase. Such an increase in Colorado River salinity would adversely affect water users downstream, both in the United States and in Mexico. The Department of the Interior has under investigation a program having the objective of leading to remedial measures that would maintain Imperial Dam water at or below its current level of 850 parts per million, after an unavoidable deterioration in quality ending in 1980. In a letter of June 9, 1972 to Commissioner Armstrong of the Bureau of Reclamation, EPA Director Ruckelshaus has characterized this program as appearing to offer the best prospect for arresting or reducing the salinity increases in the Colorado River. The implementative program has not yet been reviewed and approved by the Executive branch as a whole or funded by Congress.

Over the long term there will be demands for good quality water in both the United States and Mexico which can be met only by augmentation. Because of this fact advances in desalting and geothermal development are very important to both countries. Mexico's governmental program for geothermal development is more advanced than that of the United States. Exchanges of information and technical expertise in these two fields can be mutually useful. Fortunately programs for such exchange already exist and are being expanded.

In October 1965, the United States and Mexico, in conjunction with the International Atomic Energy Agency, established an international study team to determine the technical and economic practicability of a dual-purpose nuclear power plant to produce fresh water from the Gulf of California and power for Northwest Mexico and the Southwest United States. In November of this year, a follow-on United States-Mexican technical level working group recommended establishment of a joint study group to develop the technical and environmental information needed for consideration of the design and construction of a large nuclear electric power and water desalting plant which would assist in meeting the long-range electricity and water requirements of particular regions in the United States and Mexico. The study group also would establish an arrangement for exchange of information and personnel from related technical programs in each country for nuclear power development, water desalting plants of various types, and geothermal development.

C. Groundwater Pumping

Mexico has begun a program of extensive pumping of groundwaters on the San Luis Mesa just south of the Southern International Boundary. If continued and expanded as planned, this program will mine United States groundwaters to the detriment of United States interests. The Colorado River Basin States logically are much concerned. The United States Commissioner on the International Boundary and Water Commission has notified his colleague, the Mexican Commissioner, that most of the groundwater reaching the San Luis Mesa area in Mexico

originates from deep percolation of irrigation water being applied in the United States and that the installation and operation of the wells in Mexico will not establish any right of Mexico to the waters extracted or any requirement that the United States continue to make those groundwaters available in Mexican territory. He has informed the Mexican Commissioner that the United States plans to recover and utilize those percolating waters within its own territory, and that installation of the wells by Mexico would in no way affect the right of the United States to recover and utilize those waters north of the boundary.

In the opinion of United States engineers, the Mexican pumping program would draw groundwaters from the United States and affect both present and future development in the United States. The United States could, by the installation of additional wells on its side of the boundary, offset Mexico's pumping of United States groundwaters by intercepting most of the flows before they reach Mexico. It would seem preferable for both countries to reach an accord by which each Government would agree to locate wells and restrict its pumping in border areas -- whether on the San Luis Mesa or elsewhere in the Colorado River Basin -- so as not to affect the other adversely.

IV. RECOMMENDATIONS

A. General Nature of the Solution

It is recommended that a negotiated rather than an adjudicated solution be sought to the salinity problem with Mexico. The differences among legal and technical experts are so deep on a variety of questions relating to the problem that resort to adjudication would delay a solution for a prolonged period. Such a delay would be decidedly to the disadvantage of the people who are directly affected. Moreover, there is no certainty that the ultimate judgment would be as satisfactory to either side as a solution worked out between the two countries through friendly conversations over the next few weeks or months. Mexican officials with whom the salinity issue was discussed in November agreed that a friendly,

negotiated solution should be sought and emphasized the importance of prompt action. A negotiated solution accords with the approach taken so successfully in resolving border issues between the United States and Mexico in recent years.

It is obvious from the results of the systematic and detailed study which the Task Force has given to the salinity problem over the past four months that a permanent solution to the problem cannot be achieved immediately or without significant costs in water or money or both. The solution recommended below is divided into two stages -- interim and permanent.

In the interest of future development in the Colorado River Basin and in other river basins -- both in the United States and in Mexico -- the proposal given below goes beyond the narrow problem of the salinity differential as it exists today to include recommendations which would provide additional water quality and water use benefits on both sides of the border.

B. The Interim Solution

The following are the principal elements of the recommended interim solution:

1. Continuation of delivery of a total of some 120,000 acre-feet of water from Yuma Mesa pumping and Imperial Dam storage in substitution for a like amount of Wellton-Mohawk return flows, as under Minute No. 241, until water from Coachella salvage becomes available, or the permanent solution can be implemented.

2. Relocation and lining of a portion of the Coachella Canal in California under a cost-sharing arrangement between the Federal Government and the Coachella Valley County Irrigation District to salvage some 130,000 acre-feet of water per year for temporary Federal use in an interim solution.

The Coachella Canal branches from the All-American Canal and conveys water from Imperial Dam and the latter canal to the Coachella Valley for irrigation. The District and the appropriate authorities of the State of California have expressed their concurrence in the use by the United States of the water which could be salvaged and in the reduction of diversions to the Coachella Canal by a like amount until California's Colorado River diversions are reduced to 4.4 million acre-feet annually -- that is, most likely until the Central Arizona Irrigation Project begins diversions, which will not be before 1982. It is estimated that the relocation and the lining of a portion of the canal could be completed so that 130,000 acre-feet of water would become available annually by 1976 or 1977.

3. Steps to reduce the irrigated acreage at Wellton-Mohawk to as near 60,000 acres as proves practical under an incentive program.

The purpose of this action, together with steps to increase the irrigation efficiency on irrigated lands at Wellton-Mohawk described below, would be to reduce both water diversions to Wellton-Mohawk and drainage from Wellton-Mohawk by at least 40,000 acre-feet -- and more if found practical -- by 1978. Reduction of the drainage would reduce the financial cost of the desalting plant which is the core of the permanent solution and also the water cost resulting from substitution for the brine effluent from desalting.

The Gila Reauthorization Act of July 30, 1947 (61 Stat. 628) limited the Wellton-Mohawk Division of the Gila Project to "...approximately seventy-five thousand irrigable acres of land, or such number of acres as can be adequately irrigated by the beneficial consumptive use of no more than three hundred thousand acre-feet of water per annum..." Within that limit 61,058 acres of valley lands and 13,664 acres of mesa lands have been designated as irrigable.

Within these lands are 6,905 acres of State and Federal lands -- 6,096 acres in the valley and 809

acres on the mesa. Some 1,275 acres of the State lands have been developed by private parties under State leases. Similarly, 330 acres of Federal lands are leased to private parties.

The proposal is to retain these lands in Federal and State ownership and terminate the existing leases.

In addition to the State and Federal lands there are approximately 3,200 acres of private lands on the mesa and 3,000 acres in the valley not yet developed, even though they have been paying project assessments since the early 1950's. The proposal further is to seek legislation authorizing the Secretary of the Interior to purchase from these private landowners their equity to project water rights. It is estimated that with modest incentives the District's irrigable acreage could be limited to 65,000 acres, of which 53,000 acres would be in the valley and 12,000 acres on the mesa. With this limitation it is anticipated that the future irrigated acreage in any one year would remain at approximately the present level. With increased incentives it is estimated that the irrigable acreage could be reduced to 60,000 acres of which 50,400 would be in the valley and 9,600 would be on the mesa.

Discussions between Department of the Interior officials and representatives of the Wellton-Mohawk District indicate that a program along the above lines is acceptable to the latter.

4. Maximum practical efforts to improve Wellton-Mohawk District on-farm irrigation efficiency, as worked out cooperatively among the Departments of the Interior and Agriculture, the Environmental Protection Agency and the District.

The principal purpose of improving on-farm efficiency at Wellton-Mohawk is to reduce the drainage and thus the financial and water costs of desalting. Improved efficiency will also conform to the spirit of the Federal Water Pollution Control Act.

In 1971, on-farm efficiencies (the ratio of the quantity of water consumptively used to the quantity delivered to farms) were 35 percent on the 9,660 acres of mesa lands in the District and 68 percent on the 51,500 acres of valley lands in production, yielding a District efficiency of 58 percent (the consumptive use divided by the water diverted at the Wellton-Mohawk turnout, expressed as a percent). The District agrees that, through better water management, efficiency can be increased at minimal cost to approximately 63 percent by 1978, when it is proposed to bring a desalting plant into full operation.

It may be possible to improve District efficiency further by 1978, or in ensuing years, through additional improvements in management involving some capital costs and through adoption of new irrigation systems capable of delivering frequent low volume applications of water. Not enough is known at this time to arrive at reasonable estimates of what further improvement in efficiency may be practical by 1978 or in immediately ensuing years, or of what the costs of these improvements may be. Therefore, it is recommended that a working group, including representatives of the Department of the Interior, the Environmental Protection Agency, the Department of Agriculture, and the Office of Management and Budget, be established to determine and implement to the extent feasible, in conjunction with the Wellton-Mohawk Irrigation and Drainage District, means of further increasing efficiency; and to provide annual reports beginning January 31, 1974 of progress made and updated estimates of what is practical in terms of drainage reduction.

C. The Permanent Solution

The recommended permanent solution is desalting of Wellton-Mohawk drainage by a membrane process desalting plant to be in full operation by 1978.

Under the assumptions of 60,000 acres under irrigation, at a District efficiency of 63 percent, it is now estimated that Wellton-Mohawk drainage would average 175,000 acre-feet with a salinity of 3050 per year by 1980. A membrane process desalting plant would be designed for

the projected 1980 conditions, although the facilities would become operational in 1978. For the first two years of its operation, the desalting plant would be slightly underdesigned unless greater Wellton-Mohawk efficiency were achieved than estimated at the time of design. The plant would be designed using today's technology which is capable of recovering 70 percent of the feedwater at 280 parts per million salinity. The capital and operating costs of the desalting plant would vary substantially with the amount of water to be desalted and the method of brine disposal. Every effort would be made to keep the capital and operating costs to a minimum.

Although the plant would be designed for 70 percent recovery, the recovery rate could be increased as more advanced technology became available.

The plant itself would materially assist in the development of desalting technology. The information and experience gathered through it would be of value in solving salinity problems predicted to occur in the future elsewhere in the United States and Mexico.

Should an efficiency of substantially higher than 63 percent be achieved in the Wellton-Mohawk District, adjustments could be made in the desalting plant in the design stage, which is expected in any event to carry well into 1974, or even in the construction stage since a desalting plant of the size contemplated is composed of a number of discrete units in series. If further substantial improvements in Wellton-Mohawk efficiency were achieved after 1978 and not offset by underdesign, unneeded units of the desalting plant might be moved to other desalting sites in the United States.

The result of the above-described interim and permanent actions would be that by 1978 the salinity of Wellton-Mohawk District drainage water would no longer affect Mexico. With the removal of the effects of Wellton-Mohawk drainage, Mexico should be able to use without difficulty the drainage, salvage, and other such waters as the United States has been delivering and expects to deliver in the future as a part of Mexico's treaty allotment.

In return for the above-outlined actions or initiatives, the United States would expect from Mexico acceptance of the solution as a permanent and definitive settlement of the legal and technical issues raised by the salinity problem.

D. Allied Actions

For the reasons indicated in the discussion of principal issues, the following additional actions are recommended in the interest of orderly and progressive development in the Colorado River Basin and other river basins in both the United States and Mexico.

1. An agreement between the United States and Mexico on groundwater pumping.

2. Full implementation of the proposed arrangements which are being worked out for exchange of information and technical expertise on desalting and geothermal development.

3. Additional arrangements for exchange of information and technical expertise on farm management and irrigation practices in the Colorado River Basin. It may be desirable to provide for such exchanges under the aegis of the International Boundary and Water Commission.

4. Timely decisions in regard to implementation of specific actions to control salinity increases in the Colorado River Basin.

5. Continuation of efforts to achieve augmentation of the Colorado River.

Senator CHURCH. Thank you very much, Mr. Secretary. I have a few leadoff questions. First of all, General Brownell.

The desalting plant will produce high quality water and concentrated brine. As I understand the agreement, the brine will be conveyed to the Gulf of California and not charged against Mexico. I think that that brine will, if I have the figure correctly, amount to about 50,000 acre-feet annually. My question is, under the Colorado River Compact and other laws of the river, which state or states will be charged with the depletions attributed to the brine?

Mr. BROWNELL. The view that I have on that, Senator, is that—and I believe the legislation makes this explicit—that it is a national obligation and that as of this moment it would be impossible to say X State or Y State or Z State. It is contemplated over the forthcoming years there will be an intensive program of augmentation so that it is expected that the Federal Government will have enough success as a result of these studies to produce the additional water and fulfill its national obligation. So the question of dividing it up among the States would never as a realistic matter arise.

Senator CHURCH. This augmentation will occur within the Colorado River Basin?

Mr. BROWNELL. That is correct.

Senator CHURCH. That is the thinking of the administration?

Mr. FRIEDKIN. That is the plan, yes.

Senator CHURCH. It is not contemplated, then, that this augmentation will be achieved through an interbasin diversion of water?

Mr. FRIEDKIN. No, sir; that is not contemplated.

Senator CHURCH. Ambassador Bowdler, the work that is involved in this agreement and in the projects to be constructed under the administration's bill to implement the agreement are almost entirely within the United States. And that is work which would customarily fall within the Interior Department's jurisdiction. Would you comment on the administration's recommendation that the State Department be the lead agency? Is this really necessary?

Mr. BOWDLER. Mr. Chairman, I think it is, and the reason is the following: That the works to implement Minute 242 are concluded under the 1944 Water Treaty and that treaty says that the works on or along the border are the jurisdiction of the Commission, the International Boundary and Water Commission, or the respective sections.

As you indicated, these works are along the border, one of them actually crosses the border. Hence, I think it is logical that the jurisdiction for carrying out these projects would be under the State Department, of which the IBWC is part.

At the same time the 1944 treaty contemplates that the national sections will use the services of public and private organizations to carry out the construction and the intent here is to rely heavily on the Department of the Interior for the carrying out of these works.

Senator CHURCH. Well, the existing bypass, the works for carrying out the previous agreement between the two counties, were built by Interior, were they not?

Mr. BOWDLER. May I refer that question, Mr. Chairman, to the Commissioner who is more familiar with that?

Mr. FRIEDKIN. Yes, sir, they were. Of course, those works were all in the United States.

Senator CHURCH. These works are all in the United States except for the brine conduit, isn't that true?

Mr. FRIEDKIN. That is true, Mr. Chairman.

Senator CHURCH. You see, when the administration first sent out its request for authorization of the $95 million plus, that request was contained in the State Department authorization bill. It was stricken from the authorization bill by both the House and Senate committees on the grounds that it properly belonged within the jurisdiction of the two Interior Committees. So I think that thus far the Congress has made a determination that the funds should be funneled through the Interior Department and not be part of any State Department authorization. Would this decision prove complicating? Would it entail serious problems of adjustment as far as the administration is concerned?

Mr. FRIEDKIN. Well, it is preferable, from the administration's standpoint, as stated in the bill, to handle this through the State Department. It could, indeed, be handled through the Interior, as a matter of fact, if it were handled by the State Department, as Mr. Bowdler outlined, the bulk of the work of construction and design would be done by Interior.

Senator CHURCH. The State Department communication which transmitted the proposed bill mentions grants to Mexico for rehabilitation on the agricultural lands in the Mexicali Valley. I think some reference was made to that in testimony this morning. These grants are not included in the proposed bill or in any other bill which is now before the committee for consideration. Is the department prepared to make recommendations concerning these grants, or is this something that is being left to the future?

Mr. BOWDLER. Mr. Chairman, that is being left to the future. Whatever is done in the Mexicali Valley will have to be studied first by the Mexican Government. It may be engaged in that task now, but has not completed its studies, and we don't know what may be involved in this particular activity. Therefore, it remains in the future.

Senator CHURCH. Secretary Horton, I would like to ask you a question. This desalting plant is the largest ever envisaged, 50 times the size of any desalting plant using the reverse osmosis process that is now in existence. Are you satisfied that the technology now exists to make such a plant of such size feasible?

Mr. HORTON. Mr. Chairman, I think the figure is 30 rather than 50. It is only a technicality. I think the Department is well satisfied with the professionalism and progress being made by Mr. Pat O'Meara, the Director of OSW, and members of his staff. I think while the plant itself will be built by industry under contracts with the Federal Government, that we have the professionalism in OSW and the Bureau of Reclamation to assure that the design features we want will be built into the plant.

Senator CHURCH. Isn't this a new technology, this reverse osmosis? I mean it is relatively new.

Mr. HORTON. It is, but it has been studied and perfected by the Office of Saline Water. Prototypes have been built.

Senator CHURCH. Your Department has practically terminated the special research program for desalization of water. That is to say, the request for funds has all but terminated the research program. Are you satisfied that sufficient work has been done in this field so that it is no longer necessary to carry on a program of the type authorized?

Mr. HORTON. The cut back in funds for OSW can be viewed as an indication of the high degree of success which the program has had in designing the various saline investigations that they have actually undertaken. I think we are very well satisfied that a number of the programs they have completed are available to industry for their adoption. We are continuing work, as you know, in various membrane technologies, freezing technologies, and what not. But the funds has been cut back.

Senator CHURCH. Yes, they have been cut back to the point where it seems to me there is little left but some high salaries.

Senator BIBLE. And travel.

Senator CHURCH. And travel. And I think that this committee, in view of the decision that has apparently been made by the administration, ought to see that the program is terminated entirely. That is my personal view.

Where are you going to get the power for the desalter?

Mr. HORTON. I think that is an excellent question. In writing the legislation, working with the Department of State and others, we thought we could leave the decision, the specific decision on where the power itself would come from to a later date. We anticipate that it will require about one-tenth of 1 percent of the present power requirements of that region. We believe power will be available in the future.

We believe it should not affect the present uses of preferenced customers of the Bureau of Reclamation, and I think we have indicated that in both our transmittal letter and the legislation.

Senator CHURCH. In other words, you don't know where the power is going to come from?

Mr. HORTON. At this point, we don't.

Senator CHURCH. You just think the benevolent future will furnish it?

Mr. HORTON. We are sure we can find a source of power, if it amounts to only one-tenth of 1 percent of that being used now. We are sure while the plant is being constructed it can be found.

Senator CHURCH. You expect that power to come from Federal sources?

Mr. HORTON. It could. It could well come from private sources.

Senator CHURCH. Would it make a difference in cost?

Mr. HORTON. It would make a difference in cost certainly, but I think we wanted to assure the present preferential customers of such plants that their present power was not being endangered by the construction of a Federal desalter.

Senator CHURCH. So really you are just pledging the Government to the quest for this power without interfering with established rights of existing power sources?

Mr. HORTON. That is correct.

Senator CHURCH. With reference to the Coachella Canal, you testified that there is present authority to do the lining work under the general Rehabilitation and Betterment provisions that exist in law. I question seriously whether this is the case, because this is a very big and expensive project, $21,450,000, and it involves what, lining of 45 miles, is that it?

Mr. FRIEDKIN. 49 miles.

Senator CHURCH. That is a big chunk of new construction to come within the category of rehabilitation and betterment, I would think.

Mr. HORTON. Mr. Chairman, we have examined that. The authority for relining the canal is Rehabilitation and Betterment Act passed by the Congress of October 1949. It is a rehabilitation of an existing canal. It would be lining the canal. While I agree that $21 million is a large amount of money nonetheless it is the judgment of the Department and Administration that the authority has been provided by the R. & B. Act.

Senator CHURCH. How about the peculiar repayment arrangements? Is that within the contemplation of the Rehabilitation and Betterment Act?

Mr. HORTON. It is our judgment, Mr. Chairman, that it is.

Senator CHURCH. The Committee, I think, should look into this very carefully because we don't want to stretch existing law so far that major water projects in the future can be taken without need for further authorization of Congress. I think we want to be careful to preserve the congressional prerogative in matters of this kind.

Mr. HORTON. If I could comment, we agreed with you, and in our legislation we have sought authorization from the Congress for the non reimbursable sections of that one provision.

Senator CHURCH. Yes, well, we will look into this with the help of staff and try to make the proper determination.

Senator Bible.

Senator BIBLE. Thank you, Mr. Chairman.

I have several questions that I would like to ask, coming right down to the heart and guts of the problem. I would like to know what the total overall Federal cost is of the administration bill, the one that you have testified to, and I don't know who is the—maybe Commissioner Friedkin is the correct witness on that.

What is the total overall Federal price tag on the administration bill?

Mr. FRIEDKIN. This would be the amount that is shown in S. 3094 of $94,575,000 plus $21,450,000 for the Coachella Canal plus $5 million for the Painted Rock Reservoir lands, if needed, and that would be $120,950,000.

Senator BIBLE. That's the Federal cost total for the administration proposal?

Mr. FRIEDKIN. Yes, sir, assuming we have to buy the Painted Rock lands.

Senator BIBLE. What is the total price tag of the bill that was introduced by Senator Fannin and myself, and very similar to the bill introduced by Senator Tunney on behalf of himself and others. What is the total Federal price tag of that legislation?

Mr. FRIEDKIN. For title I?

Senator BIBLE. For everything in the bill.

Mr. HORTON. Senator Bible, in response to your question it would include $34 million more dollars for the protected pumping.

Senator BIBLE. That is over and above the $120 million?

Mr. HORTON. That's above the $120 million. In addition to that would be $121.2 million for the four upper basin title II water quality projects.

Senator BIBLE. What was the $34 million?

Mr. HORTON. Protective pumping.

Senator BIBLE. And then you take $120 million, $34 million for protective pumping and then another what?

Mr. HORTON. $121.2 million.

Senator BIBLE. For the four projects in title II.

Mr. HORTON. Yes.

Senator BIBLE. That is a total, roughly, of $275 million, is that right?

Mr. HORTON. We have come up in making a talley with a figure of $274,700,000.

Senator BIBLE. That is close enough to $275,000,000. I suppose we might have that much inflation between now and then, I am not sure.

I understood you to say you base these estimates on 1973 price levels. Why don't you base them on 1974 price levels? It's gone up 15 percent since last year, hasn't it, or has it?

Mr. HORTON. I think perhaps we should have done that, Senator Bible. When we were calculating that last year we only had 1973 prices available.

Senator BIBLE. So it is reasonable to assume that it would be higher now. It isn't going to go down, is it?

Mr. HORTON. Not in any way I can perceive at this time.

Senator BIBLE. I wish you could perceive it, but I doubt if you can. Tell me, if this committee in its wisdom and the Congress in its wisdom should approve either the Fannin-Bible bill or the Tunney bill, on which I am a cosponsor along with a good many others, in preference to the administration bill, what would your recommendation be? Assuming it passes the Congress, what would your recommendation be to the President of the United States? Maybe that is addressed to the representative, my old and dear friend, former Attorney General Herb Brownell. Whoever wants to handle the question. I am interested in what the recommendation would be as to whether the bill would be signed or whether it would be vetoed. We are used to the vetoes. We have had pretty good experience with them. I don't know whether it is good experience, but we have had a lot of experience.

Mr. HORTON. Senator Bible, you were looking directly at Ambassador Bowdler, weren't you, on that question?

Senator BIBLE. I was looking at my old friend, former Attorney General Brownell. I don't know who has the ear of the President on this problem. Don't tell me Roy Ash!

Mr. HORTON. You may be asking us a question to which we cannot have an answer.

Senator BIBLE. Why don't you both try?

Mr. HORTON. Then I will certainly defer to protocol and ask Mr. Brownell.

Senator BIBLE. You are a diplomatic and well trained lawyer.

Mr. BROWNELL. My view on it is this, Senator, that, of course, title I, plus the protective pumping item, are of direct concern to my part of the job here.

Senator BIBLE. I know you recommend that because it is your bill. How about the part of the bill that is not in your paper?

Mr. BROWNELL. On the four projects, we have taken this position. The first meeting I had with the Committee of Fourteen, when this study started, I said that I was never going to recommend, and I think I carried out my promise, anything in the international agreement which would adversely affect the orderly development of the national resources of the Colorado River Basin. We have been very careful in our negotiations with Mexico and the final agreement I believe reflect that.

I think the question of eliminating the salinity in the Upper Basin is a very important one, but I cannot honestly say to you that I have studied these four particular projects to know what priorities there should be, what the costs reasonably should be, or what the time schedule should be. But I have no hesitation in saying that the overall program for eliminating in an orderly way the salinity in the Upper Basin is of real importance to the people of the Western State and of indirect benefit to the Mexican Government.

Senator BIBLE. Well, with that optimistic and hopeful sign, I think I read into that that you would not recommend a veto if the bill was passed. Do you agree with that, Mr. Secretary?

Mr. HORTON. Senator Bible, as in all instances when the administration comes up with one piece of legislation and the Congress in its wisdom alters or changes it, we can't give you a definitive answer until we see how you change it, what the price tag is.

Senator BIBLE. You gave me the price tag. It is your price tag. You said $275 million. That is an add on of $21 million.

Mr. HORTON. Yes, sir; it is also our understanding that the House committee has made alterations to the projects proposed under title 2. We would have to reexamine the total price tag as it comes out of conference back to the administration.

Mr. BROWNELL. Could I add one sentence or two to what I said? I do want to emphasize to the committee the importance of having the international portion of this bill, the authorization enacted at the earliest possible date.

Senator BIBLE. With which I agree.

Mr. BROWNELL. It would be terribly important, in my view, to have it, if it can be done, by July 1 of this year. Therefore, I would hate to see any additions to the bill which would be so controversial that they might affect that time schedule.

Senator BIBLE. I can't believe that taking care of our own in the United States of America would complicate it so much. I think it is our responsibility to take care of those people in the West that have the same salinity problem that is inherent in the international phase of it. I have always felt that charity begins at home

and my votes on foreign aid have repeatedly shown that. And I am mighty proud of my votes on foreign aid because I think they were correct votes. Other people have different views.

I guess I assume from your answer that you are highly optimistic that the whole bill would be fine if we passed the Fannin-Bible bill, Mr. Secretary. Is it fair to say that?

Mr. HORTON. I don't know whether to be optimistic or pessimistic. I am afraid I would be right in the middle.

Senator BIBLE. This wouldn't be the first time you would be right in the middle. I want to get as definitive an answer from you as I can. Don't tell me you have to depend on Roy Ash?

Mr. HORTON. I didn't say we have to depend on Roy Ash. I think we can realistically expect that there would be voices in the administration that would recommend a veto. Other voices would not recommend a veto. I don't think we can determine what the President's answer would be.

Senator BIBLE. He is basically a westerner. I think he came from California. He has got a real grasp of the problems of the Colorado River. I am sure he has gone through them just as much as I have. We certainly have to take care of our own people in the Colorado, whether it is in the Upper Basin States or the Lower Basin States. I would hope that if we do march up the hill, we don't do it futilely. That's what I am trying to say.

I wish you would give me your considered judgment, I see you have Pat O'Meara sitting in the back of the room and you phased out his operation almost completely both in New Mexico in the brackish waters and Wrightsville Beach in North Carolina. You have appropriated so few dollars there that I think all they have is the Washington staff, but are you satisfied with—I am repeating what Senator Church asked you, that—are you satisfied that the technology is now at that point where you can go into the largest desalting plant by many times in the entire world and tell us that it will work?

Mr. HORTON. I have been assured by Mr. O'Meara that the technology does exist sufficient to construct the type of desalter the administration and Mr. Brownell are proposing. This is not to say it can't be refined.

Senator BIBLE. I think everything can be improved. Politicians can be improved and engineers and lawyers and many others. But I think I direct this question to General Brownell.

Just by way of refreshing my memory. I represented the State of Nevada when the Mexican Treaty was before the U.S. Senate. My predecessor, Pat McCarran, took a very, very dim view of it as I think the two Senators from California did, and they may very well be the only ones who made dissenting votes on the ratification of the treaty. My memory is a little hazy on that. Tell me this, General, what does the treaty that was ratified by the U.S. Senate in 1944 provide as to the 1,500,000 acre-feet of water that the United States was obligated to deliver to Mexico? What is the way it finally came out, insofar as quality was concerned?

Mr. BROWNELL. The treaty itself was silent on that point, Senator. The question came up in the debate both in the U.S. Congress and the Mexican Congress, and everybody took a guess as to what was

meant by the fact that this question was not explicitly covered in the treaty and contrary views were taken in the two Houses, but the fact of the matter remains that there was no explicit reference to the quality of water in the 1944 treaty.

Senator BIBLE. Thank you.

Tell me this, in reaching this agreement that you are talking about now, minute 242, was that submitted to the U.S. Senate for its ratification?

Mr. BROWNELL. The 1944 treaty; yes, sir.

Senator BIBLE. Not the 1944 treaty, the agreement we are talking about now?

Mr. BROWNELL. No, because the treaty itself provided for this mechanism for interpretation of the treaty.

Senator BIBLE. You go back to the 1944 treaty, and it was ratified by the U.S. Senate?

Mr. BROWNELL. Right in that treaty it is provided that the interpretation of the treaty should be done.

Senator BIBLE. That is why minute 242 did not come back to the U.S. Senate for customary ratification of a treaty?

Mr. BROWNELL. That is correct.

Senator BIBLE. I think I have only one further question and maybe this should be properly asked of the representative from Interior because I am a little worried, as the chairman is, about where the burden of supplying this power is coming from. I don't know that your answer is completely responsive on that, Mr. Secretary.

Mr. HORTON. Senator Bible, it was as responsive as we could be at this point in time. We haven't located that source of power now.

Senator BIBLE. I would like to have comments of the various States involved. My own State of Nevada has the executive spokesmen and the administrator of the Colorado River Commission here.

If this legislation moves forward as I think it should, I want to be sure that we are not going to jack up the power rates in my State of Nevada and I would like the same response from the representative of each of the States that have any power allotments. Hoover Dam, or any of the other dams on the river, Glen Canyon or Parker or any of the others. So I would solicit those views from the representatives who are still to speak on these points.

Mr. Chairman, I think that is all I have at this time. This is a complicated subject. I completely agree with General Brownell and the others that we should certainly come to grips with the problem at an early date.

Senator CHURCH. Thank you.

Senator Fannin.

Senator FANNIN. Thank you, Mr. Chairman.

Gentlemen, it is certainly a pleasure to have you all here today, and I realize it is a very complex problem, but an extremely important one.

General Brownell, we did get you back to our State for a while and we formally count you as one of our citizens. We are very pleased that you were handling this matter.

Mr. BROWNELL. Thank you.

Senator FANNIN. In some of the decisions or some of the conclusions you have made, I really am concerned, especially when you

talk about what Senator Bible was so adequately covering, and that is the basis upon which we construe the equities involved when we take into consideration what commitment our Government is making for all the Basin States. Would you agree with the statement that we have an obligation, the Federal Government has an obligation to the states of the Basin? And I think you recognize that and agree with it and, of course, we could go right back in history as to what created this problem and what has happened in the past, and the developments that were undertaken as a result of the problem. But you do object to title II. As you state, within the concept of this particular bill, would you support title II if it were a separate bill?

Mr. BROWNELL. I would have to make the same answer, I think, as far as it is applicable and that is that this was not directly within my bailiwick and I do not know enough of the details of the specified project or projects to be able to say when the work should be done or in what order the projects should come, or what the reasonable cost would be, so on that I am not going to be able to give you a very definitive answer.

Senator FANNIN. I think perhaps we will direct the question to Secretary Horton. I just feel that it is so vital that we go forward together and here we are taking into consideration the Coachella project. I think—I feel it is a part of the project and should be handled on that basis.

Mr. Ambassador, the State Department's comment on S. 2940 recommends against authorization of a wellfield in Arizona to counteract the effects of groundwater pumping which is already taking place in Mexico. Yet the agreement in Mexico recognizes that two countries should have equal rights to pump 180 acre-feet per year within 5 miles of the border. Why do you propose the authorization of wells to implement the rate of U.S. groundwater?

Mr. BROWNELL. The Minute 242 does not require that particular project at this time. I think from what the experts tell me, further study needs to be carried out on this whole problem of underground water management and in view of that our position is that we should hold upon any implementation of that particular thing until that study is made and hopefully we can go ahead with this piece of legislation in order to meet our obligations with Mexico to begin the process of implementation by the 1st of July of this year, leaving the specific project to which you speak for further study and action in the future.

Senator FANNIN. Mr. Ambassador, the EPA has already approved and stated this salinity program must go forward. We have perhaps more studies, more studies have been made on this particular problem than on any of the other matters that are involved in the overall program or in this bill. We have several studies. I can recall years ago when we were up against this problem and making studies on it, complaining about it, and still here we are now taking other action that wasn't even under consideration in those days, so I can't agree we should continue on studying. We get in trouble just going ahead and letting this water go just because we are pumping, let it flow into Mexico. Of course, there they have their pumps going. I

don't see why it isn't fair to have pumps going on this side of the line.

Mr. BROWNELL. May I ask Commissioner Friedkin, who followed this very closely, to answer this technical question?

Senator FANNIN. Yes, sir.

Mr. FRIEDKIN. You are correct that Mexico is now pumping, we are not, except in very small quantities. Also, you are also correct that considerable study has been made of this on the U.S. side. We do know generally the efforts, but there are two considerations within the Department which suggest deferring the study. One is to gain more experience, to learn more about it, more details of the area. The other is to gain further study as far as the overall comprehensive agreement along the boundary is concerned. These are matters of opinion and judgment and it is the Department's view that it would be better to defer.

Senator FANNIN. Mr. Commissioner, I realize your dedicated service of long tenure in this activity, but I am just afraid we are being influenced in what we must do to take care of Mexico. I have great concern in taking care of the United States and taking care of our people. I don't see that we should have irreparable damage come about for U.S. citizens just to allow the citizens of Mexico to benefit by it. We certainly can't wait very long on this without really being in serious difficulties.

Mr. FRIEDKIN. I agree with you, Senator.

Senator FANNIN. Mr. Ambassador, one thing I think you have a misimpression about is as far as when we received information regarding the administration bill. I would like to correct that because when we introduced S. 2940 we did have information regarding the draft bill that was being introduced, that was going to be introduced by request of the administration, so we did have that information available to us and we know your bill did not recognize, the administration bill did not recognize the problem of the natural runoff throughout the Basin States, and that was our natural consideration in what we have done. That is exactly why S. 2940 includes the central program. In effect, you are saying the State Department encourages us to authorize funding to resolve salinity problems for Mexico but does not authorize funding for resolution of this problem for the Basin States. You ask for an open end to the appropriation to accomplish the terms of the treaty. How can you justify such a policy that denies U.S. citizens equal protection against salinity?

You are advocating an open end. You are talking about what can be done later in Mexico as far as alleviating their problem, and I agree we do want to assist the Mexican Government, we want to give advice and counselling and utilize our technology, but at the same time we have a greater obligation to try to help our own people, don't you agree?

Mr. BROWNELL. Sir, I agree. I was confining my remarks to the desirability of implementing Minute 242, our obligation with Mexico, within the time frame specified in that Minute. That is not to say that there are not other needs in the Colorado River Basin. I am not qualified to pass on those, but they obviously should be stud-

ied and I think that the Department of Interior is the best one to comment on the desirability, the time schedule for moving ahead on that type of activity.

Senator FANNIN. But the State Department, as I understand it, is making the recommendation as far as what we will do to assist as far as the Mexicali area and the irrigation area, as far as drainage is concerned, is that right? Isn't the State Department making the recommendation in that regard?

Mr. BROWNELL. Under Article 7 of Minute 242 we do have certain obligations or two obligations. One is to support the efforts by Mexico to obtain appropriate financing on favorable terms for the improvement and rehabilitation of the Mexicali Valley. Then there is the other obligation to provide on a nonreimbursable basis certain funds for the Valley. But, as I explained earlier, that depends upon what plans the Mexican Government may come up with and may discuss with us.

I think I should point out that title I of your bill, which is roughly equivalent to the administration bill, while focussing on implementation of Minute 242, is also highly beneficial to the Colorado River states in terms of resolving this difficulty that we have with Mexico, and establishing a basis for further development of water resources in the area, knowing that we have a permanent and definitive solution as far as Mexico is concerned.

Senator FANNIN. Of course, what I am saying, Mr. Ambassador, is that we have certain obligations, that is true. Certainly, Mexico has certain obligations as well, and here we are requiring our farmers to install drainage systems—by requiring, they are providing drainage systems, they are Federal projects, Veterans projects. It was started on that basis by the Federal Government.

The problem that came along, the farmers have been compelled just to stay in operation to put in a drainage system and, of course, they have been assisted by the Federal Government.

Here we are in Mexico and we know they have not put forth the same effort as far as a drainage system in the Mexicali Valley is concerned, and this is one of the reasons we are having such great difficulties. The amount of water going in there over the years has been far, far greater than what was obligated under our Treaty of 1944. Of course, we could go into that for a long, long time.

I don't disagree, but we all understand what happened as far as our commitment for that amount of water.

I do thank you, but I agree this is one package program that we should get underway.

Secretary Horton, when do you expect that review will be completed?

Mr. HORTON. Senator Fannin, as I hope is clear, our opposition to the title 2 project is not an absolute opposition. Rather, the thrust of our testimony is that specific decisions should be deferred until the water quality improvement program in the Bureau of Reclamation is a bit further downstream. We have a 10-year program which started in 1972. We are 2½ years into that. We have provided to the best of our ability information to the Congress by way of a status report on where the program stands now. What we

are saying is that we shouldn't be pushed into a series of more or less unilateral off the cuff decisions that might prejudice the full implementation of the total water quality management program that might be available in 1, 2, 3 or 4 years.

The Bureau has just started looking at the different types of control of management steps that can improve the quality of the salinity in the water. Rather than take two, three of these we should look at the total salinity problem in the Basin and make decisions not now, but later.

Senator FANNIN. In the testimony, it is brought out, and you brought it out, too,

> That the Federal Water Quality Commission undertook studies of the Colorado River in the early 1960's, directed at finding solutions to the salinity problem. In December, 1971, the results of these studies were published by its successor, the Environmental Protection Agency, as "The Mineral Quality Problem in the Colorado River Basin." The report's recommendations were similar to those in the Colorado River Board's study but included a recommendation that specific salinity standards and criteria be adopted.

Here we are waiting for the EPA and we have them out in front now, and we are glad of that. But you know why I am concerned.

I will certainly give you credit, Mr. Secretary, for what you have done on the Geothermal Act. Look at the time it took the Department to come to grips with the 1970 Geothermal Act because of a study. Look at the coal leasing policy in the West and the inaction or lack of final decision.

Senator Bible and I and Senator Church, who has been the one who has taken the lead as far as the bill is concerned, worked very hard on it. We have the study, and the study, and the study, and it took a long, long time, and we have talked to you about the problems and we are looking at these problems, and analyzing what we might expect. So I think that what we need is to go forward, and it seems to me a package deal here, and that is what we hope to get through, and certainly Senator Bible and I felt in offering this legislation that that might be the solution.

Thank you all very much.

Senator BIBLE. Might I ask just one more question?

Senator CHURCH. Certainly.

Senator BIBLE. I neglected to ask this question, and it is one, I am sure, Mr. Secretary, that either you are familiar with, or the Commissioner of Reclamation, Mr. Stamm is familiar with.

You say that you obviously are going to have some power source problems to take care of the kilowatt and kilowatt hour needs that are embraced in any of these bills. Have you given consideration to the completion of the DC Power Line from Bonneville to Boulder City Substation? Is that being reactivated, because there is much power in the Bonneville area that could be piped into the Boulder City area in my State to take care of some of the needs in off season periods of time, as it is in California? Is that being reactivated?

Mr. HORTON. Senator Bible, in asking the Commissioner to respond to that, let me indicate that I don't know whether or not we can tell you whether there will be problems when electricity is

needed for the desalter or not. There are a number of proposals for different power systems in the southwest. I think we will have to analyze the situation as we get further downstream.

With respect to your specific question I will ask Commissioner Stamm to respond.

Mr. STAMM. In answer to your question, Senator Bible, yes, that transmission line has been revived and we have established a route to take a new look under today's circumstance as to whether it should be reactivated.

Senator BIBLE. As I recall, if I might just take a moment longer, the reason that it was deactivated is that the power users primarily in the Southwest and primarily in Arizona and New Mexico, didn't see fit to sign the necessary contracts to guarantee payment.

Mr. STAMM. That's correct.

Senator BIBLE. This may be a bit of a new ball game and there may be implementing contracts and sound firm contracts that will permit you to go forward with this. I make it by way of a suggestion.

Mr. STAMM. Yes, sir; and we have called for motion among the potential users of the line to see if their interest in the line has changed.

Senator BIBLE. Thank you very much.

Thank you, Mr. Chairman. I apologize for the interruption.

Senator CHURCH. Senator Haskell.

Senator HASKELL. I don't know who to address this question to, but either Mr. Brownell or the State Department. This concerns the Mexicali Valley. What is the limit of the U.S. Government obligation to restore agricultural land in the Mexicali Valley?

Mr. BROWNELL. I could offer this bit of information on that, Senator, when we first went down on the inspection trips, both on the U.S. side of the border and the Mexican side, we took some advisors from the Imperial Valley with us and they pointed out what proved to be the fact that in addition to the salinity problem as such from the river, that the important part of the improvement of the agricultural product or productivity was development of proper soil conservation measures, the establishment of tile drainage and improved irrigation practices, and we were able to show that with these improved irrigation and soil practices that we could get better productivity on the U.S. side than in Mexico out of the same quality water. And, therefore, it seemed logical that we should include this article 7 in the agreement which is sort of an insurance policy to us that the soil practices and the irrigation practices will be improved in that area and sort of guarantees that this question will never arise again in the future.

The Mexican Government itself has taken the initiative in this matter. They have borrowed funds from international banks to start the program.

We familiarized ourselves with that program and are confident that they are not only willing but anxious to have a well-rounded program to accompany the improvement of the salinity of the water.

Senator HASKELL. I understand, sir. Maybe I don't understand. I started from the premise that we were going to have some monetary obligation, am I correct in that?

Mr. BROWNELL. We don't know how that will develop. There will be several factors. After the Mexican Government has developed their program they will undoubtedly anticipate financially and undoubtedly there will be international banks that participate in the program. We do not know what their requests will be to us. There will be undoubtedly a dollar request. There is no limit expressed in the agreement itself as to what that might be.

Senator HASKELL. This was sort of bothersome to me when the Ambassador read the minute that there were certain nonreimbursable costs and then the United States has agreed to pick up the tab and we don't know what the tab is. That is the only point I am making.

Mr. BROWNELL. I think careful reading will show it must be by mutual agreement between the two governments at the time.

Senator HASKELL. So we have not by signing this minute given a blank check?

Mr. BROWNELL. That is correct, Senator.

Senator HASKELL. The minute provides that the 50,000 acre-feet of brine be charged against the U.S. side and the chairman inquired as to how it would be allocated among the States and, I believe, Mr. Brownell, you said this would come from augmentation of the water in the river. How is that to occur?

Mr. BROWNELL. My understanding is that the Department of Interior has several programs at the present time. They would be better able to comment on that than I, but I do know it is a matter of urgent study in the Department of Interior.

Senator HASKELL. It is very important, of course. Maybe I will ask Secretary Horton that.

Mr. HORTON. I think the two most promising sources that we now look toward for augmentation of the river, first would be our cloud seeding program. It is now not operational. It is still in a scientific investigational stage. We have had some very moderate applications of that of an operational nature. The studies of the Bureau of Reclamation are continuing. There is a good deal of enthusiasm in the Bureau for what seems to be early on very positive results.

The second source of augmentation may well come from geothermal waters.

Senator HASKELL. Which may or may not be saline.

Mr. HORTON. It would require the cleaning up of the salt of the waters from the geothermal pump.

Senator HASKELL. Thank you, Mr. Secretary.

Gentlemen, I would suggest that this is in the area of blue sky so far.

Senator CHURCH. It isn't much above the witch doctor level. I just want to be sure in that connection that as much as I want to help my brethren Senators from the Colorado River Basin secure some program that will assist in the desalinization of the water to be used by the farmers—our own farmers in the area, as well as to meet our treaty obligations to Mexico—that this augmentation should not come from another basin. You see, the present law prohibits any interbasin water transfer studies pending the completion of inventory for water needs in the Northwest and that moratorium, which

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was enacted by the Congress and written into law in 1968, will run until the end of 1978. S. 2940, which contemplates the whole package, the Upper Colorado River Basin part as well as the Mexican part, includes language to the effect that the Secretary shall conduct studies to be completed not later than June 30, 1980, providing for adequate replacement water.

I just want to serve notice that I will seek a modification of that sentence, if in fact S. 2940 becomes the vehicle chosen by the committee to make certain that that provision may not be construed as a later expression of Congress that in any way affects the validity of the moratorium, insofar as interbasin studies are concerned.

Mr. HORTON. Mr. Chairman, I wanted to be very cautious and reemphasize that I carefully eliminated interbasin transfers as a third option, particularly from the State of Idaho.

Senator CHURCH. Thank you very much. I want the record to be crystal clear on that point.

Senator HASKELL. I hope, Mr. Chairman, that later witnesses will address themselves to this problem because the U.S. Government is going to a great deal of expense to help Mexico and remove salinity. The original treaty didn't specify quality, so presumably we are doing a rather generous act, and if the upper basin or the lower basin States are going to be adversely affected, this is going to affect my thinking on the entire project, and I thank you gentlemen, very much indeed.

I thank you, Mr. Chairman.

Senator CHURCH. I have received a statement from Governor Rampton of Utah who requests that it be inserted in the record of these hearings, and also a statement from Senator Moss of Utah relative to the legislation we are considering, and without objection those two statements will be incorporated.

[The statements of Governor Rampton and Senator Moss follow:]

STATEMENT OF
GOVERNOR CALVIN L. RAMPTON
STATE OF UTAH
TO THE
SUBCOMMITTEE ON WATER AND POWER RESOURCES
OF THE
SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
UNITED STATES CONGRESS

APRIL 26, 1974

I HAVE REQUESTED CONGRESSMAN McKAY TO TRANSMIT TO YOU MY VIEWS ON S. 1807, S. 2940, AND S. 3094. ON MARCH 8 OF THIS YEAR, I TESTIFIED BEFORE THE COMMITTEE ON WATER AND POWER OF THE HOUSE INTERIOR AND INSULAR AFFAIRS COMMITTEE CONCERNING H.R. 12165. THIS BILL IS IDENTICAL TO THE ORGINAL S. 2940 AND MY TESTIMONY IN SUPPORT OF H.R. 12165 ALSO APPLIES TO S. 2940.

MY TWO REPRESENTATIVES ON THE COMMITTEE OF FOURTEEN, MR. LAWRENCE AND MR. JENSEN, HAVE ACTIVELY PARTICIPATED IN THE PREPARATION OF DRAFTS OF THE BILL AND IN THE JOINT STATEMENT OF THE GROUP.

BECAUSE OF THE IMPORTANCE OF THIS MATTER, I HAVE ALSO GIVEN MY APPROVAL FOR MR. LYNN THATCHER, WHO HEADS THE ENVIRONMENTAL HEALTH BUREAU IN UTAH, TO SERVE AS CHAIRMAN OF THE COLORADO RIVER BASIN SALINITY CONTROL FORUM - THE STATE-FEDERAL INTERAGENCY GROUP CONSIDERING THE QUALITY OF WATER IN THE UNITED STATES PORTION OF THE RIVER.

I MENTION THIS PARTICIPATION OF THESE TOP WATER OFFICIALS OF UTAH TO EMPHASIZE THE IMPORTANCE WHICH THE STATE OF UTAH PLACES ON THE PROBLEM OF COLORADO RIVER SALINITY AND ON IMPLEMENTING A SOLUTION OF THE PROBLEM.

SINCE THE FIRST ORGANIZED ECONOMIC ACTIVITIES OF MEN IN THE COLORADO RIVER BASIN, IT WAS RECOGNIZED THAT WATER WAS A CRITICAL RESOURCE, THE FACTOR WHICH WOULD LIMIT NEARLY ANY PRODUCTIVE ENTERPRISE. THE UTAH PIONEERS WERE PREPARED FOR THIS SITUATION AND QUICKLY INITIATED POLICIES AND PRACTICES FOR WATER USE THAT WERE COPIED THROUGHOUT THE ENTIRE WEST.

NEARLY HALF OF UTAH LIES IN THE COLORADO RIVER DRAINAGE AND, HISTORICALLY, LEADERS OF THE STATE HAVE BEEN ZEALOUS IN PURSUING AND PROTECTING RIGHTS TO USE WATERS FROM THIS SOURCE. NEEDLESS TO SAY, THE OTHER BASIN STATES ACTED IN A SIMILAR MANNER. THESE NEGOTIATIONS LED TO THE COLORADO RIVER COMPACT OF 1922, WHICH ALLOCATES THE FLOW OF THE RIVER BETWEEN THE UPPER DIVISION AND THE LOWER DIVISION; AND TO THE UPPER COLORADO RIVER BASIN COMPACT OF 1948, WHICH ALLOCATES THE UPPER DIVISION SHARE AMONG THOSE STATES. IN 1956 THE UNITED EFFORTS OF UTAH, WYOMING, COLORADO, AND NEW MEXICO LED TO THE PASSAGE OF THE COLORADO RIVER STORAGE PROJECT ACT, WHICH PROVIDED THE FINANCIAL AND LEGAL MEANS TO BEGIN FULL-SCALE DEVELOPMENT OF THE WATERS ALLOCATED TO THOSE STATES.

ONE CLOUD UPON THE FULL UTILIZATION OF WATER OF THE COLORADO RIVER HAS BEEN THE OBLIGATION FOR WATER DELIVERIES TO

MEXICO. ALTHOUGH THE COLORADO RIVER BASIN PROJECT ACT OF 1968 (PUBLIC LAW 90-537) EXPLICITLY MAKES THIS A NATIONAL OBLIGATION, THE MEANS FOR IMPLEMENTATION PRIOR TO AUGMENTATION OF THE RIVER ARE NOT DEFINED.

THE RECENT WATER QUALITY PROBLEM REGARDING DELIVERIES TO MEXICO, AND THE SOLUTION IN MINUTE 242, NEGOTIATED BY MR. BROWNELL, ENGENDERS MUCH CONCERN TO UTAH. WATER OF RELATIVELY GOOD QUALITY IS NEEDED TO REPLACE WELLTON-MOHAWK DRAINAGE WATER UNACCEPTABLE TO MEXICO. TITLE I OF S. 2940 WILL PROVIDE REPLACEMENT WATER FROM THE DESALTING PLANT AS A PERMANENT SOLUTION TO THAT PROBLEM. TITLE I ALSO AUTHORIZES MEASURES REQUIRED FOR INTERIM SATISFACTION OF THE BROWNELL AGREEMENT.

OF EVEN MORE IMPORTANCE TO THE UPPER BASIN, HOWEVER, IS TITLE II OF THE BILL, WHICH CALLS FOR IMPLEMENTATION OF THE COLORADO RIVER WATER QUALITY IMPROVEMENT PROGRAM. THE NET EFFECT OF THIS PART OF THE LEGISLATION IS TO INSURE THAT LEVELS OF TOTAL DISSOLVED SOLIDS AT SELECTED POINTS ON THE RIVER DO NOT RISE SIGNIFICANTLY. WE FEEL THAT THIS IS ESSENTIAL FOR THREE REASONS:

(1) TO MINIMIZE ECONOMIC LOSSES TO THE LOWER BASIN;

(2) TO LIVE WITH THE REQUIREMENTS OF THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972, AND TO COMPLY IN GOOD FAITH TO THE JOINT RECOMMENDATIONS OF THE 1972 FEDERAL-STATE CONFERENCE AT LAS VEGAS AND DENVER (WHICH INCLUDED EPA); AND

(3) TO INSURE THAT COMITY CONTINUES TO EXIST BETWEEN THE UNITED STATES AND MEXICO.

THE TESTIMONY ON BEHALF OF THE COMMITTEE OF FOURTEEN HAS OUTLINED THE MANNER IN WHICH INCREASING SALINITY RESULTS IN ECONOMIC LOSS TO WATER USERS IN THE LOWER BASIN. THE MOST RECENT ESTIMATES SHOW FROM $200,000 TO $400,000 ANNUAL LOSS FOR EACH INCREASE OF 1 MILLIGRAM/LITER SALINITY AT IMPERIAL DAM. CONGRESS HAS BEEN AWARE OF THIS PROBLEM FOR SOME YEARS, AND PROVIDED THE BUREAU OF RECLAMATION WITH STATUTORY RESPONSIBILITY TO STUDY POSSIBLE SOLUTIONS UNDER FOUR PUBLIC LAWS:

(1) THE COLORADO RIVER STORAGE PROJECT ACT,

(2) THE NAVAJO INDIAN IRRIGATION PROJECT AND SAN JUAN-CHAMA PROJECT ACT,

(3) THE FRYINGPAN-ARKANSAS PROJECT ACT, AND

(4) THE COLORADO RIVER BASIN PROJECT ACT.

THIS STUDY HAS RESULTED IN THE PROGRAM WHICH WOULD BE AUTHORIZED UNDER TITLE II.

THE OBJECTIVE OF TITLE II IS TO IMPLEMENT THE FEDERAL-STATE ACCORD REACHED AT DENVER AND LAS VEGAS IN 1972. THE SEVEN COLORADO BASIN STATES AND THE ENVIRONMENTAL PROTECTION AGENCY RECOMMEND THAT, "A SALINITY POLICY BE ADOPTED FOR THE COLORADO RIVER SYSTEM THAT WOULD HAVE AS ITS OBJECTIVE THE MAINTENANCE OF SALINITY CONCENTRATIONS AT OR BELOW LEVELS PRESENTLY FOUND IN THE LOWER MAIN STEM. IN IMPLEMENTING THE SALINITY POLICY OBJECTIVE FOR THE COLORADO RIVER SYSTEM, THE SALINITY PROBLEM MUST BE TREATED AS A BASIN-WIDE PROBLEM THAT NEEDS TO BE SOLVED TO MAINTAIN LOWER BASIN WATER SALINITY AT OR BELOW PRESENT LEVELS WHILE THE UPPER BASIN CONTINUES TO DEVELOP ITS COMPACT-APPORTIONED WATERS." THE

RESOLUTION FURTHER STATED THAT THE COLORADO RIVER QUALITY IMPROVEMENT PROGRAM, WHICH IS ESSENTIALLY THAT CONTAINED IN TITLE II, OFFERED THE BEST PROSPECT FOR IMPLEMENTING THIS RECOMMENDATION.

THE FINAL REASON FOR PASSAGE OF TITLE II IS OF PARAMOUNT IMPORTANCE FROM A NATIONAL PERSPECTIVE. ALTHOUGH NOTHING IN MINUTE 242 STATES THAT SALINITY AT IMPERIAL DAM WILL NOT RISE APPRECIABLY, IT IS OBVIOUS THAT MEXICO HAS HIGH EXPECTATIONS IN THIS REGARD. WHETHER OR NOT THESE EXPECTATIONS COULD BE UPHELD IN LEGAL ACTION, IT IS CERTAINLY TO THE ADVANTAGE OF THE UNITED STATES TO TAKE POSITIVE ACTION WHICH WILL MAINTAIN GOOD RELATIONS, AND AT THE SAME TIME BENEFIT WATER USERS IN BOTH COUNTRIES. WHILE THE COLORADO RIVER BASIN STATES BELIEVE THAT THE GOVERNMENT HAS MADE CONCESSIONS BEYOND WHAT IS REQUIRED BY THE MEXICAN TREATY, WE ARE INTERESTED IN TAKING A POSITIVE AND COOPERATIVE APPROACH IN THIS MATTER. ALL WE INSIST UPON IS THAT OUR COMPACT RIGHTS TO USE AND DEVELOP THE WATERS OF THE COLORADO RIVER BE PRESERVED AND PROTECTED.

WE TRUST THAT CONGRESS WILL SEE THE CLEAR NATIONAL INTERESTS AND OBLIGATIONS IN BOTH TITLES OF S. 2940 AND ACT ACCORDINGLY.

SENATE BILL 1807 IS ESSENTIALLY THE SAME AS TITLE II OF S. 2940, AND ALSO SIMILAR TO BILLS INTRODUCED IN THE HOUSE AND SENATE IN 1972 AND 1973. ALL OF THESE BILLS REFER TO THE IMPLEMENTATION OF THE COLORADO RIVER WATER QUALITY CONTROL PROGRAM DEFINED IN THE 1972 REPORT OF THE SECRETARY OF THE INTERIOR. UTAH, ALONG WITH OTHER COLORADO RIVER BASIN STATES, SUPPORTED LEGISLATION TO IMPLEMENT THIS PROGRAM IN THE PAST, AND WILL CONTINUE TO DO SO.

SENATE BILL 3094, ON THE OTHER HAND, PLACES RESPONSIBILITY FOR CONSTRUCTION AND OPERATION OF ALL FEATURES NECESSARY TO IMPLEMENT MINUTE 242 OF THE MEXICAN TREATY IN THE HANDS OF THE SECRETARY OF STATE. THERE IS NO PROVISION WHATSOEVER IN THIS LEGISLATION FOR CONTROLLING SALINITY ABOVE IMPERIAL DAM.

AS I STATED PREVIOUSLY, UTAH CAN SUPPORT ONLY SUCH PROGRAMS WHICH TREAT THE SALINITY PROBLEM AS BASIN-WIDE. SUCH PROGRAMS MUST CONTAIN WHATEVER SALINITY CONTROL FEATURES ARE NECESSARY FOR COMPLIANCE WITH FEDERAL LAW WHILE AT THE SAME TIME WATER DEVELOPMENT IN THE UPPER BASIN CONTINUES TO THE POINT OF FULL UTILIZATION OF COMPACT APPORTIONMENTS.

SINCE S. 3094 DOES NOT CONTAIN SUCH PROVISIONS, IT WOULD BE UNACCEPTABLE TO UTAH FOR THIS REASON ALONE.

Calvin L. Rampton
GOVERNOR

STATEMENT OF SENATOR FRANK E. MOSS (D-UTAH)
WATER AND POWER SUBCOMMITTEE

SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE
April 26, 1974

Subject: Salinity Control

Mr. Chairman, it is a pleasure to appear before this Subcommittee in support of a salinity control program for the Colorado River System. Specifically, I am here in support of S. 2940, a bill authorizing the construction, operation, and maintenance of certain works in the Colorado River Basin to control the salinity of water delivered to users in the United States and Mexico. I am a cosponsor of S. 1807, a bill similar to Title II of S. 2940 which would have authorized a program of studies and physical works to reduce the salts entering or concentrating in the river. Two of the physical works would be in Colorado, one in Utah and one in Nevada.

Other witnesses will go into the technical details of how the river became salty, and how the salinity of its waters has detrimental effects upon water users. The problem is one of long standing. Salinity of the river will increase as the remaining very limited water supplies are put to use in this critically water short region of the United States unless a major basin-wide salinity control program is effectuated at once.

This salinity problem per se is not unique to the Colorado River alone. The waters of every river valley where man utilizes the land and water resources show increases in salinity between the headwaters and the river's mouth. The Colorado problem is unique only because its salinity is more acute and remedial measures are mandatory. This stage has been reached because the water resource is very small when compared to the other resources of the river basin. Furthermore, the river's water supply is almost all put to use. The river must serve major parts of seven of our southwest States and the Republic of Mexico.

Members of the subcommittee are fully familiar with the salinity problem with the Republic of Mexico. Let me review it very briefly. The 1944 Mexican Water Treaty contains no explicit statement on the quality of the waters the United States is obligated to deliver. It does provide that a guaranteed one and one-half million acre-feet shall be "waters of the Colorado River, from any and all sources ..." and that "such waters shall be made up of the waters of said river whatever their origin ..." At the beginning of this controversy, Mexico claimed that the 1944 Treaty entitled her to have all of the 1.5 million acre-feet of water delivered with a quality usable for irrigation. More recently, when Mexico discovered that we were planning a salinity control program in the United States, she claimed that the

water quality must be no worse than the quality enjoyed by the last major diversions from the Colorado River in the United States, which is at Imperial Dam in the Lower Basin.

After a meeting in Washington, D. C. on June 17, 1972, the President and President Echeverria of Mexico issued a joint communique in which it was promised that "a permanent, definitive and just" solution to the international salinity problem would be promptly recommended by a special representative to be named by President Nixon. Mr. Herbert Brownell was appointed by the President to negotiate with Mexico with the objective of executing a permanent solution to the problem in terms that would be satisfactory to both countries. On August 30, 1973, Minute No. 242 of the International Boundary and Water Commission was signed in Mexico City by representatives of the United States and Mexico. Title I of S. 2940, the bill that I am supporting, when amended as will be suggested by representatives of the States, will authorize measures to implement this Minute No. 242, or the "Brownell agreement" with Mexico, with a minimum of adverse impact upon the Colorado River Basin States.

Without going into the details of Minute No. 242, I wish to say at this point that I heartily endorse the testimony that will be given by the Committee of 14 which represents the seven States of the Colorado

River Basin and which worked so diligently upon this problem with Ambassador Brownell during his negotiations with the Mexican government.

It is apparent that in Minute No. 242 that negotiations ignored the most important points of advice of the representatives of the Basin States. S. 3094, proposed by the administration, falls far short in a number of significant respects in meeting the salinity problems of the Colorado River and in protecting the Colorado River Basin States against the concessions granted to Mexico in Minute No. 242. Throughout the period of negotiations with Mexico leading to Minute No. 242, Ambassador Brownell repeatedly assured the Colorado River Basin States that no water user within those seven States would suffer any injury by reason of the negotiations or implementation of the agreement with Mexico. I believe that S. 2940, with the amendments which will be offered later, is the appropriate vehicle for insuring that this commitment of the United States to the Colorado River Basin States will be met.

Without a salinity control program, the increases in salinity will affect water users in both the Colorado River Basin in the United States and in the Republic of Mexico. Unless the rise in the river's salinity is checked, it has been estimated that by year 2000 the economic costs will be exceedingly great. High officials of the

Environmental Protection Agency, the Department of State, and the Department of the Interior have made strong federal commitments in favor of salinity control for the Colorado River Basin. The Bureau of Reclamation has established an office of Colorado River Water Quality Control in Denver. This office has prepared a status report on the projects and the studies to be authorized in Title II of S. 2940.

The seven Colorado River Basin States have been concerned for a long time about the trends of rising salinities of the waters. They have actively urged the Bureau of Reclamation to develop its program for salinity control. In response to this prodding by the States, the Bureau has developed the program that is described in its February 1972 report entitled "Colorado River Water Quality Improvement Program." The programs and projects proposed in Ti tle II of S. 2940 originated from Bureau of Reclamation studies.

The enactment of the Federal Water pollution Control Act, Amendments of 1972 (Public Law 92-500) introduced a new factor into the problem of salinity of the Colorado River System. The Environmental Protection Agency has identified salinity as a pollutant subject to the provisions of Public Law 92-500. Unless certain salinity standards can be attained there is real threat to the ability of my State of Utah and the States of Colorado and Wyoming to develop their remaining compact entitlements of water. Inability to utilize remaining water resources could be a catastrophe to the United States in

extracting oil from oil shale resources from the area.

The Colorado River Basin States recently established the Colorado River Basin Salinity Control Forum to cooperate with the Environmental Protection Agency. This Forum, which is comprised of water quality and water resource officials of the seven Basin States, has met on several occasions with officials of the Environmental Protection Agency. Their efforts have been directed toward reaching an agreement on a plan for control of salinity in the Colorado River. The salinity control units and studies to be authorized in Title II of S. 2940 are integral parts of that plan which must be initiated as soon as possible. These units -- the Paradox Valley unit, Montrose County, Colorado, the Grand Valley Unit, Colorado, the Crystal Geyser Unit, Utah, and the Las Vegas Wash Unit, Nevada -- which would meet the early objectives of the Environmental Protection Agency and the seven Colorado River Basin States as expressed in the conclusions and recommendations of the reconvened Seventh Session of the Conference on Pollution of the Colorado River held in April of 1972, under the objective of maintaining salinity in the waters of the river downstream from Imperial Dam at levels no greater than during 1972, it is estimated that lt least 400,000 tons of salts must be removed from the river annually commencing in 1977. The benefits to water users from construction and operation of these four projects would begin to be realized immediately after their

completion.

The administration's bill (S. 3094) is woefully inadequate in protection of the interests of the Colorado River Basin States in continuing to develop their legal compact apportioned uses of water. Furthermore, S. 3094 would provide nothing in the way of control of salinity of the waters of the Colorado River upstream from Imperial Dam for the benefit of United States citizens and for the protection of future water users in my own State of Utah or the other Upper Basin States.

It is interesting to note that the total cost of construction of the four projects in Title II is estimated to be about $125 million with annual operting costs of $550,000; while the cost of implementing Minute No 242 in Title I of S. 2940, or in the Administration's bill, would be about $139 million with annual operating costs in perpetuity of only one feature, the desalting plant, estimated to be $10 million for the benefit of Mexico only. The projects in Title II would remove 500,000 to 600,000 tons of salt from the river system above Imperial Dam, thus reducing the salinity for the benefits of water users in both the United States and Mexico. The Title I measures to implement Minute No. 242 would only maintain a fixed salinity differential between Imperial Dam and the Mexican border, would do nothing to prevent an increase in salinity at Imperial Dam as additional water is put to

use by the Upper Basin energy industries or others, and consequently, would only delay another crisis over salinity with Mexico.

The Bureau of Reclamation and Environmental Protection Agency have been studying potential solutions to the salinity problems of the Colorado River for many years. The time has now arrived to commence work on a major Colorado River Salinity Control program that will benefit water users in both nations. This is the basic reason why I urge this committee to report favorably S. 2940 at the earliest possible date.

Thank you for the opportunity to appear before this Committee in support of legislation that is of such vital importance to Utah and the other six States of the Colorado River Basin, as well as to our international relationship with the Republic of Mexico.

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Senator CHURCH. There are no further questions of the administration witnesses, and it being 12:35 p.m., I suggest that the hearing go over until 2 o'clock this afternoon, and it may not be possible for me to attend the afternoon session, but we will work that out among ourselves, and our first witness this afternoon is Mr. Wesley E. Steiner, the State Water Engineer for the State of Arizona, representing the Governor of the State of Arizona, and the Committee of Fourteen.

Thank you very much.

[Whereupon, at 12:35 p.m., the hearing was recessed to reconvene at 2 p.m.]

AFTERNOON SESSION

Senator FANNIN [presiding]. The hearing will come to order.

The first witness this afternoon is Mr. Wesley E. Steiner, the State Water Engineer for the State of Arizona, representing the Governor of Arizona and in his capacity as a representative of the Committee of Fourteen.

Introduce who are going to be with you this afternoon, Mr. Steiner.

STATEMENT OF HON. JACK WILLIAMS, GOVERNOR OF THE STATE OF ARIZONA, AS READ BY WESLEY E. STEINER

Mr. STEINER. I would like to start, Mr. Chairman, first with the statement of the Governor of Arizona, and then when I get to the presentation of the Committee of Fourteen for the seven States, I would like to introduce the other members of the committee who are here at the table with me.

Senator FANNIN. You may proceed.

Mr. STEINER. Governor Williams asked that I express his regrets that it was not possible for him to be here today for this very important hearing.

STATEMENT OF HON. JACK WILLIAMS, GOVERNOR OF THE STATE OF ARIZONA

Early in 1962, the Governors of the seven Colorado River Basin States were requested by the State Department to reestablish the Committee of Fourteen to advise the State Department and the International Boundary and Water Commission on resolution of the Mexican salinity problem. The Governors responded quickly, each Governor appointing to the committee two experts on technical and legal matters relating to the Colorado River. For 12 years now, the seven Governors have maintained their representation on the committee, have kept in close touch with committee activities, and have unanimously supported all positions taken by the committee for the seven states.

I am here today to advise you of seven State support for S. 2940 and the testimony that will be submitted to you jointly by the seven States through the Committee of Fourteen.

In his report to the President, Ambassador Brownell identified the Colorado River as "undoubtedly the Pacific Southwest's most valuable material resource." That this is fact is beyond question. Without the waters of this great river system, we would have few people, little development and nothing upon which to base our dreams of the future. It is a resource that we respect and treasure.

Any proposal to affect its quantity or quality receives our closest attention. Certainly the issue of the salinity of waters delivered to Mexico from the Colorado River and the new agreement with Mexico involving deliveries and quality guarantees over and beyond treaty requirements are no exception.

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Minute 242 of the International Boundary and Water Commission grants Mexico numerous concessions, but is silent on how they will be achieved and how interests of the States will be protected. That States of the Colorado River Basin, throughout the many meetings with Mr. Brownell and his Task Force and subsequently in meetings with representatives of State, Interior and the Office of Management and Budget, had sought assurances that the costs of these concessions, whether in terms of acre-feet of water, kilowatt hours of energy, or dollars would be born in their entirely by the Federal Government. As the concessions ostensibly have been granted in the interests of international comity, for the good of citizens throughout the Nation, all costs should be borne by the Federal Government.

The administration's bill, S. 3094, stops short in several important respects of providing the protection deemed essential by the States. First, the administration bill lacks essential specifics on the size and efficiency of the features that must be authorized before the quality guarantee to Mexico goes into effect. The administration bill leaves these decisions to the Secretary of State. The size of the desalter, its efficiency, and the lining of the Coachella Canal are important details to the States. We will lose all-important water if the program is not implemented on schedule and with component sizes called for in S. 2940.

Second, it fails to include necessary appropriations for the Coachella Canal lining feature. The administration would fund this program as a part of the Bureau's R. & D. program. Lining of the Coachella Canal is a critical element of the program and must be authorized and implemented on schedule if the States are to be protected. Its fate should not be left to separate action by the Congress.

Third, and very significantly, S. 3094 fails to recognize that the salt problem on the Colorado River is basin wide and that the control program implemented on the river must also be basin wide if present salinities are to be maintained as the Basin States develop their remaining entitlements. There is only one satisfactory way to avoid future discord with Mexico and insure equitable treatment for U.S. users and that is by implementing a program of salt control throughout the Colorado River Basin.

The Federal Water Pollution Control Act Amendments of 1972 require the establishment of salinity standards for all interstate streams. The states of the Basin have joined with EPA in the establishment of 1972 levels of salinity as the objective for the Colorado River, while recognizing at the same time the rights of the Basin States to develop their remaining entitlements in the river. The States and EPA have agreed that the way to accomplish this objective is to undertake the program of control of salt inputs to the river that would be initiated by title II of S. 2940.

Fourth, S. 3094 fails to protect the Basin States against water losses to Mexico resulting from pumping by the Mexican Government immediately across the border near San Luis. The states insisted during negotiations with Special Ambassador Brownell that protection against loss of surface and groundwaters to the Mexican well field be made a condition of any agreement with Mexico on the salinity issue and the interests in the United States be restored to the position they occupied prior to operation of the Mexican well field without cost to the States. Minute 242, instead, provides for a limited pumping war. Mexico agrees to restrict pumping within 5 miles of the border to the capacity of the recently completed well field at San Luis, 160,000 acre-feet per year. In return, the United States agrees to limit its pumping within 5 miles of the border to a similar 160,000 acre-feet per year. Under such an agreement, the only way that State interests can be preserved it for the United States to construct and operate the necessary protective wells within the United States at Federal cost as provided in S. 2940.

Fifth, S. 3094 fails to make adequate provisions for replacement of the reject stream and losses resulting from inoperability of the desalting plant. The administration bill recognizes the responsibility to replace these waters, but ties actual replacement to the provisions of the Colorado River Basin Project Act that recognize the entire Mexican Treaty burden as a national responsibility. It can be argued, however, that these provisions do not become effective until the Colorado River has been augmented in the amount of 2½ million acre-feet per year. It is not reasonable to ask the States to wait for relief on desalting plant processes until the river has been augmented in any such

amount. While it is impossible to forecast at this point in time how this replacement can best be effected, we are optimistic that the studies called for in S. 2940 can provide adequate replacement water at a much earlier than would be possible were it to be part of a 2½ million acre-foot augmentation of the river.

I urge your favorable consideration of S. 3940 and thank you for the opportunity to testify.

Senator FANNIN. That is an excellent statement of the Governor, and I feel his logic is in agreement with what has been discussed previously. If we are going to accomplish the objectives we all have, we must go forward on the overall project. That is certainly consistent with what I feel must be done.

Now, if you want to proceed.

STATEMENT OF WESLEY E. STEINER, EXECUTIVE DIRECTOR OF THE ARIZONA WATER COMMISSION AND STATE WATER ENGINEER, AND CHAIRMAN OF THE COMMITTEE OF FOURTEEN; ACCOMPANIED BY FELIX L. SPARKS, DIRECTOR OF THE COLORADO WATER CONSERVATION BOARD, REPRESENTING THE GOVERNOR OF COLORADO; DONALD L. PAFF, ADMINISTRATOR OF THE COLORADO RIVER COMMISSION, REPRESENTING THE GOVERNOR OF NEVADA; STEVE REYNOLDS, STATE ENGINEER OF NEW MEXICO, REPRESENTING THE GOVERNOR OF NEW MEXICO; TOM CHOULES, ARIZONA; JOHN TEERINK AND MYRON HOLBURT, CALIFORNIA

Mr. STEINER. I appear before you now as chairman of the Committee of Fourteen. With me at the witness table are members of the committee from several of the Colorado River Basin States. I would like to introduce them to you.

At my far left is Don Paff from the State of Nevada, Larry Sparks, State of Colorado, Tom Choules, Arizona. On my immediate right is Steve Renolds of New Mexico, Myron Holburt from California, and John Teerink from California.

Senator FANNIN. We certainly welcome you here this afternoon. We are very pleased to have you, and very pleased to have you participate in this discussion at this time.

Mr. STEINER. While it was not possible for all members of the committee to be here today, it is my pleasure to advise you that the joint statement we will present is fully supported by all 14 members and each of the seven States.

During World War II, in the interest of international comity, the Mexican Water Treaty was negotiated and executed by representatives of the United States and Mexico settling, among other things, the annual obligation of the United States in respect to deliveries of Colorado River water to Mexico. The Treaty requires the delivery of a guaranteed annual quantity of 1,500,000 acre-feet to Mexico, except in event of extraordinary drought, and establishes minimum rates of delivery during the year designed to permit the United States to receive credit for all irrigation return flows expected to enter the river below Imperial Dam.

Even though use in the United States continued to increase and the salinity of the waters delivered rose in the years that followed signing of the Treaty, no serious problems arose concerning deliveries of Colorado River waters to Mexico until late in 1961. Two events occurred at that time, however, to precipitate a formal protest by Mexico, the drainage system for the Wellton-Mohawk Irrigation and Drainage District was completed and went into operation and, at about the same time, storage of river flows in Lake Mead was increased in anticipation of the commencement of the filling of Lake Powell and flows available to dilute agricultural returns fell sharply. For the decade from 1951–60 the flow of the Colorado River at the northerly international boundary with Mexico averaged 4,240,000 acre-feet per year, while for the 1961–70 decade, the flow averaged only 1,521,000 acre-feet per year, a reduction of 2,719,000 acre-feet per year.

The Wellton-Mohawk project, a system of diversion and distribution works for the irrigation of 75,000 acres along the Gila River near its confluence with the Colorado, was authorized by the Congress in 1947, and completed by the Bureau of Reclamation in 1952. Attached is a map showing the relative locations of the facilities of the Wellton-Mohawk project and the programs that would be authorized by title I of S. 2940. Drainage problems soon developed and the project was augmented to include a system of drainage wells and collection system discharging into the Gila River near its junction with the Colorado.

The drainage system went into operation late in 1961, discharging approximately 300 cubic feet per second of waters averaging about 6,000 ppm of total dissolved solids into the Colorado River below the last point of diversion in the United States, but above Morelos Dam, the Mexican point of diversion for most of the water delivered under the Mexican Treaty of 1944. The average annual salinity of the waters received by Mexico increased from about 850 ppm to nearly 1500 ppm. This marked increase in salinity of deliveries provoked the filing of a formal protest with the State Department by the Mexican Government.

Of the 1,500,000 acre-feet annually guaranteed to Mexico under the 1944 Treaty, more than 500,000 acre-feet is derived from drainage or return flows below Imperial Dam. Of this amount the Wellton-Mohawk project contributes about 220,000 acre-feet and the balance comes from return flows from other U.S. projects.

The Committee of Fourteen, consisting of two representatives of each of the Governors of the seven Colorado River Basin States, was reconstituted early in 1962 at the request of the State Department, and studies were undertaken looking toward interim or permanent solutions capable of alleviating the international problem without sacrificing water resources of the Basin States.

In 1965, with the knowledge and acquiescence of the Committee of Fourteen, the State Department executed through the U.S. Section of the International Boundary and Water Commission, an executive agreement—Minute 218—with its Mexican counterpart. The United States, while reserving its legal position on Mexico's claim that the United States deliveries were in violation of the treaty,

gave undertakings which had the effect of delivering to Mexico additional quantities of water from above Imperial Dam, approximately 50,000 acre-feet, over and above the million and one-half acre-feet required by the treaty.

The United States also constructed at its expense a lined bypass channel allowing Mexico to bypass around Morelos Dam the most saline Wellton-Mohawk drainage waters.

This Minute remained in effect through 1971 until replaced in July 1972 by a second agreement—Minute 241—which more than doubled the amount of water, 118,000 acre-feet, delivered to Mexico in addition to the treaty deliveries. Minute 241 continued in effect until Minute 242 was approved on August 30, 1973.

The 1944 Water Treaty contains no explicit statement on the quality of the waters the United States is obligated to deliver, but it does provide that the guaranteed 1.5 million acre-feet shall be "waters of the Colorado River from any and all sources."—Part III, article 10—and that "Such waters shall be made up of the waters of said River, whatever their origin." When the Senate Foreign Relations Committee was considering the resolution proposing ratification of the treaty in 1945, representatives of the State Department unequivocally assured the Senate that the proposed Treaty allowed the United States to deliver 1.5 million acre-feet, regardless of quality, even if the water was unusable by Mexico.

Since the beginning of this controversy, Mexico has claimed that it is entitled under the 1944 treaty to insist that all of the million and one-half acre-feet delivered must be of a quality usable for irrigation, but has recently claimed that that quality must be no worse than the quality enjoyed by the last major diversion from the Colorado River in the United States, Imperial Dam.

On June 17, 1972, after a meeting in Washington, D.C., President Nixon and President Echeverria of Mexico issued a joint communique in which it was promised that a permanent, definitive and just solution to the international salinity problem would be promptly recommended by a special representative to be named by President Nixon. The Honorable Herbert Brownell was later named special representative and he headed a task force of Federal agency personnel who made an intensive study of the problem in late 1972. Mr. Brownell reported his proposals to President Nixon on December 28, 1972.

His recommendation for permanent solution consisted principally of a desalting plant so sized and sited as to be able to desalinate a large portion of the Wellton-Mohawk project return flows. After authorization but prior to operation of the desalting plant, the United States would provide Mexico with the same quality benefits as those to be produced by the plant by discharging all Wellton-Mohawk drainage water below Morelos Dam and replacing it with Colorado River water.

Ambassador Brownell's recommendation for interim solution involved the lining or construction of a new 49-mile section of the Coachella Canal in California in order to salvage approximately 130,000 acre-feet per year now lost through seepage. During the interim period, the water salvaged would be used by the United

States to offset in part the extra deliveries to Mexico occasioned by the waste of all Wellton-Mohawk return flows. The interim period would end when the Secretary of the Interior determines that it is necessary to reduce Colorado River deliveries to California water agencies.

Thereafter, negotiations were initiated with Mexico with the objective of executing a permanent Minute that would embody Mr. Brownell's recommendations in terms satisfactory to both countries. On August 30, 1973, Minute 242 was signed in Mexico City by representatives of both countries.

Point 1(a) of Minute 242 provides that the United States shall adopt measures to assure that the waters delivered to Mexico in the Colorado River upstream of Morelos Dam—the principal Mexican point of diversion for irrigation in the Mexicali Valley—shall have an annual average salinity of no more than 115 ppm plus or minus 30 ppm over the salinity of waters arriving at Imperial Dam upstream. It further provides that the measures the United States must adopt to effect this salinity guarantee shall be taken not earlier than January 1, 1974, and no later than July 1, 1974. Point 1(e) subjects implementation of the measures referred to in point 1(a) to the requirement in point 10 of the Minute concerning notification of congressional authorization of the necessary works. We will return to the question of the effective date of the obligation of point 1(a) later in this discussion.

The guarantee that the quality of the mainstream Colorado River waters delivered above Morelos Dam will not exceed the quality of waters diverted at Imperial Dam in the United States by more than an annual average of 115 ppm plus or minus 30 parts, constitutes a commitment unprecedented so far as we know in international law. It concedes to a downstream riparian nation that an upstream riparian will take, at its own expense, whatever measures may be necessary to protect the downstream nation beyond a certain guaranteed relationship, from the increasing salinity inevitably resulting from the application of water to beneficial use in the upstream nation. Implementation of this guarantee in point 1(a) will require the construction of a desalting plant, and the Coachella Canal lining, as recommended by Mr. Brownell. Sections 101 and 102 of S. 2940 would provide the necessary authorization.

The present state of the art in the technology of desalting brine waters assures recovery of only 70 percent of treated water. The Committee of Fourteen believes strongly that every possible emphasis and support should be given by the United States to a strengthened research program aimed at increasing the recovery rate to at least 90 percent of treated water, and we are assured by knowledgeable personnel in the Office of Saline Water that it is reasonable to hope that this objective is realizable in the near future. Later in our presentation we will propose an amendment to S. 2940 that would authorize continued research to effect greater recovery.

In any event, the Basin States, faced with an already over-appropriated river, cannot accept any permanent loss of Colorado Basin water resources in the form of unusable brines or losses resulting from inoperability of the desalting plant or other causes,

and it is, therefore, imperative that the United States assume and effectuate an obligation to replace at its cost any water loss caused by operation of the proposed desalination plant.

Because of the very real energy shortage in the Basin, we also must have a Federal commitment that the substantial electric power demand of the desalination plant will not be supplied by reducing or diverting energy now supplied to preference customers of the Bureau of Reclamation generation plants in the Basin. This commitment is expressed in section 101(h)(2) of S. 2940.

Point 2 of Minute 242 provides that from September 1, 1973, until the provisions of point 1(a) become effective, the United States shall deliver 118,000 acre-feet annually of other higher quality waters in substitution for an equal amount of bypassed drainage waters from the Wellton-Mohawk district, with the understanding that Mexico would continue to voluntarily bypass all other Wellton-Mohawk drainage waters without receiving substitution waters in lieu thereof. This in effect continues the arrangements of Minute 241 on an interim basis until the provision of point 1(a) become effective.

Point 3 of the Minute requires the United States at its own expense to extend the lined bypass channel be extended from the international boundary to the Gulf of California on Mexican territory, although at United State expense.

Point 5 provides that until a comprehensive agreement on ground water in the border area is concluded by the parties, each country must limit ground water pumping within a 5-mile zone along the international boundary to an annual total of 160,000 acre-feet. This ground water agreement is a response to the situation created by Mexico's recent unilateral decision to drill and begin pumping a well field immediately south of the international boundary.

We understand that during the international negotiations leading up to Minute 242, the U.S. negotiators objected to this unilateral change in the status quo in respect to ground water developments in the border area because it is clear as a matter of hydrology that the new Mexican ground water developments will steepen the gradient of ground water flow from the United States into Mexico unless a compensating U.S. ground water development is initiated.

Studies made from the International Water and Boundary Commission indicate that it will be necessary to pump in the United States approximately 160,000 acre-feet per year within 5 miles of the Arizona-Sonora boundary to protect against the loss of surface and ground waters to Mexico as a result of pumping by the Mexican Government in the vicinity of San Luis.

These same studies also reveal that as a result of the combined pumping by the two governments the San Luis drain will dry up and the waters pumped by the United States will be required to maintain deliveries of 140,000 acre-feet per year to Mexico across the boundary at San Luis as has been our practice over the years and as is permitted in Minute 242.

In 1964 the Department of the Interior, in promulgating the southwest water plan, proposed the recovery of 220,000 acre-feet per year of ground waters in the Yuma area. The Mexican Govern-

ment protested vigorously. State Department opposition developed quickly and Interior abandoned the plan except for the development of the wells on the Yuma Mesa required to provide 60,000 acre-feet per year of substitution waters to assist in meeting the requirements of Minute 241. Without the knowledge of the States, the Mexican Government moved quickly to undertake the development of the San Luis well field.

The Committee of Fourteen urged the negotiating team to make resolution of the problem posed by Mexico's pumping a condition of U.S. agreement to a solution of the salinity problem. Two alternatives were available that would have left interests of the Basin States as they were prior to the initiation of pumping in the San Luis well field and would have been without cost to the States. First and most logical would have been insistence by the United States that Mexico accept as a charge against its treaty allotment all waters drawn from the United States by the San Luis well field. Failing this, the Mexican Government would have the option of limiting the amount of water pumped annually at the San Luis well field to an amount which the two governments would agree would have a negligible impact on U.S. water supplies.

The Mexican Government, we are told, would not negotiate on the basis of either of these two alternatives. Point 5 of Minute 242 simply allows the United States to resort to protective pumping in response to Mexico's recent development. The committee was and is skeptical of the wisdom of giving implicit legal sanction to Mexico's unilateral act, and of the wisdom of requiring the United States to pump ground water in self-protection, at considerable expense, and then ultimately to deliver the same water to Mexico.

If continuing negotiations on ground waters are not successful in achieving agreement by the Mexican Government to accept ground and surface waters drawn from the United States by the San Luis well field as a charge against the treaty allotment or to limit pumpage at the well field to an amount that would have a negligible effect on U.S. waters; then as provided by section 103 of S. 2940 the protective ground water program must be undertaken entirely without cost or injury to the Basin States, in terms of money, power, and water resources.

We believe that the Government must undertake this responsibility at this time as it is difficult to imagine success in the negotiations now that Mexico has her objective, the salinity guarantee, within reach and is already fully committed to the pumping of 160,000 acre-feet annually from the San Luis well field.

In Point 6 of the Minute, both countries agreed to consult on future ground water developments, and in point 7, the United States promises to support efforts by Mexico to obtain favorable financing for the improvement of the Mexicali Valley and also promises an unstated amount of nonreimbursable assistance for Mexican rehabilitation programs in the Mexicali Valley relating to the salinity program.

Point 8 unequivocally recognizes Minute 242 as constituting the permanent and definitive solution of the salinity problem promised in the joint comminique of June 17, 1972.

Point 9 is a promise by the United States to implement the necessary measures at the earliest practical date.

Point 10 makes the entire Minute enter into force upon approval by the two governments, with the proviso that:

> The provisions which are dependent for their implementation on construction of works or on other measures which require expenditure of funds by the United States, shall become effective upon the notification by the United States to Mexico of the authorization by the United States Congress of said funds.

It will be remembered that point 1(e) subjected implementation of the salinity relationship guarantee in point 1(a) to this proviso of point 10.

The Committee of Fourteen is convinced that, when all the provisions of the minute are read together, they must be interpreted to man that the salinity relationship guarantee cannot become a legal obligation of the United States, and therefore cannot be effectuated, until Congress has enacted appropriate legislation--that is, authorizing the desalting plant at Wellton-Mohawk and the lining of the Coachella Canal. The administration has confirmed this understanding in its February 7, 1974, letters to the President of the Senate and the Speaker of the House, wherein it is stated that "under the agreement Mexico will not receive further improvement in its water until the Congress enacts enabling legislation."

Of course, the authorization of these measures alone does not meet the requirements of the basin States, unless satisfactoery assurances on ground water pumping and replacement of brine and operational losses are also enacted, we would face serious injury from implementation of minute 242.

The legislation proposed by the administration—S. 3-04—falls short in the following significant respects in meeting the salinity problems of the Colorado River and in protecting the Colorado River Basin States against the concessions granted in minute 242:

1. It fails to recognize that the salt problem is basin wide and that the control program must also be basin wide if present salinities in the river are to be maintained as the basin States develop their remaining entitlements.

2. It fails to include necessary appropriations for the Coachella Canal lining feature. Lining of the Coachella Canal is a critical element of the program and must be authorized and implemented on schedule if the States are to be protected. Its fate should not be left to a separate action by the Congress.

3. It fails to provide for authorization and implementation of the ground water pumping program to protect against loss of U.S. waters as a result of pumping by the Mexican Government at the newly installed San Luis well field.

4. While the administration in S. 3094 recognizes the Government's responsibility to replace operational and reject waters from the desalting plant, actual replacement is tied to the provisions of section 202 of the Colorado River Basin Project Act, which provisions recognize the entire Mexican Treaty burden on the Colorado River as a national responsibility, effective upon augmentation of the Colorado River in the amount of 2.5 million acre-feet per year. To ask the States to wait for relief on desalter losses until 2.5 mil-

lion acre-feet per year have been added to the river would be unreasonable, especially in light of the fact that the Office of Management and Budget has quashed or seriously maimed all studies in progress or prospect to determine means of augmenting the Colorado River in such amounts.

5. It is silent on the issue of source of power for the desalting plant and the protective pumping although there is some mention of the problem as it relates to the power needs of the desalting plant in the accompanying section-by-section analysis.

The Committee of Fourteen believes that minute 242 makes concessions to Mexico beyond the contemplation of the treaty; nevertheless, we would like to be able to help the United States honor the promises made in minute 242. For this reason, we believe that the water users of the Colorado River Basin, and all the people of the United States will be best served by the enactment of S. 2940, which provides the necessary authorizations and appropriations for the construction of the desalting plant and the lining of the Coachella Canal, along with the necessary commitments and authorizations calculated to avert water loss to the basin States and to protect their water users from increasing salinity.

Throughout the period of studies made by the Brownell task force as well as the period of negotiations with Mexico leading to minute 242, Mr. Brownell assured the Committee of Fourteen that it was his cardinal principle that no water user within the basin States suffer any injury by reason of the negotiation or implementation of minute 242. We believe that the pending legislation with the amendments subsequently cited is the appropriate vehicle for insuring that this commitment of the United Saates to the basin States will be redeemed.

The Colorado River has experienced a long-term increase in salinity. All recent investigations by Federal and State agencies show that the salinity of the river will continue to increase as a result of necessary increases in use of water in this water-short area of the United States unless a major basin-wide salinity control program is undertaken.

The projected increase in salinity will affect water users in the Colorado River Basin in the United States and in the Republic of Mexico. It is estimated that by the turn of the century, unless the rise in the river's salinity is checked, economic detriments in the United States, both direct and indirect, will increase by about $80 million annually—unless otherwise stated, values related to costs and effects of salinity are based upon work of the Colorado River Board of California. The river's increasing salinity must be expected to affect adversely our relations with Mexico.

The strong federal commitment to salinity control for the Colorado River Basin is evidenced by statements made by top officials representing the Environmental Protection Agency, the Department of Interior and the State Department. The Bureau of Reclamation has established a Colorado River Basin office in Denver and has prepared a status report on the projects and studies to be authorized in title II of S. 2940.

Before discussing the program called for in title II of S. 2940, we would like to briefly summarize the background of increasing salinity on the Colorado River.

The Colorado River begins in the Rocky Mountains of Colorado, Utah, and Wyoming, travels 1,400 miles through seven basin states and Mexico, and ends in the Gulf of California. The river basin covers 244,000 square miles, including parts of seven states and Mexico. A wide variation in climatic conditions exists, from hot arid desert regions to cold arid plateaus and valleys at high elevations in the northern portion of the basin. These wide variations result in as little as a 90-day growing season in many of the northern valleys to year round cropping in the lower desert areas. Approximately 2.4 million acres are irrigated within the basin, and thousands of acres are also irrigated with water exported from the basin.

The Colorado River Basin has a population of about 2.25 million people. Within the basin, the regional economy is based on irrigated agriculture, mining, forestry, manufacturing, oil and gas production, and tourism. The impact of the river extends far beyond the basin. Water from the river serves the southern California, Denver, Salt Lake City, and Albuquerque areas. With the completion of the central Arizona project now underway, the Phoenix and Tucson areas will also be served. Approximately 12 million people in the United States receive supplemental water supplies from the Colorado. About one-half million people and 425,000 irrigated acres in Mexico are served with Colorado River water. The map on the following page shows the entire Colorado River Basin, the locations of the four projects authorized in title II, the location of the projects for which planning reports will be prepared under title II, and the works to be authorized under title I of S. 2940.

The Colorado River has a large dissolved mineral load resulting in salt concentrations higher than most major rivers. The salinity, which is already approaching critical levels in some areas of the basin, is expected to go higher without corrective measures.

Two basic processes cause salinity increases in streams. The processes are salt leading, and salt concentrating. They can act separately or together to increase the salinity in streams.

Both natural phenomena and man's actions account for the river's salinity. The primary source of dissolved salt is the saline shale formations that occur throughout much of the Upper Colorado River Basin.

Natural sources of salt may be classified as point and diffuse. Point sources include springs or small streams within a relatively small area. Diffuse natural sources are salt accretions from large drainage areas.

About 20 percent of the naturally occurring salts issue from mineral saline springs and seeps throughout the basin. Annually, an estimated 900,000 tons are added in the Upper Basin and 700,000 tons are added in the Lower Basin from these sources.

Much more precipitation falls on the high mountains than in the lowlands and valleys, but after the low salinity runoff from the mountains has converged with the runoff and seepage from the lowlands, a large amount of salt has been added to the river system. It

is estimated that about 80 percent of the naturally occurring salts added to the river are from diffuse sources. This amounts to an estimated 4.2 million tons annually under average water conditions in the Upper Basin and 0.5 million tons in the Lower Basin.

Irrigation is the major consumer of water in the basin and is responsible for the largest of the increases in salinity caused by man's activities. Irrigation contributes to both salt loading and salt concentration. Water is removed by evaporation and consumption by the plants but practically all of the dissolved salts are returned to the river, concentrating the salts in a smaller volume of water. When irrigation water is applied to land overlying saline shales, large quantities of soluble salts are dissolved from the shales and returned to the river.

Studies indicate that as much as 3.5 million tons of salt are added annually by irrigation return flows in the Upper Basin. Salt loading and salt concentration effects of irrigation account for an estimated 270 parts per million of the salinity at Imperial Dam, or 14 parts per million for each 100,000 acre-feet consumed.

During the 1973 water year, Upper Basin reservoir evaporation was 550,000 acre-feet, which approximates the estimates of long-term evaporation. This caused an increase of 30 parts per million in salinity at Imperial Dam, or 6 parts per million for each 100,000 acre-feet evaporated.

The Lower Basin reservoirs, Lakes Mead, Mohave, and Havasu, have a long-term average annual evaporation rate of about 1,050,000 acre-feet, which would be responsible for 60 parts per million for each 100,000 acre-feet evaporated.

Diversions from the Upper Colorado River Basin into surrounding basins occur at or near the headwaters, where the river's water has a very low salt content. Thus, the effect on downstream salinity of Upper Basin transmountain diversions is very similar to the effect resulting from increased reservoir evaporation. In 1973, 690,000 acre-feet of water and about 70,000 tons of salt were diverted out of the Upper Basin. The net effect was to increase the salinity at Imperial Dam by 40 parts per million. This amounts to an increase of 5 parts per million for each 100,000 acre-feet of water diverted.

Municipal and industrial water uses amount to less than 200,000 acre-feet annually above Imperial Dam. Of the approximately 350,000 tons of salt load added during 1973 assignable to these uses, about 40 percent is due to salt additions from former operations of an industrial complex in Nevada. Omitting the impact of that salt load, these uses cause a total increase of 22 parts per million at Imperial Dam, or 11 parts per million for each 100,000 acre-feet of water used.

The U.S. Geological Survey has estimated that, under natural conditions, the Colorado River at Lee Ferry contained an average annual salt load of 5.1 million tons, with a salinity of 250 parts per million. Man's activities have increased the river's salt load at Lee Ferry by about 3.7 million tons and the average annual salinity to about 600 parts per million. Man's addition of 3.7 million tons annually to the river amounts to about 40 percent of the total annual salt load of 8.8 million tons. Man's activities, the consumptive use

of water plus salt loading, accounts for 350 parts per million out of 600 parts per million, or nearly 60 percent of the river's salinity at Lee Ferry.

The river's average annual salinity at Lee Ferry for the 5 years, 1968 through 1972, was 606 parts per million. Average annual salinities at other major points along the river in the Lower Basin for the 5 years ending in 1972 were Hoover Dam, 739 parts per million; Parker Dam, 744 parts per million; and Imperial Dam, 881 parts per million.

Table 1 presents sources of salinity discussed earlier and shows how each source contributes to the river's present salinity at Imperial Dam.

TABLE 1.—APPROXIMATION OF CONTRIBUTIONS TO SALINITY AT IMPERIAL DAM

Source	PPM
Upper basin-naturally-occurring salinity	259
Upper basin-irrigated agriculture	270
Upper basin-CRSP reservoir evaporation	30
Upper basin-transmountain diversions	40
Entire basin-municipal and industrial uses	36
Lower basin-mainstem reservoir evaporation	60
Lower basin-naturally-occurring salt additions	52
Lower basin-salinity increase, Parker to Imperial Dams—from irrigation and phreatophyte losses	117
Total	875

Note: Salinity impacts for sources are estimated based on current levels of use, except for the Parker to Imperial Dam analysis which is based on average difference in salinity over 5 years, 1968–72.

The largest contributions to salinity are from natural runoff and natural point sources. The following tabulation shows that over two-thirds of the lands in the Colorado River Basin are owned by the Federal Government. Federally owned lands contribute substantially to the salinity problem.

LAND OWNERSHIP IN COLORADO RIVER BASIN
[In percent]

	Private	State, local government	Federal Government
Upper basin	29	4	67
Lower basin	19	9	72
Aggregate	23	7	70

The Colorado River will increase in salinity in future years unless control measures are implemented. The amount of increase is dependent upon the growth of municipal, domestic, industrial—including mining and energy production—irrigation, and recreational uses which tend to add dissolved minerals and to deplete the river's flow. Water exports from Upper Basin headwaters will further deplete the river's flow.

Even if the timing and amount of all salt loading and concentrating activities were known, the river's future salinity still could not be predicted with exactness, as the salinity is also affected by the river's annual runoff, which fluctuates widely. Reasonable approxi-

mations of future salinity may be calculated, however, by assuming average water supply conditions.

Over the last few years, it has become very evident that the Upper Basin's vast mineral energy resources will be further called upon to assist in meeting the Nation's energy requirements. Large electric generating plants that use coal mined within the Basin are either being placed in operation or are nearing completion. Plans for major coal gasification plants are proceeding past the design stage into contract negotiations. The costs of mining and processing oil shale deposits in Colorado, Wyoming, and Utah, are rapidly becoming competitive with the costs of other sources of petroleum. Development of these energy resources will require the use of water for evaporation cooling, for chemical interactions in manufacturing gas fuel, for extracting oil from oil shale and for support of the increased population associated with the industry.

Approximately 20 percent of the depletions of the river caused by Upper Basin states are due to the export of Colorado River system water to areas outside the basin. It is expected that the quantity of water exported outside the basin will increase in the future. Denver, for example, recently passed a $160 million bond issue which will enable the construction of works that will increase Denver's diversions out of the Colorado River Basin by about 100,000 acre-feet/year. In addition, there are several transmountain diversion projects that have either been recently completed or are nearly completed, that will be diverting additional quantities in future years.

In-basin municipal and industrial uses, other than those associated with energy development, are not expected to greatly increase. Irrigation, the present major user of water in the Upper Basin, will continue to constitute the principal use of water in the future.

Most of the Lower Basin's supply is presently being used, and projects that will consume the remaining portion are either completed or under construction.

The Central Arizona Project, on which construction is just getting underway will when completed in 10–12 years, enable Arizona to withdraw its full apportionment from the river. Nevada's use is steadily increasing and should reach its full apportioned use between the years 1990 and 2000.

Upon completion of the Central Arizona Project in the mid-1980's, California's uses will have to be reduced to 4.4 maf/yr, except during those years when the Secretary may declare a surplus.

Estimates of future salinity at Lee Ferry were derived by adding to present conditions of depletions and salt load at Lee Ferry, the depletions projected for future years together with the changes in salt load associated with the different types of depletion. The resulting projections are listed in table 2.

The major harmful impacts of increasing salinity are felt by municipal, industrial and agricultural users of Colorado River Water.

The major harmful economic impacts on urban water users caused by using waters of a high salinity and hardness are as follows:

1. Reductions in the useful lives of (a) water utility distribution facilities, (b) home, business, and industry piping and fixtures, (c)

TABLE 2.—CURRENT AND PROJECTED FUTURE SALINITY OF THE COLORADO RIVER, ASSUMING NO SALINITY CONTROL MEASURES

[Values in ppm]

Location	Year			
	1968–72	1980	1990	2000
Lee Ferry	606	640	700	780
Lake Mead	739	780	860	960
Parker Dam	744	790	880	980
Palo Verde Dam [1]	750	810	910	1,020
Imperial Dam	881	960	1,080	1,210
Northerly international boundaries [2]		1,075	1,195	1,325

[1] Records for Palo Verde Dam are for 1971–72 only.
[2] Projected salinities at northerly international boundary assume that Minute 242 will be implemented, limiting the differential salinity increase between Imperial Dam and the northerly international boundary to 115 ppm.

water using devices within homes, businesses and industries, and (d) home and industry heating vessels.

2. Increases in water treatment and conditioning costs. Some of these impacts represent current expenses, but most are included in the decreased service lives of the affected facilities.

Economic detriments experienced by urban users of Colorado River water have been studied and reported by several investigators. Numerical values of damages to urban users were estimated by the Colorado River Board of California based largely on recent studies of the coastal plain of Southern California performed by the consulting firms of Daniel, Mann, Johnson and Mendenhall and Koebig and Koebig for the California Water Resources Control Board. Because of the difficulty in obtaining valid estimates of the economic detriments associated with all of the factors enumerated above, the estimates of salinity detriments were limited to impacts on those items for which valid studies have been made. Accordingly, the estimates include the impact of items 1(a), 1(d), 2 and only a partial evaluation of the detriments associated with item 1(b), and nothing on item 1(c). Evaluation of item 2 was based on the estimated costs of operating municipal water softening plants plus residual hardness detriments.

The damages to urban users were computed on a unit-use basis to be 15¢/af/ppm increase in salinity.

Irrigators using high salinity water are faced with high expenses to overcome a variety of harmful impacts upon their opeartions. Crop yields decline and plants and trees die as the salinity within the root zone increases. The higher valued crops are generally most susceptible to such damage. To reduce salt buildup within the root zones of crops, increasing quantities of water must be passed through the soil in order to leach salts accumulating in the root zone. The soil must be able to accept an increased amount of the applied water without becoming permanently saturated. Often it is required to install expensive pipe drainage systems.

The additional quantities of applied water also leach fertilizers past root zones, thus resulting in increased fertilizer requirements. Labor costs, capital outlays, and fertilizer crops are all increased. Additional costs are involved during the seed germination period

when special irrigation and cultivation measures are necessary to achieve seed germination.

The Bureau of Reclamation has analyzed the penalty costs associated with the use of Colorado River water within Arizona, California, and Nevada, extending its analyses beyond the studies conducted by the Environmental Protection Agency and other investigations. The Bureau study represents the most comprehensive analysis to date. The findings are reported to be that the total annual direct cost to irrigators in these States amount to $66,400 for each ppm increase in the river's salinity. The annual indirect costs were estimated to be $42,000 per ppm salinity increase. Thus, total annual direct and indirect costs are $108,400 for each parts per million increase.

This estimate of salinity costs to irrigators was converted into a unit cost per acre-foot of irrigation water delivered. The result, 1.7¢/af/ppm, is used herein as the best estimate of salinity detriments to irrigators using Colorado River water.

Using forecasted use of Colorado River water in Arizona, California, and Nevada, the projections of salinity increases, and unit values of urban and agricultural salinity penalties, the increases in damages to Colorado River water users in these States, over and above damages currently being experienced, were computed for the years 1980, 1990, and 2000. The total annual detriments to Colorado River water users in the three States due to the projected increases in salinity, amounted to $14 million in 1980, $44 million in 1920, and $80 million in 2000. About 80 percent of these values are direct damages, and the balances are indirect. The total detriments amount to $240,000 per year per parts per million increase for the year 2000.

These potential damages indicate the stake the people of the Colorado River Basin have in measures to control the river's salinity. The beneficiaries of salinity control and the causes of salinity increases are dispersed widely throughout the Basin States.

During the 1950's, Congress in authorizing major new developments in the basin recognized that there would be associated salinity increases. The acts that authorized the Colorado River Storage Project, the Navajo Indian Irrigation Project, the San Juan-Chama Project, and the Fryingpan-Arkansas Project directed the Secretary of the Interior to collect data and make analyses relating to the salinity of the Colorado River. As a result of these acts, the Bureau of Reclamation has reported on the data collected and its analysis in a series of biennial reports on the quality of the river. To date, six reports have been issued covering sources of salinity, data on flows and levels of salt concentration.

The Colorado River Board of California began a comprehensive review of the entire salinity problem in early 1969, and in August, 1970, published a report on its work entitled, "Need for Controlling Salinity of the Colorado River." The report recommended commencement of a basin wide salinity control program to keep salinity at or near present levels while water project development continued in the seven Basin States.

The former Federal Water Quality Administration understood studies of the Colorado River in the early 1960s, directed at finding

solutions to the salinity problems. In December, 1971, the results of these studies were published by its successor, the Environmental Protection Agency, as "The Mineral Quality Problem in the Colorado River Basin." The report's recommendations were similar to those in the Colorado River Board's study but included a recommendation that specific salinity standards and criteria be adopted.

The Colorado River Basin States were concerned about the trends of rising salinities presented in reports and urged the Bureau of Reclamation to develop a program to control salinity. In response thereto, the Bureau developed the program described in its February, 1972, report entitled, "Colorado River Water Quality Improvement Program." The program and projects proposed in title II of S. 2940 stem from this program.

Development of the waters of the Colorado River has been governed by interstate compacts, an international treaty, legislation, court decisions, water and power contracts and administrative decisions. While most have not dealt specifically with water quality, it is important to briefly mention several significant actions.

The 1944 Mexican Water Treaty provides for "a guaranteed annual quantity of 1.5 million acre-feet" of water to Mexico from the Colorado River system. There are no specific provisions with respect to salinity; however, Minute 242 of the International Boundary and Water Commission, signed by the United States and Mexican Commissioners on August 30, 1973, gives Mexico a guaranteed quality relative to Imperial Dam.

The Environmental Protection Agency convened the Seventh Session of the "Federal-State Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries" in February and April, 1972, with all seven Basin States participating. Testimony was presented by Federal, State, and local officials.

Commissioner of Reclamation Ellis Armstrong, speaking for the Secretary of the Interior stated that:

> The Department of the Interior is pledged to pursue a program of salinity control for the benefit of all citizens to whom the Colorado River is a lifeline. In recognition of the effects of the proposed developments on the salinity of the river, the Congress specifically directed the Secretary of the Interior to make water quality studies and to devise plans for improvement.

The conferees, official representatives of the seven Basin States and the Environmental Protection Agency, unanimously adopted conclusions and recommendations pertaining to the salinity problems of the Colorado River. These conclusions and recommendations pertaining to the salinity problems of Colorado River. These conclusions and recommendations were approved in June 1972, by Mr. William D. Ruckenshaus, Administrator of the Agency. The key recommendation, with respect to S. 2940, is that the Bureau of Reclamation's salinity control program be accelerated so as to annually remove 400,000 tons of salt from the river system commencing in 1977.

The complete conclusions and recommendations of the Conference are as follows:

1. It is recommended that: A salinity policy be adopted for the Colorado River system that would have as its objective the mainte-

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nance of salinity concentrations at or below levels presently found in the lower main stem. In implementing the salinity policy objective for the Colorado River system, the salinity problem must be treated as a basin wide problem that needs to be solved to maintain lower basin water salinity at or below present levels which the upper basin continues to develop its compact-apportioned waters.

2. The salinity control program as described by the Department of the Interior in their report entitled, "Colorado river water quality improvement program," dated February 1972, offers the best prospect for implementing the salinity control objective adopted herein. Therefore, it is recommended that:

(1) To minimize salinity increases in the river, a salinity control program, generally as described in the Interior Department report be implemented on an accelerated basis;

(2) The Bureau of Reclamation have the primary responsibility for investigation, planning and implementing the basin wide salinity control program in the Colorado River system;

(3) To accelerate the salinity control program, the Bureau of Reclamation assign a high priority to LaVerkin Springs, Paradox Valley, and Grand Valley, water quality improvement projects with the objective of achieving stabilization of salinity levels on the Lower Colorado River at the earliest possible date. The contemplated impact would be to initiate immediate action so as to achieve, by 1977, the removal of 80,000 tons of salt per year from LaVerkin Springs, 180,000 tons per year from Paradox Valley, and 140,000 tons per year from Grand Valley. This would provide a total reduction of 400,000 tons per year and would result in an estimated subsequent reduction of 33/mg/1 at Imperial Dam.

(4) The Office of Saline Water contribute to the program by assisting the Bureau of Reclamation as required to appraise the practicability of applying desalting techniques; and

(5) The Environmental Protection Agency continue its support of the program by consulting with and advising the Bureau of Reclamation and accelerating its ongoing data collection and research efforts.

3. To achieve the salinity policy described herein, the long-range program of the Bureau of Reclamation shall be directed toward achieving reduction of salinity concentrations that would otherwise exist at Imperial Dam to the extent of at least 120/mg/1 in 1980, 355/mg/1 in 1990, and 405/mg/1 in the year 2000.

The Conferees agree that the Bureau of Reclamation's program as submitted in its report "Colorado river water quality improvement program," dated February 1972, should be considered as an open ended and flexible program. If alternatives not yet identified prove to be more feasible, they should be included as part of the program, and if elements now included prove not to be feasible, they should be dropped. In addition, it should be recognized that there may be other programs which could reduce the river's salinity. Since present levels are greater than desirable, an effort should be made to develop additional programs that will obtain lower salinity levels.

The enactment of Public Law 92–500 introduced a new factor into the problem of the Colorado River's salinity. The Environmental Protection Agency has identified salinity as a pollutant subject to the provisions of Public Law 92–500. The Act also establishes a

program of 75 percent Federal grants to local agencies for treatment facilities.

The Colorado River Basin States recently established the Colorado River Salinity Control Forum to cooperate with the Environmental Protection Agency. The Forum, comprised of water quality and water resource officials of the seven Basin States, and the EPA have met and are attempting to reach agreement on a plan for control of salinity in the Colorado River.

Past increases in river salinity, projections of further increases and the detrimental impacts of such increases on water users in the Basin States, as well as the adverse effects on our international relations with the Republic of Mexico, all establish the urgent need for a basin wide salinity control program. The passage of Public Law 92–500 in 1972 and the signing of Minute 242 in 1973 give strong incentive for the implementation of a basin wide program at the earliest possible date.

The measures necessary to implement Minute 242 will improve salinity at the Mexican border. To control the salinity at and above Imperial Dam will require that increases in salinity that will occur with increases of uses of the river be balanced with projects and measures that prevent sale from entering the main stem of the river. Unless these control measures are undertaken, the salinity of the water at Imperial Dam will continue to rise.

During the negotiations leading to Minute 242, Mexico was informed by the U.S. negotiators that the United States intends to undertake a program to control the salinity at Imperial Dam. Both the principal U.S. negotiator and the principal Mexican negotiator expect that a salinity control program will be undertaken. Ambassador Brownell in his report to the President:

> recommended in the interest of orderly and progressive development in the Colorado River Basin and other river basins in both the United States and Mexico—timely decisions in regard to implementation of specific actions to control salinity increases in the Colorado River Basin.

In a statement to the Committee of Fourteen on June 1, 1973, Ambassador Brownell stated:

> that unless the United States does control this threatened and almost certain increase of salinity above Imperial Dam, the water we deliver to Mexico may become unacceptable, and we shall, in the future, have a new salinity problem with that country.

The Minister of Foreign Affairs for Mexico, Emilio Rabasa, upon the signing of Minute 242, stated:

> there is not the slightest doubt that this—is a permanent and definitive solution. Beginning January or July 1974, and thereafter, the United States will construct or will have costructed works to guarantee that we shall have water equal to that of the Imperial Dam plus—an annual average salinity of—115 ppm, a difference which does not amount to anything. Therefore, the final result will be that the Mexicali farmers will have forever—they and their children and their children's children—water whose annual average salinity will never exceed 1010 ppm, which is perfectly acceptable.

The 1010 parts per million at Morelos Dam, taking into account differences in measurement techniques and the 115 ppm differential, is equivalent to current levels of salinity at Imperial Dam.

The Bureau of Reclamation and the Environmental Protection Agency have been studying potential solutions to Colorado River problems for many years. The time has arrived to commence work on a major Colorado river salinity control program that will benefit water users in the United States, as well as water users in Mexico. It is particularly timely to do so now that Congress also has before it measures to implement a salinity control program exclusively for the benefit of Mexico.

Four projects would be authorized for construction by title II of S. 2940. These projects would achieve the near term objective of the Environmental Protection Agency and the seven Colorado River Basin States as enunciated in the Conclusions and Recommendations of the Seventh Session Conference on Pollution of the Colorado River.

Benefits to water users from construction and operation of the four projects would begin to be realized immediately after completion. In the discussion of the projects that follows, estimated benefits are shown for year 2,000. Although the reduction in salinity is presented only for Imperial Dam, the benefits represent accruals to all water users below Lake Mead.

While it is recognized that the Bureau of Reclamation has not yet completed its feasibility level studies on these projects, sufficient work has been accomplished to identify that these are worthwhile projects that should be constructed. There is sufficient lead time in the governmental process so that the Bureau will have ample time to complete its feasibility reports before construction is commenced.

The U.S. Bureau of Reclamation estimates the total construction cost of these four projects to be $125.1 million, and the estimated annual operating cost to be $550,000. These projects would remove 514,000 to 594,000 tons of salt annually, reducing the salinity of the river's water for the benefit of users in both the United States and Mexico. By comparison, the program to implement Minute No. 242, and maintain a fixed salinity differential between Imperial Dam and the Mexican diversion point, of benefit to Mexico only, will cost at least $139 million and have an annual operating cost of $10 million.

Paradox Valley in a southwestern Colorado is underlain by a collapsed salt dome known to be 14,000 feet thick. Within the valley, the pure salt source is within 60 to 100 feet of the ground surface. The Dolores River, a tributary of the Colorado, crosses the valley near its midpoint and picks up over 200,000 tons of salt annually from rising groundwater entering the river. This area has been under consideration as a salinity control project for many years.

Detailed investigations began in 1972 with the installation of stream gaging and water quality stations. Data from these stations verified earlier estimates of the quantities of salt being added to the river system. Geophysical surveys and exploratory drilling conducted in 1972 and 1973 defined the area of salt pickup and the movement of saline groundwater into the river. At about midvalley there is a sharp interface between the saline and fresh groundwaters which appears to be stable. A test well has been drilled into the fractured salt dome cap and pumping tests performed to evaluate the proposed control plan.

The results of this testing indicate that the salt being added to the Dolores River in Paradox Valley can be effectively controlled by pumping saline groundwater from the brine zones. The estimated annual removal of salt by the proposed program is 180,000 tons.

The project plan calls for the installation of a field of about 8 brine wells, 250 feet deep, that would lower the fresh water-brine interface by pumping, thus preventing the brines from rising to the ground surface and entering the river. The pumped brines would be conveyed about 20 miles from the well field at an elevation of 4940 feet, through a series of pumping stations, to the proposed Radium evaporation reservoir at about 7,000 feet elevation. Radium reservoir would be constructed on an impervious, marine shale. Tests indicate that there would be no leakage from either the dam or reservoir.

The U.S. Bureau of Reclamation estimated cost of construction, based on 1973 prices for the brine wells, pumping plants,, pipelines, and evaporation reservoir is $16 million, an interest during construction raises the total capital costs to $17,650,000. The annual operation, maintenance and replacement costs based on the expected life of equipment and a 6⅞ percent interest rate is $350,000. Total annual costs, including amortization of the capital costs over 100 years at an interest rate of 6⅞ percent, would be $1,600,000.

The removal of 180,000 tons per year of salts from the Colorado River system would reduce the river's salinity at Imperial Dam by 20 ppm in the year 2,000. This would result in a reduction in damages to users of $4,600,000 per year, for a benefit/cost ratio of 2.9 to 1.

The Grand Valley area of Colorado lies at the junction of the Gunnison River and the Colorado River. The Grand Valley Irrigation Company, started in 1882, diverted water from the Colorado River to irrigate 22,500 acres. Near the turn of the century, five other small irrigation districts ranging in size from a few hundred to a few thousand acres were formed to divert water from the Colorado River. The last major irrigation development in the valley was the Bureau of Reclamation's Grand Valley project, started in 1912 to irrigate about 42,000 acres. The city of Grand Junction, with a population of 20,000 located near the center of the irrigated area, is the major municipal, commercial, and industrial city in the Upper Colorado River Basin.

There are about 80,000 acres of irrigated land in the valley, of which about 11 percent are not cropped in any one year. The principal crops grown are hay and pasture, corn, fruits, small grain, and sugar beets. The average farm size is 50 acres with some as large as 500 acres. Market value of farm products in 1970 was over $15 million, of which 60 percent is from the sale of livestock, poultry, and their products and 13 percent is from the sale of peaches, apples, pears, and cherries.

The soils of this general area are derived from Mancos shale. This formation is about 4,000 feet thick, and consists of relatively uniform silty clay shale with veinlets of gypsum, calcite, and sodium sulphate. This marine formation has a very high salt content. Ground water percolating over and through the weathered and

cracked upper zone of the shale picks up high concentrations of salt which are transported to the Colorado River through wasteways, ditches, or by natural ground water movement to the river.

It can be assumed that the current tonnage of salt in the return flows will continue unless the quantity of water that comes in contact with dissolved salt from the Mancos shale is reduced and controlled. Some of the major washes traversing the irrigated area and discharging into the river have flows with salinity levels in excess of 6,000 parts per million ppm.

The Department of Agriculture estimates that the salt load of the Colorado River is increased by a total of about 700,000 tons per year as the river flows through the valley with return flows from irrigated agriculture in Grand Valley estimated as contributing about 500,000 tons of the total. Reduction of the salt contribution by irrigated agriculture in Grand Valley would be achieved by reducing the amount of deep percolation of applied agricultural water and the leakage from the conveyance and distribution systems.

One of the measures required to reduce deep percolation from irrigated lands is improvement in irrigation management so that deliveries to the farms are limited to only that quantity of water needed to replace the moisture deficiency in the farm's soil and to leach salts from the root zone. This quantity is determined in a new Bureau of Reclamation program called irrigation scheduling. This program, currently being applied to 7,200 acres or 10 percent of the Grand Valley irrigated area, involves the computerized scheduling of times and amounts of water to be applied to each individual farm based on analyses of soil moisture deficiencies, climatic information, crop, and other relevant data. Through proper irrigation scheduling and changes in onfarm water delivery facilities to enable no more than the required amounts of water to be applied to the fields, reductions in deep percolation of applied water into the underground can be achieved. Existing Department of Agriculture programs should prove of assistance in improving conditions of irrigated lands and facilities for irrigation. Farmers employing these management practices should realize some increase in crop yield.

Most of the delivery and drainage canals and laterals in Grand Valley are unlined and there are large seepage losses from these conveyance facilities to the underground. Canals and laterals serving about 5,000 acres were lined in 1970. The Grand Valley salinity control project would include the lining of the remaining 220 miles of unlined canals and 480 miles of laterals in the valley, the consolidation of those canals and laterals that parallel one another, and the addition of water control structures to the system. Also needed are onfarm physical improvements such as the lining of field ditches, installation of water measuring devices and control structures to deliver water more accurately, control of tailwater, and installation of proper drains. These onfarm improvements, although not included in this legislation, would be accomplished under existing programs of the Secretary of Agriculture. Already some of the needed onfarm improvement is taking place, as 241 miles of farm ditches have been lined and 86 miles of onfarm pipelines constructed.

The reduction in salt contribution to the Colorado River resulting from all measures discussed is estimated to range from 200,000 to 280,000 tons annually. Besides this benefit to downstream users from the Grand Valley project, there would be benefits to local water users.

The cost of the system improvement portion of the Grand Valley program is estimated to be $59 million for consolidating and lining canals and laterals, and replacing and rehabilitating canal and lateral control structures. With interest during construction added, the total capital cost would be $72,900,000. Upon completion of the work, it is anticipated that the system will be operated by the local districts at their expense. Similarly, the cost of irrigation management services will be paid by the farmers utilizing the services.

Annual costs of the Grand Valley program amount to $4,900,000 and are based on amortization of the capital costs over 100 years at 6⅞ percent interest rate, with the annual capital cost component reduced by $200,000 per year, the estimated local share based upon anticipated savings to local interests in operation and maintenance expenses of the rehabilitated canal and lateral systems. The salt reductions of 200,000 tons to 280,000 tons per year would cause reductions in the river's salinity at Imperial Dam in the year 2000 of 23p/m to 32 p/m. The resulting reductions in damages to users would range from $5,300,000 to $7,400,000, for benefit/cost ratios of 1.1/1 to 1.6/1.

The Crystal Geyser is an abandoned oil test well, located 3.5 miles south of the town of Green River, Utah, on the east bank of the Green River. Saline water originating from the Navaho Sandstone formation, 700 feet deep, rises through the geyser, which erupts at approximately 5-hour intervals. The erupted water has a salt concentration of 11,000 to 14,000 p/m and contributes 3,000 tons of salt annually to the Colorado River.

A feasibility level investigation was conducted by Brigham Young University through a contract with the Bureau of Reclamation. The investigators considered several alternative means of controlling the geyser. Plugging of the geyser was considered but abandoned because the geologic conditions at the geyser are such that the rising saline water would simply erupt at other locations in the immediate vicinity.

The alternative recommended by the investigators, and to be authorized by the legislation, would be to construct a dike around the points of eruption to capture the erupted water. A portion of the erupted water would return to the geyser and the remainder would be conveyed by gravity through a pipeline about 3 miles to a 40-acre evaporation pond. The control plan would prevent the entire annual 3,000 tons of salt from entering the river.

The dike would be designed to blend with the exposed sandstone formation for esthetic purposes. Because of the return of a portion of the erupted water to the geyser, the interval between eruptions would be reduced from 5–6 hours to 2–3 hours, increasing its value as a tourist attraction.

The estimated cost of the proposed project would be $490,000 with an annual operation, maintenance, and replacement cost of

$3,000. As construction would be completed in less than a year, the project's capital cost is the same as the construction cost, and, amortized in 100 years at 6⅞ percent interest rate, the annual capital and operating costs would amount to $30,000. The salinity impacts at Imperial Dam of removing 3,000 tons per year of salt by the project would be 0.3 p/m reduction in the year 2000. This is equivalent to a benefit of $70,000 per year, or a benefit-ratio of 2.3/1.

Las Vegas Wash is a natural channel which drains from the Las Vegas Valley into the Las Vegas Bay arm of Lake Mead. Historically, Las Vegas Wash was an intermittent stream flowing only during periods of high rainfall and runoff. With the expansion of Las Vegas, effluent from municipal and industrial waste treatment plans was discharged into the Wash and this, along with rising ground water flows, has created a perennial flow into Lake Mead.

The Wash adds about 209,000 tons of dissolved solids annually to the Colorado River system. The sources are both point and diffuse. The point sources, effluent from sewage treatment plants with secondary treatment and powerplant cooling water blowdown, account for about 20 percent of the total salt load. The remaining 80 percent of the salt load comes from rising ground water, a diffuse source that includes flows from a long-established ground water mound beneath industrial waste ponds and other regional ground water discharge flows. A program to renovate the industrial waste ponds is now underway. Impervious linings will be installed will prevent the continued percolation of the saline wastes from the Basic Management, Incorporation—BMI—industrial complex near Henderson, Nevada. These facilities were built by the Federal Government and operated under its control for many years.

The proposed plan for reducing the contribution of salinity of Las Vegas Wash ground water consists of a ground water interception facility, delivery pipeline, pumping plant, evaporation pond, and surface flow bypass system. This solar evaporation plan is estimated to reduce the salt contribution of the wash by 131,000 tons annually.

The ground water flow, which surfaces at a narrow point in the wash, would be collected in a series of subsurface drains and pumped 4 miles to evaporation ponds, comprising some 2,300 acres in the vicinity of Henderson. Maximum annual evaporation, which is expected to be reached in the year 2000, will be about 15,000 af/yr.

The treated effluent from the municipal treatment facilities, which has a much lower salinity than the ground water, would be collected, bypassed around the area of rising ground water, and allowed to discharge into Lake Mead.

Implementation of the project will reduce salinity of the water to downstream users. The wash is highly valued as a recreational and wildlife habitat area. Continued return of treated effluents will maintain year-round flow of wash below the area of rising ground water.

The estimated cost of the proposed salinity reduction program is $49.6 million with an annual operation, maintenance and replacement cost of $200,000. Total capital costs, including interest during construction, would be $54,700,000, and the annual costs, based on

amortizing the capital costs over 100 years at an interest rate of 6⅞ percent, would be $4 million. The removal of 131,000 tons a year of salt from the river would reduce the river's salinity at Imperial Dam by 12 ppm, which reduction would reduce annual damages to users by $3 million. The benefit/cost ratio attributable to this project would be 0.75/1.

In addition to the four projects to be authorized for construction, there are a number of other potential salinity control projects on which planning reports should be completed expeditiously. Previous studies by the Environmental Protection Agency and the Bureau of Reclamation have identified these projects. The projects fall into three categories: point, irrigation, and diffuse sources, and are as listed:

Point source control—La Verkin Springs, Utah, Littlefield Springs, Arizona, Glenwood-Dotsero Springs, Colo.

Irrigation source control—Lower Gussison, Colo., Uintah Basin, Utah, Colorado River Indian Reservation, Ariz., Palo Verde Irrigation District, Calif. Diffuse source control—Price River, Utah, San Rafael River, Utah, Dirty Devil River, Utah, McElmo Creek, Colo., Big Sandy River, Wyo.

Preliminary estimates of the Bureau of Reclamation indicate that a total salt reduction of approximately 1,130,000 tons annually and a reduction in salt concentration of 100 ppm at Imperial Dam is possible from these 12 sources.

Users of Colorado River water have initiated programs to minimize the damaging impacts of salinity. These programs include the control of effluent from thermal-electric powerplants and other industrial users, reappraisal of authorized water development projects, installation of underground drains in agricultural areas, and blending of Colorado River water with a higher quality water in southern California.

Since 1970, entities involved in the design and construction of thermal-electric powerplants have taken actions to eliminate the return of cooling tower glowdown water to the Colorado River. thereby reducing the salinity impact of such plants. As cooling water evaporates, the dissolved salt in the remaining water becomes more and more concentrated. Cooling water must be maintained at or below specific levels of concentration; to accomplish this a portion of the concentrated water is discharged, or "blown down", and replaced with fresh water. When the glowdown water is not returned to the river system, the dissolved salts contained in the water diverted are removed from the river.

At the present time, there are large coal-fired thermal-electric generating plants either in operation or under construction within the Colorado River Basin that will be disposing of their blowdown water way from the river, thereby removing dissolved salts from the Colorado River system. An analysis of one of these plants, the Navajo Generating Station near Lake Powell in northern Arizona, revealed that not returning glowdown water removed about 30,000 tons a year of dissolved salts from the river system. The operations of the other power plants similarly remove considerable quantities of dissolved salts from the Colorado River system. It should be rec-

ognized, however, that even with the reduction in quantity of dissolved salts due to these practices, the river's concentration of dissolved salts increases because of the consumptive use of water in powerplant cooling.

In a different approach in the Lower Colorado River Basin, the San Diego Gas and Electric Co. has been working on plans to construct a large nuclear power plant in the Colorado Desert near Blythe, Calif. Other southern California utilities are also planning on nuclear units at this location. The proposed San Diego Gas and Electric Plant would use Palo Verde Irrigation District drain water for cooling purposes and would not return the cooling tower glowdown water to the Colorado River. The consumed drain water would be replaced downstream by an equivalent quantity of Colorado River water from The Metropolitan Water District of southern California. Thus, by intercepting and using the more saline drainage water, both the total salt load and the salinity concentration in the Colorado River downstream from the Palo Verde Irrigation District drain would be reduced. Metropolitan Water District has approved the exchange of 60,000 acre-feet of its water in this manner, including allocation of 17,000 acre-feet to San Diego Gas and Electric Co., 33,000 acre-feet to Los Angeles Department of Water and Power, and 10,000 acre-feet to Southern Californian Edison Co.

Massive coal gasification plants are being planned for construction in New Mexico. Current plans are for none of the used water to be returned to the river system. Thus, as with the thermal-electric plants, the total dissolved solids of the river will be reduced as a result of this use; nevertheless, there would also be increases in salinity downstream as a result of the concentration effect of consumptive use.

The Nation's increasing demand for oil has caused government to initiate a leasing program and industry to proceed with prototype development of the tremendous oil shale reserves of the Upper Colorado Riven Basin. Because the unrestrained discharge of effluents from the mining and extraction could have a damaging impact on downstream salinity, the oil shale base agreement proposed in the environmental impact statement contemplates that measures would be taken to prevent toxic and saline returns from polluting surface and groundwaters. As with the previously described uses wherein water is consumptively used and the salts in the water are removed from the river system, the use of Colorado River water in an oil shale industry with indicated safeguards should lead to reductions in the dissolved salt load of the Colorado River and minimal increases in downstream salinity.

Presently authorized but unconstructed projects within the upper Colorado River Basin are being reappraised to minimize their salinity impact. This is being accomplished by careful analysis of lands that would receive irrigation water to assure exclusion of lands overlying saline formations and by planning onfarm facilities to reduce excess applications of water by farmers.

Farmers in Arizona and California using Colorado River water have been applying various management practices in order to con-

tinue the beneficial use of the high salinity water. Most of the irrigated lands receiving Colorado River water in these States have manmade drainage facilities of some nature to carry away the volume of water required to keep the soil water salinity at acceptable levels.

For example, the Imperial Irrigation District and its individual farmers have, during the period 1929 to 1972, installed over 17,800 miles of tile drains at a total cost of over $40 million. In addition, over $26 million have been spent in the District to concrete-line nearly 2,400 miles of laterals and farm ditches to reduce seepage and thereby reduce drainage problems. It is estimated that an additional $84 million will have to be expended within that district along to combat current levels of salinity. Coachella Valley farmers, irrigating about one-seventh the average of Imperial Valley farmers through 1972, had installed 1,900 miles of tile drains.

Both individual urban water users and water distributing entities have adopted measures that reduce to some extent the harmful impacts of high salinity water. The Metropolitan Water District of southern California and several other water purveyors operate central softening plants; and thousands of individual water users, both domestic and commercial, have incorporated softeners in their plumbing systems.

The Metropolitan Water District of southern California over 1 million acre-feet a year of Colorado River water into the southern California coastal plan where over 10 million persons reside. With the completion in 1972 of the initial facilities of the California State Water Project, the District has available to it northern California water with about one-third the salinity of Colorado River water. In order to reduce the salinity of the water delivered to its service area, the District recently announced a program involving significant expenditures by the District which would allow distribution of a 50-50 blend of the two waters to 75 percent of its service area.

The salinity of the Colorado River has local, State, national, and international aspects. While there are many entities and levels of government concerned with the salinity of the Colorado River, only the Federal Government is involved in all major aspects of the salinity problem. The Federal Government, in Minute 242, has the objective of arriving at a permanent and definitive solution to the problem of the salinity of the water delivered to Mexico. Without upstream salinity control, the problem will not remain solved. Federal lands are the source of most of the naturally-occurring salts in the river. Accordingly, it is believed that the Federal Government is the appropriate unit of government to initially finance the salinity control project and to bear a major share of the repayment responsibility.

In consideration of the factors mentioned above and the Federal Water Pollution Control Act Amendment of 1972, assignment of 75 percent of costs as nonreimbursable is deemed equitable, with the states of the Colorado River Basin responsible for repayment of the remaining 25 percent of project costs.

The Colorado River Basin States conducted extensive discussions among themselves concerning appropriate division of the Basin

States' share of costs between the Upper and Lower Basins. After considering all factors, the States agreed upon the divisions of costs stated in S. 2940 for the four projects to be authorized by that bill.

This negotiated agreement calls on the Secretary to set the cost allocations following analysis of the authorized salinity control projects that consider benefits to each basin, causes of salinity and availability of revenues in the respective basin funds. The Secretary's allocation to the Upper Basin States is not to exceed 15 percent of the total cost of each unit allocated to the Basin States.

Natural causes produce most of the salts in the basin. People have been using Colorado River water and causing salinity increases ever since the West was settled over 120 years ago. Now, there are thousands of farmers and businesses, scores of diversions out of the basin, hundreds of villages, towns and cities that use Colorado River system water and thereby cause incremental salinity increases. All of these interests could be held responsible for a share of the allocated costs of salinity control, as could those millions of persons who will benefit from control of salinity.

Fortunately, mechanisms are in hand that enable the costs allocated to the basin States to be collected in an equitable manner and repaid to the General Fund of the Treasury without having to develop the complex administrative machinery required to collect charges from each beneficiary within the Colorado River Basin. These mechanisms are the Upper Colorado River Basin Fund and the Lower Colorado River Development Fund.

The revenues to these funds originate from power sales. The power generated is incidental to control and operation of the Colorado River for purposes of maximizing beneficial use of the river's water. Entities purchasing the power pass on to their customers the costs thereof. Thus, through the development funds, the power users, who are generally also those who benefit from the use of Colorado River water would repay the allocated costs of salinity control.

In order to obtain the revenues necessary to repay the General Fund of the Treasury, the electric power rates will have to be raised slightly in the case of the Upper Colorado River Basin Fund.

The Lower Colorado River Basin Development Fund was established by the Colorado River Basin Project Act of 1968 for the purpose of repaying the costs of any project that may be built to augment the flow of the Colorado River. The problems of the river's salinity are so pressing that the Lower Basin States have concluded that a portion of the power revenues accruing to this Fund should be used for repaying allocated costs of salinity control. Again the power—and thereby water—users of the Lower Basin will be paying charges into the fund that will be directly used to repay the General Fund of the Treasury.

The Colorado River, the primary source of water for major portions of seven States and Mexico has experienced and will continue to experience increases in salinity which adversely affect its water users. In recently negotiated Minute 242 the Federal Government agreed to limit the difference in salinity between Imperial Dam and the Northerly International Boundary as a permanent and definitive solution to the salinity problems with Mexico.

Ambassador Brownell in his report of December 28, 1972, to the President recommended "Timely decisions in regard to implementation to specific actions to control salinity increases in the Colorado River Basin." Without the control of upstream salinty, the United States will be faced with a new salinity problem with Mexico as salinity levels increase with continued development; and water users in the United States will be faced with a new salinity problem with Mexico as salinity levels increase with continued development; and water users in the United States will suffer significant economic impacts, with impacts estimated to reach $80 million annually by the year 2000.

The seven Colorado River Basin States, the Environmental Protection Agency, and the Department of Interior have agreed on the long-range salinity objective for the Colorado River of maintaining the salinity of the lower mainstream at or below present levels while the Basin States continue to develop their compact apportioned waters; and on the short-range goal, within this objective, of removing 400,000 tons of salt annually from the river system.

The proposed legislation, S. 2940, the Colorado River Basin Salinity Control Act of 1974, which you have under consideration, meets this goal and will assist in achieving a permanent solution to the controversy with Mexico over the salinity of the Colorado River.

Accordingly, it is strongly recommended that S. 2940, the Colorado River Basin Salinity Control Act of 1974, be enacted as modified by the amendments that follow.

The Committee of Fourteen suggests the following amendments to S. 2940.

1. Page 3, between lines 12 and 13, add:

(Sec. 101(b)(3)) The Secretary is authorized to conduct a saline water research and development program to improve and advance brackish water conversion technology using improved processes to increase the desalting plant efficiency, thereby reducing the reject stream flowing from the plant.

The desalting plant will be designed using today's technology to recover 70 percent of the feedwater. Ambassador Brownell in his report to the President called attention to the fact that the recovery rate could be increased as more advanced technology became available. The Director of the Office of Saline Water has expressed the opinion that with continued research recovery rates of 90 percent are achievable. Improvement to 90 percent would reduce reject stream losses from approximately 43,000 to 14,000 acre-feet per year.

2. Page 3, line 13, strike out subsection (c) in its entirety and substitute the following:

(c) Replacement of the reject stream from the desalting plant and of any Wellton-Mohawk drainage water by-passed to the Santa Clara Sough to accomplish essential operation except at such times when there exists surplus water of the Colorado River under the terms of the Mexican Water Treaty of 1944, is recognized as a National obligation as provided in Section 202 of the Colorado River Basin Project Act (82 Stat. 895). Studies to identify feasible measures to provide adequate replacement water shall be completed not later than June 30, 1980. Said studies shall be limited to potential sources within the waters of Arizona, California, Colorado, New Mexico and those portions

of Nevada, Utah and Wyoming, which are within the natural drainage basin of the Colorado River. Measures found necessary to replace the reject stream from the desalting plant and any Wellton-Mohawk drainage bypassed to the Santa Clara Slough to accomplish essential operations may be undertaken independently of the national obligation set forth in Section 202 of the Colorado River Basin Project Act.

The first two sentences of this amendment are intended to improve draftsmanship. The last two sentences are to limit studies of sources of replacement water to the Colorado River Basin and to provide that replacement may be accomplished in advance of meeting the requirements of Section 202 of the Colorado River Basin Project Act. Long distance conveyance of the amounts of water required would be economically prohibitive. It may be argued that section 202 requires augmentation of the Colorado River by 2.5 million acre-feet per year before the Mexican treaty allocation becomes a national obligation. To ask the States to wait for relief on desalting plant losses until such an amount has been added to the river would be unreasonable.

3. Page 4, line 6, (Section 101(e)), change "disposed" to "exchanged."

The Secretary will not have authority to sell surplus product water from the desalting plant but may exchange it at a price with entities holding perfected rights of contractual rights to water supplies from the river.

4. Page 4, line 9, add following the period. "The City of Yuma shall have the first right of refusal."

This amendment would give the major municipality closest to the desalting plant the first right to contract to exchange Colorado River water for desalting plant product water at such times as surplus product water exists.

5. Page 5, line 5, following "authorized" add comma and "with the consent of the Board of Directors of the Wellton-Mohawk Irrigation and Drainage District."

This amendment protects the District against unilateral reductions in authorized acreage greater than 10,000 acres.

6. Page 5, line 10–12, (Sec. 101(g)), strike "or to retain such lands for fish, wildlife, or other appropriate purposes."

This is unnecessary language in that the Secretary already has authority to retain lands for such purposes. We are concerned that specific inclusion here may at some time in the future be construed as enlarging that authority.

7. Page 5, line 23 through line 3 on page 6, (Sec. 101(h)), delete all of sentence beginning on line 23.

All costs associated with improvements that will enable water users to meet applicable water quality requirements of State and Federal law shall be the responsibility of the water users under financial criteria established by law.

Again, this is an unnecessary provision as the Water Quality Amendments of 1972 will govern. We are concerned that inclusion here might at some time be construed as enlarging that law.

8. Page 7, line 1, delete:

The Secretary is also authorized, in conjunction with the Corps of Engineers, to adopt other control measures below the dam to permit the United States to comply with its obligations under Minute numbered 242.

Such measures have not been identified by the administration even though their early drafts of legislation to implement Minute 242 included similar language. S. 3094, however, does not do so.

9. Page 7, line 24 through line 15, page 9, delete all of section 102 and substitute:

Sec. 102(a). To assist in meeting salinity control objectives of Minute 242 of the IBWC during an interim period, the Secretary is authorized to construct a new concrete-lined canal or to line the presently unlined portion of the Coachella Canal of the Boulder Canyon Project in California from State 2+26 to the beginning of Siphon No. 7, a length of approximately 49 miles. The United States is to be benefited by an amount of water during an interim period equal to the amount of water conserved by constructing or lining said canal. The interim period shall commence on completion of construction or lining said canal and shall end the first year that the Secretary delivers mainstream Colorado River water to California in an amount less than the sum of the quantities requested by (1) the California agencies under contracts made pursuant to section 5 of the Boulder Canyon Project Act, and (2) Federal establishments to meet their water rights acquired in California in accordance with the Decree in Arizona v. California.

(b) The charges for total construction shall be repayable without interest in equal annual installments over a period of 40 years beginning in the year following completion of construction; provided, that repayment shall be prorated between the United States and Coachella Valley County Water District, and the Secretary is authorized to enter into a repayment contract with Coachella Valley County Water District for that purpose. The annual repayment installments shall be nonreimbursable during the interim period, defined in Section 102(a) and shall provide that after the interim period, said annual repayment installments or portions thereof shall be paid by Coachella Valley County Water District, and all other repayment installments shall be nonreimbursable.

(c) The Secretary is authorized to acquire by purchase, eminent domain, or exchange private lands or interests therein, as may be determined by him to be appropriate, within the Imperial Irrigation District on the Imperial East Mesa which receive, or which have been granted rights to receive, water from Imperial Irrigation District's capacity in the Coachella Canal. Costs of such acquisitions shall be nonreimbursable and the Secretary is to return such lands to the public domain, but withdrawn from entry. The United States shall not acquire any water right by such acquisition of lands.

(d) The Secretary is authorized to credit Imperial Irrigation District against its final payments for certain outstanding construction charges payable to the United States on account of capacity to be relinquished in the Coachella Canal as a result of the canal lining program, all as determined by the Secretary: Provided, That relinquishment of capacity shall not affect the established basis for allocating operation and maintenance costs of the All-American Canal to existing contractors.

This rewrite of section 102 would accomplish the following objectives:

(a) Clarification that benefits from water salvage from lining of the Coachella Canal will accrue only during an interim period;

(b) Better definition of the interim period as ending when the Secretary of the Interior reduces Colorado River deliveries to California;

(c) More specific definition that costs are nonreimbursable during the interim period;

(d) The opportunity for Coachella to negotiate with the Secretary with respect to payments after the interim period as there may be years in which Coachella receives no benefit or only a partial benefit from the lining;

(e) Assurance that the United States in purchasing East Mesa lands does not acquire any water rights and that the lands pur-

chased will be returned to the public domain from whence they came.

10. Page 9, strike line 16 through line 23 and substitute: "Sec. 103(a) The Secretary is authorized to:"

This amendment would remove the 2-year waiting period and authorize the Secretary to proceed immediately with the construction and operation of protective pumping in the vicinity of the border. Mexico's San Luis well field is in operation. It is highly improbable once given the quality guarantee that Mexico will agree to abandon the well field or agree to accept the quantity of water drawn from the United States by that field as a charge against her treaty allotment. To maximize the U.S. negotiator's position, the Secretary should be authorized to proceed with counterpumping immediately.

11. Page 10, strike lines 15 and 16, and substitute:

(b) The cost of work provided for in this section, including delivery of water to Mexico, shall be nonreimbursable; except to the extent that the waters furnished are used in the United States.

It is envisaged that most if not all of the waters pumped will be delivered to Mexico in partial satisfaction of the treaty. All costs of such pumpage and delivery should be nonreimbursable. The amendment provides that should any of the pumped waters be used in the United States, the user must bear the costs associated with its production.

12. Page 11, Line 18, delete "$119,500,000" and substitute "$125,000,000."

$3,500,000 of the increase would provide funds for the desalter technology research proposed in the first amendment. The remaining increase of $2 million would finance the reject stream replacement water studies called for in section 101(c).

13. Page 13, strike line 23 and substitute: "canals and laterals, and the combining of"

Page 14, line 11, add the following:

The Secretary will enter into agreements with the Secretary of Agriculture to develop a unified control plan for the Grand Valley Unit. The Secretary of Agriculture is directed to cooperate in the planning and construction of on-farm system measures under programs available to that Department.

This amendment recognizes the importance of current onfarm irrigation improvement programs of the Department of Agriculture in the overall program to reduce salt returns to the river and the need for active, coordinated input from the Department.

I hasten to add for the benefit of Chairman Church, who is not able to be with us this afternoon, that one of these amendments that we are suggesting deals with the question that was foremost in his mind. It would limit the studies of replacement water, replacement of the brines to the basins. It uses the same language of the Moratorium of 1968 Act, although there is no limit on time in the language in our amendment.

Senator FANNIN. I will call this to Chairman Church's attention.

Mr. STEINER. Thank you very much for the opportunity to present this statement on behalf of the Committee of Fourteen.

Senator FANNIN. Thank you for a very comprehensive statement. The committee members should be congratulated for the fine work they have done. It indicates a tremendous amount of thought and preparation, and they have consideration of every phase of the legislation, and I think that it is essential now that we do go forward, and I think that you have brought out that the needed studies have been made and that now is the time for action, and I feel the same as you do, that it should be an overall program and not just to go part way, and it is essential that we do have confidence in legislation.

A good deal of the Federal electric power in the United States is under contract to nonpreference customers. In your opinion will all present users be protected under this legislation?

Mr. STEINER. That certainly is our desire, that all present users of federal power be protected and that is the intent of the language in S. 2940, as we understand it.

Senator FANNIN. Very good. I note that was the intent that we had and I wanted to know if you did agree that it was adequately covered.

Mr. STEINER. We believe so, yes.

Senator FANNIN. Are there any other statements? Your other witnesses, would they desire to make any statement at this time?

Mr. STEINER. I believe it would be well, Mr. Chairman, to give Mr. Paff an opportunity to respond to the question that Senator Bible indicated he was going to ask him if he had the opportunity to.

STATEMENT OF DONALD L. PAFF, ADMINISTRATOR OF THE COLORADO RIVER COMMISSION

Mr. PAFF. Thank you, Wesley. I would like to respond to Senator Bible's request for information regarding power and energy supplied for the desalting complex. I believe that the current and future acquisition of additional electric power energy is most difficult and requires as a minimum considerable advance commitments to insure that it will be available when needed.

Thus, the acquisition of a supply should be completed immediately in order to meet a demand of the order of 35 megawatts in the 1978 period.

One needs only today to try to acquire additional power and energy to realize the complexity of acquisition of even 35 megawatts and perhaps to put that in perspective, the current maximum allocation of Parker Davis to the State of Nevada is 53 megawatts, thus the 35 megawatts is in our viewpoint a substantial amount of power when you consider it in that perspective.

Senator FANNIN. Thank you, Mr. Paff, and we will call this to Senator Bible's attention. Of course, coming from his State I am sure you will also convey your opinion to him. Thank you very much.

Any further statements?

Mr. STEINER. Mr. Chairman, Mr. Reynolds would also like to make a statement.

STATEMENT OF STEVE REYNOLDS, STATE ENGINEER OF NEW MEXICO

Mr. REYNOLDS. My statement is on the witness list, representing the Governor of New Mexico. I do not intend to present a separate statement, but on behalf of Governor King, express the State of New Mexico's endorsement of support for legislation S. 2940.

Senator FANNIN. Thank you very much, Mr. Reynolds. We are very pleased to have that commitment from you and from the others that are here today and it is certainly encouraging to see the unanimity that exists. It is certainly going to be very helpful and I am very proud this has come about.

I know over the years there have been differences of opinion and you certainly are to be commended for getting together and ironing out some of these differences and coming forward with a recommendation that you all support.

Any other statements?

STATEMENT OF FELIX L. SPARKS, DIRECTOR OF THE COLORADO WATER CONSERVATION BOARD

Mr. SPARKS. Senator, I do have a statement. I don't want to take the time to read the statement but I do have a statement prepared that I would like to put in the record as though read in full.

Senator FANNIN. Your complete statement will be made a part of the record. You may do it as you see fit.

Mr. SPARKS. I would rather not take any further time. I would point out that there is a resolution attached to my statement, a resolution adopted by the Colorado Senate. I was advised this morning by Senator Anderson of our State Senate that that resolution yesterday was adopted by the House of Representatives, so it now becomes a full resolution of the Colorado General Assembly which I have attached to my statement which I would like to include for the record.

Senator FANNIN. Thank you, and it will be made a part of the record.

Mr. SPARKS. A few minutes ago a staff member from Senator Dominick's office handed me two statements from the representatives of the districts representing the entire drainage area in Colorado, statements by the various companies in the Grand Valley area. I would like to have these included as part of the record also.

Senator FANNIN. Mr. Sparks, those statements will be made a part of the record.

Mr. SPARKS. And I have a resolution, Senator, from the Upper Colorado River Commission, the official agency representing the upper basin States, approving and endorsing this legislation, and I would also like to put that in the record.

Senator FANNIN. It will be made part of the record.

[The information referred to above follows:]

STATEMENT
OF
FELIX L. SPARKS, DIRECTOR
COLORADO WATER CONSERVATION BOARD

BEFORE THE
SUBCOMMITTEE ON WATER AND POWER RESOURCES
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
UNITED STATES SENATE

WASHINGTON, D. C.
APRIL 26, 1974

I am Felix L. Sparks, Director and Secretary of the Colorado Water Conservation Board. I appear here today as the representative of that board and at the request of the Honorable John D. Vanderhoof, Governor of the State of Colorado.

The Colorado Water Conservation Board is the official agency of the State of Colorado charged with the responsibility for protecting, developing and conserving the water resources of the state. Colorado's two representatives on the Committee of Fourteen were appointed from the staff of that board. As has already been stated by the chairman of the Committee of Fourteen, the State of Colorado endorses the recommendations of that committee. We believe, however, that the position of the State of Colorado in this matter requires a brief explanation.

Several months ago, we were furnished with copies of a regulation proposed by the Environmental Protection Agency which would establish salinity standards for the Colorado River system at or below levels found in the lower main stem as of April, 1972. While the

standards do not so state, we believe that they mean 865 parts per million of total dissolved solids at Imperial Dam on the lower Colorado River. This conclusion is drawn from our knowledge of the negotiations with the Republic of Mexico which culminated in the adoption of Minute No. 242 of the International Boundary and Water Commission.

Standing alone, the proposed regulation by the Environmental Protection Agency, if it becomes law, would prohibit any further use of Colorado River water by the State of Colorado or any other state of the Colorado River Basin. To Colorado, this would present an impossible and unenforceable situation. However, the proposed EPA regulation recognizes this fact and contains the following statement: "In implementing this standard for the Colorado River System, the salinity problem will be treated as a basinwide problem that needs to be solved in order to maintain lower basin water salinity at or below present levels while the upper basin continues to develop its compact-apportioned waters."

Colorado can never agree that the salinity standards on the Colorado River as now proposed are reasonable and enforceable, unless it is demonstrated that such standards can be met without depriving us of our major source of water supply. I will add at this point that the Colorado River constitutes about seventy percent of the total surface water supply available within our state.

The common approach of the EPA and the seven basin states

has been to devise a salinity control program for the Colorado River which would not result in protracted litigation and other open combat on the Colorado River. The occasion is rare when the seven states of the Colorado River can mutually agree on anything. We have expended millions of dollars and thousands of hours in disagreeing with each other. We are weary of such internecine warfare. It is therefore refreshing to come before this Subcommittee and state that S. 2940 represents a mutually acceptable solution to the salinity problems of the Colorado River.

S. 2940 authorizes the construction and operation of two salinity control projects in Colorado. The Paradox Valley unit would control salinity discharges from natural sources. The Grand Valley unit would control salinity discharges from irrigation. While these two projects are of no direct benefit to the State of Colorado, we believe they will represent a giant step forward in controlling the salinity of the Colorado River.

The Grand Valley unit, in particular, will be a valuable pilot project for irrigated lands everywhere in western United States. The knowledge gained from this project can be applied to other areas where irrigation return flows affect water quality. It is our understanding that there has been some consideration of reducing the funding for this project. We believe that such reduction would defeat the purposes of the proposed legislation.

We understand that S. 3094 is also being considered by this Subcommittee at this time. This bill would implement the provisions of Minute No. 242 of the International Boundary and Water Commission. The State of Colorado wishes to express its unyielding opposition to this proposed legislation, unless it includes the other provisions now contained in S. 2940.

In its letter to the Congress explaining the purposes of the bill now designated as S. 3094, the State Department makes the following claim: "This agreement has very considerable advantages for the United States. Above all, it removes the uncertainties of the effect the salinity problem might have caused on further development of the Colorado River Basin."

Indeed, the agreement does remove uncertainties about further development in the Colorado River Basin. It precludes further development--unless a comprehensive upstream salinity abatement program is instituted. Why this is a "considerable advantage" to the United States is as murky as a London fog, unless the states of Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming are not considered to be a part of the United States.

The proposed desalting plant near the International Boundary would accomplish nothing to improve the quality of the water delivered at Imperial Dam. It is the quality of water delivered at this point which is the crux of the agreement with Mexico. It is also this portion

of the agreement which would have a disastrous effect upon any further upstream use of Colorado River water, without such salinity control measures as contemplated by S. 2940.

Mr. Chairman, the members of the Colorado General Assembly are keenly interested in the progress of the legislation which is the subject of this hearing today. Earlier this week, I received a call from Senator Fred E. Anderson, Chairman of our Senate Committee for Natural Resources, requesting that I call this Subcommittee's attention to a resolution adopted by the Colorado Senate on January 31, 1974, pertaining to the Colorado River salinity problem. A copy of that resolution is attached to my statement. I ask the permission of the Subcommittee to have this resolution included as a part of my statement.

I thank the Subcommittee for the opportunity to present this testimony on behalf of the State of Colorado today. Governor Vanderhoof had expected to be here personally. However, since the current session of the Colorado General Assembly has been prolonged as the result of several unresolved issues, he was unable to come at this time. The Governor asked that I convey his appreciation to Senator Church and to the other members of the Subcommittee for the invitation extended to him to present a statement concerning the pending legislation.

FLS:mm

Second Regular Session
Forty-ninth General Assembly

STATE OF COLORADO

BY SENATORS Anderson, Kinnie, Locke, McCormick, Noble, and Wunsch; also REPRESENTATIVES Younglund, Baer, Bledsoe, Boley, Bryant, Burns, Edmonds, Gunn, Hinman, Lucero, Quinlan, Ross, Sonnenberg, and Spano.

SENATE JOINT RESOLUTION NO. 2

WHEREAS, The Colorado River and its tributaries are a natural resource of vital importance to the State of Colorado and to the other states of the Colorado River Basin; and

WHEREAS, All the rivers of the State of Colorado and their tributaries constitute a natural resource of paramount importance to Colorado and its citizens, the use of which has been enjoyed by its citizens for over 100 years, and the use of which is essential to the national as well as local needs; and

WHEREAS, Pursuant to federal law, the Environmental Protection Agency has proposed the adoption of certain arbitrary salinity control standards for the Colorado River, which adoption could have a serious adverse effect upon the existing and planned uses of water in Colorado and in the other basin states, unless comprehensive and expensive desalting programs are initiated; and

WHEREAS, A major part of the so-called salinity problem is attributable to the execution of Minute No. 242 of the International Boundary and Water Commission under the date of August 30, 1973, relating to the Mexican Water Treaty of 1944, by unilateral executive action without either the consent of Congress or any of the seven affected states of the Colorado River Basin, the terms of which the State of Colorado continues to disapprove; and

WHEREAS, Section 202 of the Colorado River Basin Project Act of 1968 (82 stat. 885) states that "The Congress declares that the satisfaction of the requirements of the Mexican Water Treaty from the Colorado River constitutes a national obligation . . ."; and

WHEREAS, The establishment of federal salinity standards in accordance with the provisions of Minute No. 242 without the concurrent initiation of a comprehensive upstream salinity abatement program will adversely affect Colorado's use of water to which it is entitled by

interstate compact and thereby have a serious detrimental effect on Colorado's economic and social welfare and will thus create inequitable economic hardship on the capacity of Colorado's water users to comply with said salinity standards and thus impair the development of its water and other natural resources needed to meet the nation's growing energy needs; now, therefore,

Be It Resolved by the Senate of the Forty-ninth General Assembly of the State of Colorado, the House of Representatives concurring herein:

That the General Assembly of the State of Colorado supports the Colorado Water Quality Control Commission and the Colorado Water Conservation Board in their negotiations with the agencies of other basin states and the federal government in establishing reasonable salinity standards for the Colorado River and all other rivers in Colorado.

Be It Further Resolved, That the General Assembly of the State of Colorado supports the financing of pollution control measures by the United States Government, such as the enactment of the "Colorado River Basin Salinity Control Act", now pending in the United States Congress, which authorizes an immediate action program for controlling salinity in the Colorado River system, without infringement upon the provisions of the Colorado River and Upper Colorado River compacts, and a continuing program that would expedite the federal investigation, planning, and construction of salinity control works.

Adopted by the Senate on January 31, 1974.

JOINT STATEMENT
OF
THE COLORADO RIVER WATER CONSERVATION DISTRICT
AND
THE SOUTHWESTERN WATER CONSERVATION DISTRICT
TO
THE SUBCOMMITTEE ON WATER AND POWER RESOURCES
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
OF THE UNITED STATES SENATE
ON
S. 2940
93d CONGRESS, 2d SESSION

April 26, 1974

Mr. Chairman Church and Members of the Subcommittee:

We ask that this statement, which is submitted jointly by The Colorado River Water Conservation District and the Southwestern Water Conservation District in support of S. 2940, the "Colorado River Basin Salinity Control Act", be made a part of the record.

The Districts are public agencies of the State of Colorado, each established by a special act of the state legislature. Together they geographically encompass all of the area in Colorado West of the Continental Divide and are the source of 70% of the virgin flow of the Colorado River at Lees Ferry, Arizona, the dividing point between the Upper and Lower Colorado River Basins. The Districts are shown on the attached map. At present only a small fraction of the flow generated by the two Districts is utilized within their boundaries, but the construction of several water resource projects is imminent.

Both Districts have the statutory responsibility of conserving and applying

to beneficial use in their respective areas the waters of the Colorado River and its tributaries within the State of Colorado. Rivers included are the headwaters and a substantial part of the runoff area of the mainstem of the Colorado River and many of its principal tributaries. These tributaries include the San Juan, Dolores, Gunnison, White and Yampa Rivers, as well as numerous streams tributary to them.

We appreciate the opportunity to present this statement in support of the passage of S. 2940, a bill designed to reduce the salinity of the Colorado River, but our support certainly does not imply any responsibility for salinity; this is a basin-wide problem. Salinity control measures provided for in S. 2940 will allow and should provide for continuing economic growth so dependent on the increased use of water. We commend the sponsors of S. 2940 for the language in Sec. 201a, directing the Secretary to implement the salinity control policy that recognizes that the Upper Basin States shall develop their compact-allocated share of Colorado River Basin water.

Two of the four projects to reduce salinity to be authorized by Title II of the proposed legislation, the Paradox Valley unit and the Grand Valley unit are within the geographic area of the districts. Three of the units for which the Secretary is authorized and directed to complete planning reports in Section 203; Lower Gunnison, Glenwood-Dotsero Springs and McElmo Creek, are also within the boundaries of the Districts. The five salinity control projects are shown on the map.

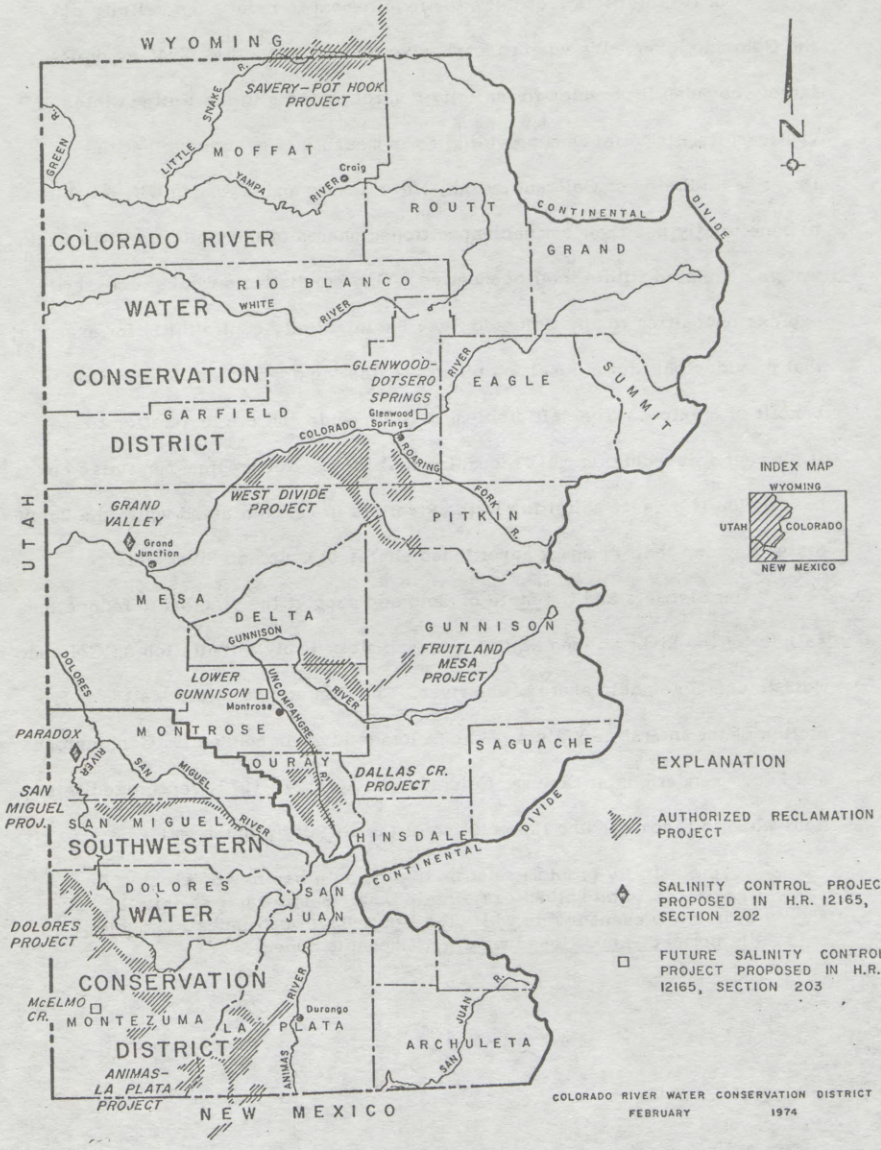
Our continuing and abiding interest in this legislation can be further demonstrated by the fact, as this committee knows, that seven reclamation projects in the area of the Districts have been authorized by Congress for construction, but are not constructed because of lack of funding. Two, Fruitland Mesa and Savery-Pot Hook, authorized in 1964, received no recommendation for any appropriation in the President's FY 1975 Budget message. The other five (San Miguel, Dolores, Animas-LaPlata, Dallas Creek and West Divide) are recommended for only small amounts of planning moneys. Two of these projects, Animas-LaPlata and Dolores, would greatly benefit the Ute Indian tribes in Southwestern Colorado. One, West Divide, is essential to supply water for the emerging oil shale industry. The seven water resource projects are shown on the map.

All seven projects are essential to the nation's economy, prosperity and ability to be self-sustaining in energy and food and fiber. The energy crisis has focused national attention on the coal as well as oil shale potential of Western Colorado. The development of these energy resources cannot proceed without a reliable water supply. The construction of these authorized projects can, in part at least, guarantee the requisite water supply reliability. We would, therefore, request that, as the opportunities present themselves, the committee members will urge their counterparts in the Appropriations Committees to better fund the planning and construction of these projects.

Our two districts recognize the requirement to reduce the salinity of the Colorado River. We wish to emphasize that we support S. 2940 as drafted, largely because it provides for salinity control projects in the United States upstream from Imperial Dam providing some measure of assurance that the Upper Basin States of Colorado, Utah, New Mexico and Wyoming will be able to beneficially use their compact-apportioned shares of the Colorado River Basin waters generated within their boundaries. Our two districts would necessarily express opposition to any Colorado River Basin salinity control bill, for example, that provides only for a desalting plant near the Mexican Border for the sole benefit of Mexico. The salt problem is basin-wide and the legislation to implement salt reduction must recognize that the control program must also be basin-wide if present salinities in the River are to be maintained while the Basin States develop their compact apportioned shares of Colorado River water.

Our districts and the State of Colorado support the program to reduce the salinity of the River so long as it does not limit or imply a limitation on Colorado's right to use Colorado's share of the river. The Conference in the Matter of Protection of the Interstate Waters of the Colorado River in making its Conclusions and Recommendations at Denver, Colorado, on April 27, 1972, recognized this right when in recommending the solution of the salinity problem said:

> ...the salinity problem must be treated as a basin wide problem that needs to be solved to maintain Lower Basin water salinity at or below present levels while the Upper Basin continues to develop its compact-apportioned waters. (emphasis added).


WYOMING
SAVERY-POT HOOK PROJECT
GREEN R.
LITTLE SNAKE R.
MOFFAT
YAMPA RIVER
Craig
ROUTT
CONTINENTAL DIVIDE
GRAND
COLORADO RIVER
RIO BLANCO
WATER
WHITE RIVER
CONSERVATION
GLENWOOD-DOTSERO SPRINGS
EAGLE
RIVER
SUMMIT
GARFIELD
DISTRICT
COLORADO
Glenwood Springs
ROARING FORK R.
PITKIN
WEST DIVIDE PROJECT
GRAND VALLEY
Grand Junction
UTAH
MESA
DELTA
GUNNISON
GUNNISON
FRUITLAND MESA PROJECT
LOWER GUNNISON
Montrose
UNCOMPAHGRE RIVER
DOLORES
PARADOX
MONTROSE
SAGUACHE
DALLAS CR. PROJECT
SAN MIGUEL PROJ.
SAN MIGUEL
SAN MIGUEL RIVER
OURAY
HINSDALE
SOUTHWESTERN
CONTINENTAL DIVIDE
DOLORES
WATER
SAN JUAN
DOLORES PROJECT
CONSERVATION
McELMO CR.
MONTEZUMA
LA PLATA
Durango
RIVER
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ANIMAS-LA PLATA PROJECT
ANIMAS
SAN JUAN R.
ARCHULETA
NEW MEXICO
N
INDEX MAP
WYOMING
UTAH
COLORADO
NEW MEXICO
EXPLANATION
AUTHORIZED RECLAMATION PROJECT
SALINITY CONTROL PROJECT PROPOSED IN H.R. 12165, SECTION 202
FUTURE SALINITY CONTROL PROJECT PROPOSED IN H.R. 12165, SECTION 203
COLORADO RIVER WATER CONSERVATION DISTRICT
FEBRUARY 1974

CONCURRING STATEMENT
OF
GRAND VALLEY IRRIGATION COMPANY
FRUITA CANAL AND LAND COMPANY
GRAND VALLEY WATER USERS ASSOCIATION
ORCHARD MESA IRRIGATION DISTRICT
MESA COUNTY IRRIGATION DISTRICT
PALISADE IRRIGATION DISTRICT
REDLANDS WATER AND POWER COMPANY
AND
THE COLORADO RIVER WATER CONSERVATION DISTRICT
TO
THE SUBCOMMITTEE ON WATER AND POWER RESOURCES
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
OF THE UNITED STATES SENATE
ON
S. 2940
April 26, 1974

The Colorado River Water Conservation District in addition to submitting a statement jointly with the Southwestern Water Conservation District that speaks to the overall value of legislation like S. 2940, also wishes to comment specifically on the property rights and operations of water user's associations and irrigation companies in the Grand Valley area which will be directly affected by Section 202 of S. 2940. These groups are: The Grand Valley Irrigation Company, the Fruita Canal and Land Company, the Grand Valley Water Users Association, the Orchard Mesa Irrigation District, the Mesa County Irrigation District, the Palisade Irrigation District and the Redlands Water and Power Company. Taken as a whole, these organizations serve an irrigable area of approximately 100,000 acres, of which about 65,000 acres are presently devoted to commercial agriculture. In addition to supplying the water for these lands, the companies supply irrigation water for lawns,

gardens and shrubs for about 18,000 people in the valley beyond the reach of city water mains. The annual growing season is between 180 and 200 days (the longest in the State of Colorado), permitting the production of a wide variety of grain and forage crops as well as fruits, vegetables and sugar beets. Per acre crop yields rank among the highest in the State, with the 1973 gross crop value in the Grand Valley in 1973 of approximately $19 million. Studies by Colorado State University* and others have shown that each dollar value of increased crop production generates $7 and $8 in new business activity in local, state and national levels. The efforts of the typical Grand Valley irrigation farmer create crop values of about $300 per acre in a good year, resulting in approximately $2400 per year of increased business activity on his efforts. His profit is about $30 per acre. In addition he provides free of charge the "Green Belts" so highly prized by urban communities.

It is the primary duty of the water organizations to provide the best water service possible at the least possible cost to the water users. These water organizations in the Grand Valley have met this challenge well and responsibility for many years. For an annual cost to the water user that ranges between $5 and $14 per irrigated acre (depending on the system, the year and the crops grown), these water organizations have continued to meet their water supply obligations with only infrequent interruptions for the last 50 years and the systems have been operated and upgraded continuously on a fiscally sound basis.

*Impact of Agricultural Change on a Local Economy in the Great Plains, Technical Bulletin, 106, Colorado State University Experiment Station, October 1969

The various water supply organizations in the Grand Valley generally support the concept of S. 2940, but believe some modification of the language in Section 202 (2) should be made or that the apparent conflict between Section 202 and 205 (1) should be clarified. Requiring by law (Section 202 (2) that canals and ditches be combined into fewer facilities could cause many legal, financial and operational problems where the various systems are separately owned and operational procedures have been long established. There should be language in the bill which would assure protection of existing property rights and continued autonomy of individual companies if they so desire. The requirements that the local companies and associations assume all obligations for operation, maintenance and achievement of maximum salinity reduction in the Colorado River could place an unlimited and unreasonable financial burden on the various water organizations. Unexpected failures could occur in expensive concrete linings and structures, requiring repair or replacement at private expense, or it might be arbitrarily determined that "maximum" salinity reduction was not being achieved and additional expenditures of unspecified magnitude could be required. To minimize these uncertainties and because Colorado River salinity is a basin wide problem and the guarantee to Mexico expressed in Minute 242 of the Boundary & Water Commission is a federal obligation, we urge that the Subcommittee add amendatory language that the water users costs for operation and maintenance will not be increased.

We believe it should be emphasized that residents of the Grand Valley will realize benefits from this legislation only to the extent that

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operating expenses are reduced or total crop yields increased by bringing marginal lands into full production. They stand to gain nothing and could suffer potential loss through the retention of salts in the soil beneath presently productive fields.

Farming commenced in the Grand Valley in 1882, and was well established before any other appreciable irrigation was practiced in the Colorado River Basin; before there was a Colorado River Compact or a "law of the river" or any salinity problem. While the farmers of the valley share the national concern for the quality of water in the Colorado River, they do not believe they should bear a disproportionate share of the cost of corrective measures or enter into agreements which could jeopardize their livelihood.

RESOLUTION
of
UPPER COLORADO RIVER COMMISSION
re:
COLORADO RIVER BASIN SALINITY CONTROL LEGISLATION

WHEREAS, on April 27, 1972, at the Federal-State Conference in the Matter of Pollution of the Interstate Waters of the Colorado River and Its Tributaries the conferees unanimously recommended that: (a) a salinity policy be adopted for the Colorado River system that would have as its objective the maintenance of salinity concentrations at or below levels presently found in the lower main stem, and (b) in implementing that policy objective the salinity problem must be treated as a basinwide problem that needs to be solved to maintain Lower Basin water salinity at or below present levels while the Upper Basin continues to develop its compact-apportioned waters; and

WHEREAS, the conferees also recognized that the salinity control program as described by the Department of the Interior in its report entitled "Colorado River Water Quality Improvement Program," dated February 1972 represents part of a practicable plan for implementing the salinity control objective; and

WHEREAS, by letter of June 9, 1972 to the Secretary of the Interior, the Administrator of the Environmental Protection Agency concurred with the conferees, endorsed the proposed salinity control program, and offered the assistance of his agency to the extent of available resources; and

WHEREAS, Bills (H. R. 12165 and S. 2940) are pending orders of business in the Committees on Interior and Insular Affairs of the House of Representatives and Senate of the United States Congress; and

WHEREAS, Title I of said Bills (H. R. 12165 and S. 2940) would authorize the Secretary of the Interior to construct certain works downstream from Imperial Dam on the Colorado River in the Lower Basin for the implementation of minute numbered 242 of the International Boundary and Water Commission, United States and Mexico, entitled "Permanent and Definitive Solution to the International Problem of the Salinity of the Colorado River"; and

WHEREAS, Title II of said Bills (H.R. 12165 and S. 2940) is based upon recommendations of the State-Federal, water-quality conferees and the report of the Department of the Interior's "Colorado River Water Quality Improvement Program," and would provide for salinity control measures to be authorized in the United States upstream from Imperial Dam to benefit both United States and Mexican uses of Colorado River waters; and

WHEREAS, Bills prepared by the executive branch of the Federal government (H. R. 12834 and S. 3094) to authorize measures near the Mexican border to implement minute numbered 242 of the International Boundary and Water Commission are pending orders of business in the Committees on Interior and Insular Affairs of the House of Representatives and Senate of the United States Congress; and

WHEREAS, the Environmental Protection Agency will soon publish its "Proposed Salinity Control Policy and Requirements and Procedures for Establishment of Salinity Standards and Plan of Implementation for Salinity Control" in the Federal Register; and

WHEREAS, the plan for implementation of salinity control in the Colorado River Basin must involve the "Colorado River Water Quality Improvement Program" of the Federal government in Title II of the Bills H.R. 12165 and S. 2940; and

WHEREAS, the enactment into law by the Congress of the administration Bills (H.R. 12834 and S. 3094) may provide only a temporary solution to the salinity problem with Mexico if the States of the Colorado River Basin are to continue to develop their compact-apportioned Colorado River water to the limit of their entitlements:

NOW, THEREFORE, BE IT RESOLVED by the Upper Colorado River Commission, convened in adjourned regular session at Salt Lake City, Utah on April 9, 1974 that it endorses and supports H.R. 12165 and S. 2940, and urges the Congress of the United States to enact said legislation into law;

BE IT FURTHER RESOLVED that the Members of the House of Representatives and the Senate of the United States Congress from the seven Colorado River Basin States, Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming are hereby petitioned to actively support the enactment of H.R. 12165 or S. 2940 and to oppose H.R. 12834 and S. 3094 or other legislation that is purported to implement minute numbered 242 of the International Boundary and Water Commission, United States and Mexico, without providing for a program to control the salinity of the Colorado River system upstream from Imperial Dam;

BE IT FURTHER RESOLVED that copies of this resolution be transmitted by the Executive Director of the Upper Colorado River Commission to the President of the United States, Secretary of the Interior, Secretary of State, Administrator of the Environmental Protection Agency, members of the United States Congress from the Colorado River Basin States, members of the Committees on Interior and Insular Affairs of the House of Representatives and the Senate of the U. S. Congress, the Governor of each of the Colorado River Basin States, and to other interested entities.

CERTIFICATE

I, IVAL V. GOSLIN, Executive Director of the Upper Colorado River Commission, do hereby certify that the above Resolution was adopted by the Upper Colorado River Commission at an Adjourned Regular Meeting held in Salt Lake City, Utah on April 9, 1974.

WITNESS my hand this 10th day of April, 1974.

Ival V. Goslin

Ival V. Goslin
Executive Director

Mr. PAFF. I have a statement on behalf of Governor O'Callaghan I would like to read for the record.

Senator FANNIN. You may go forward.

STATEMENT OF HON. MIKE O'CALLAGHAN, GOVERNOR OF THE STATE OF NEVADA

Mr. Chairman, members of the committee, it is a distinct pleasure for me to endorse on behalf of the State of Nevada the Colorado River Salinity Control Act before you as S. 2940.

My representatives on the Committee of Fourteen have kept me closely briefed on matters relating to the Colorado River and I support the testimony that has been submitted to you jointly by the seven Colorado River Basin States through the Committee of Fourteen.

It is my opinion that title I and II programs and measures in S. 2940 will address the salinity of the waters of the Colorado River as will permit the United States to implement the August 30, 1973, agreement with the Republic of Mexico as set forth in Minute No. 242, consistent with the continued orderly development conservation and use of the natural resources associated with the River, both in Mexico and the United States. These programs and measures will also provide for the protection and enhancement of the quality of the environment without impairment of the rights of the water and power users of the Colorado River Basin States as they may now or hereafter be established.

I cannot support the administration's bill, S. 3094, because it stops far short in many important aspects as to fully protecting the interests of the States in meeting the obligations set forth in Minute No. 242. Additionally, S. 3094 fails to recognize that salinity of the Colorado River is a basinwide problem.

Our use of Colorado River water in Nevada, which is limited to municipal and industrial purposes, has materially increased since 1971, the beginning of operation of the first stage of the Southern Nevada Water Project authorized by Congress in 1965. Already, we are moving forward toward the expansion of this project to meet our increasing needs of the 1980's.

I believe that the proposal in S. 2940 that is before you will have a major positive impact on our continued development and use of Colorado River water, yet meeting the International obligations of Minute No. 242.

Mr. Chairman, it has been a pleasure to present to you Nevada's views on this most vital piece of legislation. We urge your early favorable consideration of S. 2940 and amendments as spoken to in the Committee of Fourteen testimony. Authorization of the Colorado River Basin Salinity Control Act will be another milestone in the development, management, use and conservation of this critically needed resource and will demonstrate our concern for proper stewardship of the resource and our concern for International harmony.

Senator FANNIN. Thank you, Mr. Paff.

Any further statements?

On behalf of the committee I want to express thanks to you gentlemen. Will you please convey the thanks of the committee to your Governors for their statements, and as I look at the group at this table, I see the expertise that would be hard to find anywhere else in this country, and we certainly have some experienced people testifying, and I have had the pleasure of being associated with several of you over the years and I know of your dedication and commend you for the work you are doing with regard to this particular piece of legislation. Thank you very much.

The next witness is Mr. Bell, representing the Cocopah Tribe of Indians.

Mr. Bell, we are pleased to have you with us here this afternoon. You have a prepared statement. The complete statement will be made a part of the record, and you can read it if you like, or handle your testimony as you so desire.

STATEMENT OF L. GRAEME BELL, REPRESENTING THE COCOPAH TRIBE OF INDIANS, YUMA, ARIZ.

Mr. BELL. I will just summarize the testimony.

I appreciate your hearing me on behalf of the Cocopahs. As you may or may not know, the refuse canal from the desalination plant as proposed now is going to bisect, is designed that it will bisect the Cocopah Reservation, meaning that it will cut most of the Indians off from the Colorado River and it will make their lands considerably less attractive to them.

They have also had a problem of being a very poor Indian tribe inhabiting a very forlorn stretch of land south of Yuma. Recently their plight has been abated considerably because they won a recent court decision in the District Court of Phoenix giving them about 800 more acres of land accreted in the course of the Colorado River's shift to the west.

With this canal they will in effect lose part of this land because they will, the canal will bisect them from the land that they have recently won.

When this legislation—when similar legislation was being considered on the House side, the Cocopahs suggested that instead of covering up the canal or pipe in the refuse under the Reservation, that what they suggested be done was adding a strip of land to the bottom of the Reservation which is now under BLM control. And the House Committee went along with this, and what we are here today for is to again ask that our amendment, which is in my written statement, be included for your consideration and be added to any bill that ultimately comes out of this committee.

Senator FANNIN. It will be made a part of the record and it will be given consideration.

Mr. BELL. Thank you.

Senator FANNIN. Thank you very much for being here with us today, Mr. Bell.

[The prepared statement of Mr. Bell of the Cocopah Tribe follows:]

April 26, 1974

SUBCOMMITTEE ON WATER AND POWER RESOURCES
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
UNITED STATES SENATE

TESTIMONY OF THE COCOPAH TRIBE OF INDIANS
CONCERNING S. 1807, S. 2940, AND S. 3094
(Legislation related to the salinity of the
Colorado River)

The Cocopah Tribe of Indians supports the general concepts in these bills, but believes that additional provisions are essential in order to protect the rights and interests of the Tribe. The Tribe's proposed amendment, which is supported by the Bureau of Reclamation and which was adopted substantially intact by the House Subcommittee, will be set forth at the end of this testimony. The important background information is as follows.

The Tribe is organized and recognized by the Secretary of the Interior, pursuant to the Indian Reorganization Act of June 18, 1934 (48 Stat. 984), as amended by the Act of June 15, 1935 (Pub.L. No. 74-147). The Tribe is the governing body of the Cocopah Indian Reservation, located southwest of Yuma, Arizona, established by Executive Order No. 2711 on September 27, 1917. The Reservation was thought to consist of 528 acres, although as a result of a recent court decision, discussed below, an additional 877 acres has been added to the Reservation.

In common with many Indian communities, many members of the Tribe are poverty-stricken. Unemployment is a major problem. The Tribe has been striving mightily to develop a self-sufficient economic base on the Reservation, but its efforts have been hampered by several factors. Probably the most severe problem is the small size of the Reservation. The Colorado River Basin in southern Arizona is ideally suited for production of specialty crops but, because of the limited size of the Reservation, agriculture has not provided a means of sustenance for all the tribal members. This situation has been alleviated somewhat as the result of a decision by Judge Walter E. Craig of the United States District Court for the District of Arizona on September 24, 1973.* The Tribe was awarded approximately 877 acres of accreted lands along the Colorado River adjacent to the Reservation. In addition, since 1956, the Tribe has leased two lots covering approximately 62 acres about seven miles southwest of Yuma, Arizona. This additional acreage will help in the continuing struggle for economic viability.

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* Cocopah Tribe of Indians v. Morton, No. CIV-70-573-PHX-WEC.

A second problem is water. While the Tribe was allotted 2,744 acre feet of water per year by the United States Supreme Court in Arizona v. California, 376 U.S. 340, 344 (1964), the amount of water will not be enough to irrigate the accreted and leased lands in the future. Both of these areas are suitable for intensive agriculture, provided that adequate water is available.

The Cocopah Tribe definitely supports the general thrust of this proposed legislation. The Tribe has long been aware of the dangers of increased salinity in the lower Colorado River. In addition, our Tribe recognizes the legal and moral obligation of the United States to provide the Republic of Mexico with high quality water suitable for irrigation and other useful purposes, and does not wish to take a position that would obstruct the rapid fulfillment of that obligation. Accordingly, the Tribe supports almost all aspects of the Colorado River International Salinity Control Project proposed by the Bureau of Reclamation in its special report of September, 1973.

One aspect of this project poses a serious threat to the future of the Cocopah Reservation. The project as

proposed includes a canal to carry off the "reject stream", the highly saline reject water which is not treated by the proposed desalinization plant. This canal for the reject stream, which may be as much as 25 feet wide and six feet deep, will bisect the Cocopah Reservation on a line roughly parallel to the Colorado River. We understand that the proposed easement for the canal will be 100 feet wide. Not only will the canal deprive the Tribe of desperately needed acreage, but it will pose a formidable physical barrier, dividing the main portion of the Reservation from the accreted lands that have just recently been won in court. Furthermore, the combined operation of the desalinization plant and the waste water canal will probably mean that the main channel of the Colorado River, the principal aesthetic and recreational amenity on the Reservation, will be totally depleted for much of the year. The attractiveness of this and other proposed tourist facilities will be diminished, and probably eliminated, if the river no longer flows by the Reservation.

Our Tribe has had a long and difficult struggle to obtain our land. We fought for our accreted land for ten years before a court ruled that it had been rightfully ours all along. In the meantime, we lost a decade of development

potential. In addition, our accreted land is already facing major physical barriers -- a railroad levy and a floodplain levy. Now we are told that we must accept this waste water canal.

We do not believe that we should be asked to sacrifice our meager and hard earned resources for the benefit of this project, unless the Tribe receives fair compensation in return. Indeed, tribal land cannot be taken without the consent of the Tribe because the Tribe is organized pursuant to the Indian Reorganization Act. See, 25 U.S.C. §476. The United States government should not attempt to meet its treaty obligations to Mexico by ignoring its trusteeship obligations to the Cocopah Tribe. Accordingly, the Tribe proposes, as compensation for the sacrifices it will be asked to make for the project, that the following action be taken.

Because of its minimal land base, the Tribe is desperately attempting to obtain additional tribal lands. Although the Tribe is seeking to obtain three parcels in the area of the Reservation, this presentation will deal with only one strip of land. The strip of land in question is directly adjacent to the southern boundary of the accreted land which was recently added to the Reservation. The

present Reservation boundaries in the affected area are outlined in red on the attached Exhibit A. The parcel involved here is cross-hatched in blue on Exhibit A. *

The Tribe proposes that this legislation provide that the indicated parcel be transferred to the Tribe. The Bureau of Reclamation and the Bureau of Indian Affairs both agree. The House Subcommittee, working on companion legislation, adopted a similar amendment which was presented to it. **

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* The Bureau of Reclamation, the Bureau of Indian Affairs, and the Tribe have all assumed that the lower red line on Exhibit A is the southern boundary of the Reservation in the accreted area. Recently, attorneys in the Interior Solicitor's office have suggested that the southern boundary may be the broken red line on Exhibit A. Further details concerning this possible cloud on the title will be supplied by the Tribe's attorneys if the Subcommittee wishes. The strip of land involved here includes both land which is definitely new tribal land (the lower one-half of the area cross-hatched in blue) and land on which there is a possible cloud on the title (the upper one-half of the area cross-hatched in blue). Thus this proposal, to which all interested parties agree, would add new land and would eliminate a possible cloud on the title of land which had always been assumed to be tribal land.

** The possible cloud on the title, discussed in the above footnote, was not discovered in time to include the affected land in the amendment which was offered at the mark-up session of the House Subcommittee. Thus, the present House version of the amendment includes only the lower one-half of the cross-hatched area. The Tribe has requested that the additional land be added to the amendment at the House Committee mark-up session.

The parcel, consisting of approximately 720 acres, is withdrawn reclamation land which is presently managed by the Bureau of Land Management. The parcel is brushy accretion land which is composed primarily of alluvium soil. Although a small part of the parcel is presently being farmed, most of the land is presently unused. This land is particularly suitable for inclusion in the Reservation because it is very similar to the Tribal land directly to the north. The parcels should logically be used as a unit, whether for purposes of agriculture or development.

The transfer of the parcel would fulfill a major dream of the Cocopah Tribe. Accordingly, we request that the bill be amended to add the following subsection:

"The Secretary is authorized and directed to cede the following land to the Cocopah Tribe of Indians, subject to existing government works, to be held in trust by the United States for the Cocopah Tribe of Indians:

Township 9 South, Range 25 West of the Gila and Salt River Meridian, State of Arizona:

Section 25: Lots 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 29;
Section 26: Lots 1, 8, 9, 10, 11, 12, 13, 14, and 15;
Section 27: Lots 2 and 3;
and all accretion to the above-described lands.

> The Secretary is authorized and directed to construct three bridges, one of which shall be capable of accomodating heavy vehicular traffic, over the portion of the reject stream which crosses the Reservation of the Cocopah Tribe of Indians. The transfer of lands to the Cocopah Indian Reservation and the construction of bridges across the reject brine channel shall constitute full and complete payment to said Tribe for the rights-of-way required for construction of the reject brine channel and appurtenant electrical transmission lines."

We believe that this proposal is modest, reasonable, and fair. The amendment is supported by all of the interested agencies. If the United States is prepared to spend as much as 133 million dollars on these desalinization facilities largely for the benefit of a foreign country, it should be more than willing to absorb the comparatively minor expense outlined above for its First Citizens.

The Tribe wishes to express its appreciation to the Subcommittee members and to the Subcommittee Staff for the courtesies they have extended to the Tribe.

Respectfully submitted,

THE COCOPAH TRIBE OF INDIANS
Robert Barley, Tribal Chairman
Counsel:
Charles F. Wilkinson
L. Graeme Bell III
Native American Rights Fund
1506 Broadway
Boulder, Colorado 80302
(303) 447-8760

TOWNSHIP 9 SOUTH, RANGE 25 WEST OF THE GILA AND SALT RIVER MERIDIAN, ARIZONA.

DEPENDENT RESURVEY AND ACCRETION SURVEY.

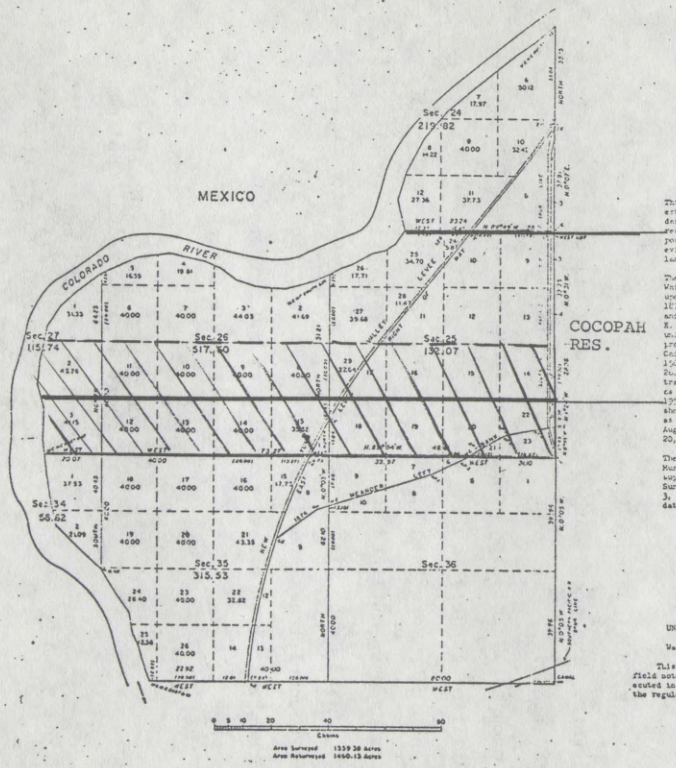

Exhibit A

This plat represents a retracement and re-establishment of the south and east boundaries and subdivisional lines designed to perform corners thereof in their original positions according to the best available evidence, and, the survey of accretion lands.

The original surveys were executed by T.F. White, Deputy Surveyor, in 1873, as shown upon the official plat approved April 15, 1874. There have been subsequent surveys and resurveys by Arthur W. Brown and W. H. Thorn, Cadastral Engineers, in 1918-20, under Group 69, as shown upon the plat approved August 27, 1920; by Francis E. Joy, Cadastral Engineer, in 1933, under Group 156, as shown upon the plat accepted March 20, 1934; and, by Wendell G. Gold, Cadastral Engineer, in 1954, under Group 291, as shown upon the plat accepted October 20, 1954. Except as to new subdivisions as shown hereon, the lottings and areas are as shown upon the plats of April 15, 1874, August 27, 1920, March 20, 1934 and October 20, 1954.

These surveys were executed by Leonard W. Murphy, Surveying Technician, under the supervision of Robert C. Yuratt, Cadastral Surveyor, from November 29, 1960 to January 3, 1961, pursuant to special instructions dated September 15, 1960, for Group 355.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D.C. September 14, 1961

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted.

For the Director

Chief, Division of Engineering

Exhibit A

Senator FANNIN. The next witness is Mr. Brent Blackwelder, representing the Environmental Policy Center.

We welcome you here this afternoon. You have a written statement. The complete statement will be made a part of the record, and you may do just as you see fit. Your testimony will be received as you desire to give it.

STATEMENT OF BRENT BLACKWELDER, WASHINGTON REPRESENTATIVE OF THE ENVIRONMENTAL POLICY CENTER

Mr. BLACKWELDER. Thank you, Mr. Chairman. We appreciate the opportunity to appear and testify today.

I have with me a statement presented to the House Committee considering the same legislation by the Sierra Club. It is a three page statement and we would appreciate it if this could be received and included in the record.

Senator FANNIN. The complete statement that you are offering will be made a part of the record.

Mr. BLACKWELDER. Thank you.

My name is Brent Blackwelder and I am a Washington Representative of the Environmental Policy Center, a national conservation organization which does research and lobbying on critical environmental issues. Our Washington office is located at 324 C St. SE., Washington D.C. 20003.

The Environmental Policy Center believes that the United States has a moral obligation to Mexico to remedy the salinity problems in the Colorado River which we have caused as the result of irrigation projects. We believe that the United States has long neglected its responsibility in this area and in fact has conducted itself in a fashion unbecoming a nation that professes to adhere to high moral standards. We feel that the bills now pending before this committee concerning salinity control programs for the Colorado River Basin —S. 1807, S. 2940 and S. 3094—not only fail to come to grips with the central issues but propound solutions which may not satisfactorily handle the problems, which may not be wise in view of the energy situation, and which fail to force those responsible for the problem to shoulder a major share of the costs of cleanup.

The bills before the committee do not properly address two central issues: (1) the alternative of eliminating the Wellton-Mohawk Irrigation District which is one of the primary causes of the salinity problem with Mexico, and (2) the alternative of curtailing development of some of the upstream irrigation project which will aggravate the salinity situation if constructed and cause increasing damages downstream. We wish to address these two points briefly, and then go on to offer some specific comments about various aspects of the legislation. We will concentrate our remarks primarily on S. 2940.

Possible elimination of the Wellton-Mohawk irrigation district. We urge the committee to give serious consideration to the complete phasing out of the Wellton-Mohawk District as an alternative to constructing the desalting plant complex. S. 2940 does propose cutting down the size of the irrigation district, but we feel this

falls drastically short of what is needed. No doubt any proposal to eliminate this district will be vigorously opposed by the Arizona delegation. However, from a national perspective it is possible that this alternative would: (1) result in the most satisfactory reduction of salinity; (2) prove to be less costly to the taxpayer over the long run than building and operating a desalting complex; (3) help save energy in an energy crisis; and (4) be environmentally sound.

The history of the Wellton-Mohawk irrigation district is no doubt familiar to this committee and the environmental problems and economic costs associated with this irrigation district lead to the conclusion that this area should never have been irrigated to begin with. We wish to call the committee's attention to the fact of the total cost of $50 million originally assigned to irrigators for repayment, only $1 million as of June 30, 1973, has been reimbursed. It seems incredible that the taxpayers of the nation are now being asked to spend many millions more—possibly as much as $200 million in the long run—to remedy the salinity problems occasioned by this irrigation district.

We believe that this committee should be questioning the wisdom of proceeding with more upstream irrigation projects which further aggravate the salinity problem. Projects planned or under construction should be reassessed to determine which should be allowed to go forward, which should be dropped altogether, and which should be modified in certain respects.

The following projects merit special scrutiny with regard to the salinity problems they may occasion: The Central Utah project, Dolores, Dallas Creek, San Miguel, West Divide, Animas La Plata, China Meadows, and Fryingpan-Arkansas.

The Bonneville Unit of the Central Utah project, for example, will increase the salinity of the Colorado River at Hoover Dam by 14 mg/1. The Environmental Protection Agency has assigned a cost of $580,000 per year to the damages caused by that increase in salinity. The entire Central Utah project would cause $2.5 million annually in damages due to aggravation of salinity conditions. It is a wonder that Mexico can take the United States seriously on salinity issues when we persist in building upstream projects that continually add to the salinity problems downstream.

Proposals which claim to deal with the salinity problem without simultaneously imposing controls on continued development of new irrigation projects upstream can only be termed inadequate and shortsighted. We believe that if the costs of salinity control associated with these irrigation projects were properly incorporated into the benefit-cost ration and were assigned to irrigators, then it would be apparent that many of these projects should not go forward.

We feel that there are serious problems with the proposed cost-sharing for salinity controls in section 205 of S. 2940. It is improper to cite the 75 percent Federal/25 percent non-Federal formula of the Water Pollution Control Act Amendments of 1972 as providing the basis for a similar cost sharing on salinity controls. The 75/25 formula in that act was directed at the grant program for the construction of treatment plants for domestic sewage. This cost-sharing formula was not to be applied to projects installed by industry to

handle its discharges or to agricultural pollution. It is our view that the costs of cleaning up salinity from irrigation projects should be borne by the irrigators of the problem districts themselves, and these costs should in turn be reflected in the cost of the agricultural products which those districts produce. Otherwise there is gross distortion in the true cost of producing crops in certain areas as a result of the government subsidization of salinity cleanup, and this patently discriminates against farmers elsewhere in the country.

We wish to point out further that even with the 75/25 cost-sharing formula, the irrigators are still not paying the 25 percent non-Federal share. Rather, consumers of electric power are being forced to subsidize irrigators by taking care of this share. Finally, we are especially concerned that the costs of taking care of any salinity caused by development of energy resources in the west be assigned to the industry responsible and not to the taxpayer.

In section 101(k) of S. 2940, we are troubled by the language which states:

> The Secretary is also authorized, in conjunction with the Corps of Engineers, to adopt other control measures below the dam.

We don't know what the "other control measures" referred to might be, and we are worried that the channelization of the Gila might be included among such measures. We are strongly opposed to any channelization of the Gila because of the significant environmental damage that this would cause and we urge that the committee drop the above language or else specifically prohibit the channelization of the Gila.

Section 103 of S. 2940, would appear to give authorization to a pumping war between the United States and Mexico. The section seems to say that if agreement can't be reached with Mexico on groundwater pumping, then we should go ahead and start pumping groundwater furiously ourselves. We will thus wind up with the United States on one side and Mexico on the other each pumping madly without regard to consequences.

In section 204 of S. 2940 we think it would be desirable that provision be made that in the membership of the Advisory Council at least one member from each State be a representative of the environmental viewpoint.

We close by urging this committee to undertake a full scale review of all irrigation projects proposed or in early stages of construction in order to determine their salinity problems, what downstream damages they might cause, and what the cleanup costs will amount to.

We hope the committee will take a critical look at the salinity problems associated with the Garrison Diversion project in North Dakota. This project could do to Canada what the Wellton-Mohawk irrigation has done to Mexico. Last fall the Canadian Government sent a very strong note of protest to our State Department about the impending contamination of Canadian waters with salty return flows from the Garrison diversion project. The Bureau of Reclamation still does not know what it is going to do with these salty return flow. The Oahe diversion project in South Dakota is another project

whose salinity problems are not adequately understood or appreciated by the Bureau of Reclamation. The Garrison and Oahe projects typify the "build now study later" attitude that has got to be changed if we wish to avoid serious problems in the future.

We urge the committee to take swift action to place a moratorium on these projects so that we can prevent ourselves from getting into a situation comparable to that which we now find ourselves in with Mexico.

Thank you, Mr. Chairman, for the opportunity to testify.

Senator FANNIN. Thank you very much. I don't know if we can get into the other matters or not, but we do appreciate your bringing it to our attention.

The next witness will be William E. Warne, Director of the National Water Supply Improvement Association, and Mr. Neil Cline, Secretary-Manager of the Orange County Water District.

I welcome you here this afternoon.

STATEMENTS OF WILLIAM E. WARNE, DIRECTOR, NATIONAL WATER SUPPLY IMPROVEMENT ASSOCIATION; AND NEIL M. CLINE, SECRETARY-MANAGER, ORANGE COUNTY WATER DISTRICT

Mr. WARNE. Thank you, Mr. Chairman.

My name is William E. Warne. I am a consultant in water resources of Sacramento, Calif. Several years ago I was Director, Department of Water Resources, State of California. Before that I served as Assistant Secretary of the Interior for Water and Power Development, and still earlier I was Assistant Commissioner of the Bureau of Reclamation.

During these and other assignments in the water and related resources fields over a career that began here in Washington more than 38 years ago, I have been a student of the Colorado River. I also have followed closely the development of desalination and the other new water sciences.

I am appearing before you here today as the member of the Board of Directors of the National Water Supply Improvement Association who has been designated to state the interests of their relatively new organization in the objectives of the bills that are before your committee.

NWSIA is organized to promote the use of desalination, waste water reclamation, and other water sciences and to exchange and spread information concerning the state of the art for the purposes of improving the quality of community water supplies. We seek to promote the enhancement of the urban environment and the protection of the public health through raising the quality of substandard public water supplies. We believe the real costs of serving poor quality water in public systems have not been adequately considered. These unappraised costs are very high and they continue to mount as water supplies are progressively degrated. They can be reduced only by improvement of the supplies.

NWSIA has 14 public agency members scattered from the Virgin Islands to California; 23 associate members, and 109 individual

members. We come specifically not as a member of the Colorado River Basin but as a broader basin group interested in the quality of drinking water throughout our whole country.

Senator FANNIN. We appreciate your testimony in that regard.

Mr. WARNE. More than 10 million people, a good many of whom are represented by NWSIA members, obtain all or substantial parts of their drinking water supplies from the Lower Colorado River Basin. At points where these waters are taken the water available for diversion is at least half again as degraded as is recommended by the U.S. Public Health Service to be wholesome drinking water. The Orange County Water District, which is represented here today by Neil Cline, secretary-manager, has pioneered water factory 21, a unique complex of water reclamation, desalination and ground water replenishment, to treat Colorado River water in its service area and to improve the quality of the waters that it serves to 1,500,000 people. The OCWD has been a leader in the formation of NWSIA. NWSIA supports Mr. Cline's presentation to this committee.

The definitive solution proposed by Ambassador Herbert Brownell to the Colorado River salinity problem as it relates to the Mexicali Valley seeks betterment of U.S. relations with the Republic of Mexico. The proposed solution will include the construction of a 100 Mgal/d desalter to freshen the effluent of the Wellton-Mohawk irrigation drain. Collateral works called for by minute 242 of the International Boundary and Water Commission—IBWC—are necessary to insure the desalter will be effective in improving the quality of water delivered to the Mexicali Valley and to conserve replacement water in the Colorado River system.

NWSIA will welcome the construction of the 100 Mgal/d desalter. The desalter will provide a large scale demonstration of the effectiveness of this new method of water quality improvement. It will provide the first full-scale test of this means of extending the usefulness of the available water. It will provide these demonstrations in a desperately water-short environment, that of the Colorado River Basin, where they will be most effective and highly visible. The desalting plant will attract worldwide attention, not only because of its unprecedented size, but also because it will be the instrument of resolving an annoying international conflict of long standing. We believe the state of the desalting art warrants the confidence that the Congress is being asked to place in the desalter. We also doubt that any other entity than the U.S. Government is apt to provide an early desalting demonstration on this scale. NWSIA, therefore, endorses the authorization and the construction of the works that are contemplated in minute 242.

Two questions remain. Which Federal agency should build the desalting plant? Should the needed program for improvement of the quality of the water in the American section of the Colorado River also be a part of this authorization?

NWSIA points out that the Office of Saline Water, the Bureau of Reclamation, and the Geological Survey, each of which has demonstrated expertise useful in the management of the techniques and facilities needed to improve the quality and to extend the uses of

the waters of the Colorado River, are all three in the Department of the Interior. The IBWC, in the State Department, has no such specific experience. Without derogation of the Department of State, which is also a great department of our Government, let me say that members of NWSIA would have greater confidence in the Interior Department in this situation. The long and successful experience of the Interior Department in management of the Colorado River and in developing the desalting technology recommend it. We hope to see OSW continue as a viable institution conducting significant research and development programs.

What the Mexicans have gone through in the Mexicali Valley is different only in degree from the trials visited on the water users in the Imperial Valley of California and the Yuma and Gila project areas in Arizona. The Colorado River has been progressively degraded. Each year its water becomes a little poorer. At each diversion point progressing downstream the quality of the water is a little worse. These processes of progressive degradation are nonreversible. The results are cumulative. This is true because all of the waters of the Colorado River are stored and used. Whereas once the annual floods of the river flushed out the salts that naturally entered the river's waters, now all of the water is used and all of the salts are retained in the basin. Only through extensive and planned programs of salt exclusion, water reclamation, and desalination can remedies be provided throughout the basin. The quality of Colorado River water cannot be generally improved without the comprehensive program that has been proposed; minute 242 only attacks the Mexican water supply problem.

NWSIA believes that the United States should not long delay efforts to provide general improvement of the quality of water in the Colorado River Basin. We suggest to the committee that if segregation of the Brownell proposal for relief of Mexico from remedies needed throughout the Colorado Basin will serve to frustrate upstream programs, then the Mexican relief should be made a part of a packaged Colorado River water quality solution. The whole package should be authorized.

The Colorado River water quality problems must be faced squarely, not only in the interests of several hundreds of thousands of our good neighbors in Mexico, but also as urgently in the interests of many millions of our fellow citizens living in the Pacific Southwest.

Senator FANNIN. Thank you very much, Mr. Warne. I know of your background and of course remember some of the times when perhaps we were not together on certain subjects. I recall back when we had a difference of opinion sometimes on what should be done. Certainly we are in agreement now.

I do feel we have a tremendous opportunity of developing an industry that would help in our export business and naturally the first need is at home, but I know in traveling in some of the countries of the Middle East that they have a great deal of interest in salinization programs and they are discussing this very program and the possibility that they will have a chance to visit it.

Of course, we could offset some of the balance of payments that we lose by all this importation of foreign crude, if we could have some good export products such as what we are talking about here today.

That is just one phase of the act that you brought out in your statement as far as the large scale unit?

Mr. WARNE. Senator, it is my great pleasure here, too, to be here on the same side with you. I always knew the Colorado River was going to bring us together. I would also point out that the problems of the Colorado very likely will have its other evidences in other regions in time and it seems to me that it is well advised for the government to approach this problem comprehensively and seriously now that it has become an urgent problem in one area. We are going to face it, I think, elsewhere, too.

Senator FANNIN. Thank you, Mr. Warne, for your statement.

Mr. Cline.

STATEMENT OF NEIL M. CLINE, SECRETARY-MANAGER, ORANGE COUNTY WATER DISTRICT

Mr. CLINE. Thank you, Mr. Chairman. I am happy to have this opportunity to present to your committee as it considers S. 2940 and related bills the views of an agency which is experiencing problems with the waters of the Colorado River parallel to those of the Mexicali Valley. My name is Neil Cline, I am secretary-manager of the Orange County Water District in Orange County, Calif., which manages the surface and groundwaters of the Lower Santa Ana River Basin. Our district serves about 1,500,000 people in rapidly urbanizing Orange County.

Orange County which was largely agricultural 20 years ago is still rapidly increasing in population as it gains in importance in California as the location of light and software industries, as a recreational center, and as one of the most desirable residential areas in our State.

While growth has strained all of the resources of Orange County, the water supplies of our area have been most severely impacted. The reasons for this are several. The southern California Coastal Plain on which Orange County is situated is semiarid. Its natural waters were overdeveloped very early, through irrigation of the thousands of acres of orange groves that once flourished there and gave the county its name. Orange County, like the Mexicali Valley, is at the end of the ditch. Upstream developments and water users on the Santa Ana River have first use of the water produced by our principal local stream with subsequent degradation of quality. Because our current demand greatly exceeds local supplies, the entire Santa Ana Basin is increasingly dependent upon imported water, with the result that at present the Orange County Water District gets 30 percent of its water from the Santa Ana River and local supply, and receives 70 percent of its water through the Colorado River Aqueduct of the Metropolitan Water District of southern California.

Being at the end of all of our supply systems, the Orange County Water District must accept water that has been used and reused. The water we receive from either the Santa Ana River or the Colorado River sources no longer is better than 750 ppm in total dissolved solids. That makes all of the water that we receive at least half again as high in TDS as is recommended by the U.S. Public Health Service for drinking water.

To a large extent the economic growth of Orange County was possible because a vast groundwater reservoir of high quality water was available. The Orange County Water District was organized to manage that underground basin, to replenish the basin when it was pumped to depths that encouraged intrusion of ocean waters into the aquifers, and to guard and restore the quality of the waters of the basin, when reuse threatened to degrade the water on which most of the people in the county were and continue to be entirely dependent.

The Orange County Water District has encountered a salt balance problem not so severe, but much like that which plagues the irrigators and other water users in the Mexicali Valley. The high quality water in our groundwater basin in the Mexicali Valley. The high quality water in our groundwater basin is increasingly restricted. It is surrounded by marginal waters including that which we have percolated through spreading basins to replenish the groundwater storage and that which has been affected by intrusions of saline water from the sea and intrusions from other degraded sources.

The OCWD conducted a consumer survey some months ago. We discovered that the average family in our district is penalized approximately $220 per year in costs related to the use of poor quality water. These expenses are in addition to those related to the use of the water of better quality that we originally had available in the groundwater reservoir. These penalty costs are the results of requirements for water softening, reduced useful life of appliances and plumbing, and, in increasing amounts, the purchase of bottled drinking water.

The Orange County Water District has not been oblivious to its responsibilities. To offset the insidious crisis of salt accumulation in the basin, the district has mounted a multipronged attack to control further degradation. Recently our agency began buying at high cost, water imported from the North through the facilities of the California State Water Project and the Metropolitan Water District. These waters, used for groundwater replenishment, are much better quality than Colorado River water, and consequently do not degrade our reservoir to such a degree as does the Colorado River water.

We have invested heavily in research and advance planning for a forebay water reclamation plant near Prado Dam and for a desalination plant at Anaheim Lake to reduce the total dissolved solids in the water that we receive from the Colorado River and other degraded sources. We hope to reduce the mineral content to about 250 ppm prior to percolating the water to our groundwater basin.

We propose a 75 mgd desalting project utilizing either reverse osmosis, electrodyalysis or ion exchange at Anaheim Lake. We are

having six demonstration modules designed at the cost of almost half a million dollars at this time in an effort to perfect the technology.

The Orange County Water District has cooperated with the Office of Saline Water, with other Federal and State agencies, and with neighboring and other water districts to explore all promising opportunities to improve water supplies and services.

Mr. Chairman, as we testified before the House Committee reviewing this same problem, the Orange County Water District has no lack of sympathy with our good neighbors in the Mexicali Valley. On the contrary, we know what they have been suffering, because our situation is much the same as theirs.

We heartily endorse the objectives of minute 242 of the International Boundary and Water Commission. We agree that the Federal Government should build the desalter to freshen the waters of the Wellton-Mohawk drain and to reduce the total dissolved solids in the diversions at Morelos Dam. We would point out, however, that if the work that you authorize is limited to that which is needed to resolve the Mexicali Valley problem, the effort will fall far short of meeting the needs of the people of the Colorado River service areas.

The waters going to Mexico, admittedly, have been the worst that have been delivered from the Colorado River. The quality of the river's waters degrade progressively year by year, however, and the quality already is very bad at Imperial Dam and it is quite poor at the Colorado River aqueduct intake in Lake Havasu. For those of us in Orange County who must use Colorado River water after it has been further degraded and percolated to our ground-water basin, our advantage over the Mexicans is not large today and, in our view, it will disappear entirely within a short time if corrective measures on the Colorado are limited to the great desalter on the Wellton-Mohawk drain.

The Orange County Water District strongly urges full consideration and approval of the more comprehensive program of water quality improvement for the Colorado River Basin that is incorporated in the bills presently before this committee. The programs proposed in the bills are sound. The costs of the programs will be shared. The benefits will flow to water users in the United States as well as to those in Mexico.

Environmental considerations impel us toward greater efficiencies in the use of our water supplies, and toward conjunctive management of surface and ground waters both for supply and for quality control. Without salinity control of the Colorado River, it will become increasingly difficult to sustain programs for recycling water not only in our area but throughout the entire southwest.

In conclusion, the Orange County Water District wishes to emphasize that we appreciate the pioneering work done by the office of saline water. We do not believe the research into desalination has been completed and are distressed by some proposals to reduce the Federal effort in this vital work. We think that the OSW, which has developed the expertise in desalination, is the appropriate agency to conduct the Colorado River programs. OSW, if it is em-

ployed in these landmark projects now under consideration, will be in the best position to make the new work succeed and also to make the salinity control program serve to advance the science of desalination and to strengthen the desalting industry.

Thank you, Mr. Chairman.

Senator FANNIN. I was interested in your statement on page 3, that the average family in your district is penalized approximately $220 per year in costs related to the use of poor quality water. Is that from the standpoint of equipment? What all is involved in calculating that cost?

Mr. CLINE. We had a county-wide survey in which we sent college students door to door and interviewed people who were using various qualities of water throughout the county and we determined the people using the poor quality water bought a lot of drinking water, they purchased water softeners, replaced plumbing equipment, and it had the accumulation of about $220 per year in penalty so those people could have better quality water.

Senator FANNIN. I didn't realize it was that extensive, but I understand that if you take into consideration all the things you discussed there that it could add up very rapidly.

I do appreciate the testimony that you both have given, and the record will be held open if you have anything further that you wish to submit. I do appreciate your being with us here today.

The next witnesses are Mr. Tom Choules and Mr. C. C. Tabor, representing the Wellton-Mohawk Irrigation and Drainage District of Arizona.

Your complete statement will be made a part of the record. As I understand it you just have one statement.

STATEMENT OF C. C. TABOR, MANAGER-SECRETARY FOR AND ON BEHALF OF WELLTON-MOHAWK IRRIGATION DISTRICT; ACCOMPANIED BY TOM CHOULES, ATTORNEY FOR THE WELLTON-MOHAWK IRRIGATION DISTRICT

Mr. TABOR. I am making the statement. I would like to make an additional statement.

The Wellton-Mohawk Irrigation District is also in the Power Distribution business and at the present time we buy all of our power from the Bureau of Reclamation, under three contracts, the Hoover Dam, Harvard, and Glen Canyon. Our Parker Davis contract expired March 31, 1974. We were all prepared to renew the contract for 10 years. In fact, we had a copy of the contract. However, when we received another one which was for 3 years only which we were asked to sign, and since we had no alternative, of course, we signed it and sent it back. That means that that contract expires in 1977 which to me is very close to the date of the beginning of operation of the desalination plant. Why our Parker Davis contracts have been so handled, I am not sure. And, of course, it is only suspicion on my part that this curtailment of contract is associated in any way with the desalination plant.

I would propose that there be language in the bill that would protect Parker Davis contractors from having their power dimin-

ished for the desalination plant and we would be willing to send in substitute language if the committee so desires.

Senator FANNIN. Thank you, Mr. Tabor. And whatever you want to recommend, naturally would be received and given consideration. If you do want to supply language, I can tell you that it will be given consideration.

Mr. TABOR. That is all I have.

Senator FANNIN. Mr. Choules, did you have anything further that you would like to present?

Mr. CHOULES. No.

Senator FANNIN. I thank you both for being here with us this afternoon. Thank you for your testimony. The record will be kept open for 2 weeks. I do thank you for your testimony.

[The prepared statement of Mr. Tabor follows:]

STATEMENT OF C. C. TABOR,
MANAGER-SECRETARY FOR AND ON BEHALF OF
WELLTON-MOHAWK IRRIGATION & DRAINAGE DISTRICT
BEFORE THE WATER AND POWER RESOURCES SUBCOMMITTEE
OF THE SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE
ON S. 2940 AND OTHER BILLS, APRIL 26, 1974 IN WASHINGTON D.C.

I am accompanied by Mr. Tom Choules, the attorney for the Wellton-Mohawk Irrigation and Drainage District and this statement has been prepared for and on behalf of the District for submission to this hearing. For the information of the Committee, there follows a brief description of the Wellton-Mohawk Irrigation and Drainage District, hereinafter referred to as the District.

The District is a federal reclamation project located in Southwestern Arizona, extending Easterly from Yuma along the Gila Valley and is approximately bisected by the Gila River. Congress, by the 1947 Gila Project Reauthorization Act, provided for the construction of this project "...comprising approximately 75,000 irrigable acres of land or such number of acres as can be adequately irrigated by the beneficial consumptive use of not more than 300,000 acre feet of water per annum diverted from the Colorado River...". The Bureau of Reclamation in its "definite plan report" for this project estimated that the maximum diversion requirement at Imperial Dam to permit the 300,000-acre-foot beneficial consumptive use on this project would be 585,000 acre feet per year. Irrigation facilities, with the capacity to deliver these quantities of water, were built by the United States at a cost of $42,000,000.00 An additional sum of $14,000,000.00 has been allocated for construction of drainage works. The District has entered into a contract with the United States for the operation of these facilities and for the repayment

of this construction cost. At the present time, there are approximately 69,000 irrigable acres in private ownership and approximately 62,000 of those under intensive cultivation. Approximately 3,000 acres are in roads, homesites, etc. The remaining 10,000 acres were in the process of being developed in orderly progression until this pending legislation and matters leading up to it were proposed.

The Wellton-Mohawk Irrigation and Drainage District is a political subdivision of the State of Arizona, organized under the laws of the State of Arizona and is the responsible operating entity for the project.

The District's contract with the United States calling for a maximum use of 300,000 acre feet beneficial consumptive use of water annually has never been defined as to the meaning of that term. In the Supreme Court decree of Arizona v. California as between states, that term has been defined as diversions less returns and the water records of the Bureau of Reclamation are generally kept on that basis. However, there has been no determination that the definition of that term as it applies to the District, within the State, has that definition. The U.S.B.R. in the last few weeks has inferred that definition would be applied to the District's beneficial consumptive use.

The District, at the present time, returns to the Colorado River approximately 220,000 acre feet of water per year out of her drainage system and at the present improving quality of that water, would very shortly be in salt balance. That is, it would be returning as much salt to the River as it is diverting. Up to the present time it has returned more salt than it diverted.

For your information, the quality of water in the Colorado River, at the "tail-end of the ditch" where the District is located, is approximately one and a third tons of salt per acre foot. In order to maintain crop productivity and avoid the soils from salting up, it is necessary that these salts be leached past the root zone, removed from the soil and they are returned to the river in that fashion. This is true along the entire length of the Colorado River. At the head-waters of the Colorado River the waters are approximately fifty parts per million, whereas by the time they are delivered to the District they are approaching nine hundred parts per million because of the addition of natural salts from the soil and because of use and re-use of the water. Water, in order to be beneficially used, deteriorates in quality and it is one of the facts of irrigated agriculture that downstream users take water of less quality than an upstream user because of this characteristic.

This Committee is aware of the history of the dealings with the Mexican States and the signing of the Mexican Water Treaty of 1944. You are further familiar with the legal, political and technical background of Minute 242 executed by representatives of the United States and Mexico in connection with that treaty. We concur in the statement of the Committee of Fourteen as presented to this Committee today, in relation to that background and will not reiterate those statements. This statement is directed toward the great concerns that the District has as to the effect upon the District's future of this proposed legislation.

Ambassador Brownell informed all of the Colorado River water users in the United States, as he met with them through the Committee of

Fourteen that there would be no detriment to water users in the United States. The proposed legislation calls for a reduction in the return flows from Wellton-Mohawk and contemplates that that reduction will be achieved either through better irrigation efficiency or the purchase of irrigable lands thus taking them out of production or preventing them going into production or, in all likelihood, a combination of both. The District does not argue with the proposal that irrigation efficiency should be a goal, not only to be achieved by the District, but by all water users along the Colorado. It is needless to say that any increased irrigation efficiency upstream benefits not only Mexico, but also the District, and that such benefits should be practiced as well not only by water users in the United States but by water users in Mexico. It is also a well-known fact that water users in Mexico have never attempted to practice irrigation efficiency and that they are now suffering as a result of their failure to provide for proper irrigation practices and adequate drainage.

Irrigation efficiency, however, must be tied in with economic realities and it is possible to obtain certain efficiencies but at the same time cut down yields to where they are not practicable. It is also possible to create certain irrigation application methods which have not yet been tested with water of the quality of the Colorado River and the farmers are somewhat dubious of attempting to experiment on a basis that might put them out of business if they find that experimentation does not work.

Let me direct my comments now to some of the provisions of the bill and point out the fears that the District has in relation thereto.

1. Reduction of return flows to 175,000 acre feet per annum.

This will require a reduction of some 40,000 to 45,000 acre feet per year of flows from the District. The District now has approximately 108 wells that it has pumped on an alternate basis, attempting to co-operate with the United States and Mexico in the deliveries of drainage waters into the river, -- when Mexico's water orders have been high, pumping her worst wells and when Mexican water orders were low, pumping the better wells, thereby reducing the impact of these return flows on irrigated agriculture in Mexico. Mexico has, since June 25, 1972, however, been by-passing all of Wellton-Mohawk's waters and has not diverted any of them into irrigated agriculture. She indicated that she no longer will do so, pending, she hopes, the satisfactory solution to the problem by this proposed legislation and the creation of the desalting complex. However, the District and the State of Arizona are getting return flow credit for these waters even though not used by Mexico. However, it was contemplated in the irrigation of the District that certain of the better wells would be re-used and that the other waters would improve in quality. The water which Mexico agreed to accept, under all United States' interpretations of the Mexican Water Treaty included water from any source whatsoever. Water users in Arizona are using much worse water in many places than that delivered to Mexico. In order to reduce the return flows to 175,000 acre feet per year, it will be necessary to remove from, or prevent their going into, production many of the acres of land within the District. The bill so contemplates and provides that the repayment obligation of those lands so removed will be written off as well as

certain of the operation and maintenance costs allocated to those lands and that the repayment obligation of the District to the United States would be reduced accordingly. It is, however, important that there remain enough water to irrigate the remaining acres and as the better wells are generally those which are the higher producers, it is contemplated that some of those wells will be cut off and therefore the water that would be available for re-use within the District will not be available. It is important there be no reduction of the 300,000-acre-foot beneficial consumptive use as the acreage itself is reduced.

2. Reject water and other drainage waters.

The reject water from the desalting plant, which is intended to pass to the Gulf through the Santa Clara slough would ordinarily be treated as return flow water for which Wellton-Mohawk and the State of Arizona would obtain credit as return to the river for delivery of water to Mexico. The national obligation which has been assumed by the United States for this reject water, both in this bill and in the Central Arizona Project bill, which made the water delivery to Mexico a national obligation, should be couched in language that will provide that the State of Arizona and the District receive return flow credit for all water, both as reject water from the desalting plant and as any drainage water that might be by-passed to the slough now and not wait for augmentation of the river. We contemplate that there may be certain times that the desalting complex will be down and waters will be by-passed to the slough because of the 115 part per million deferential under Minute 242. There may be flood flow waters that require passing to the gulf. All of

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these waters should be allowed as return flow credit and be picked up by the United States from waters which she is going to seek to obtain to replace these losses. It is not fair that the District should have to bear the loss of these waters caused by an agreement beyond the scope of the Mexican Water Treaty in violation of the contract between the United States and the District and outside of the legal requirements as understood by the law of the river. The District is also greatly concerned that the United States may attempt to use the method of condemnation to force changes in the contractual obligations that the United States has to the District and is specifically concerned that they may attempt to reduce the irrigable acreage and increase the burden on the remaining acreage by amending the contract in that fashion. We maintain that we have a contract with the United States and that the only way in which it may be amended is by negotiations and are hopeful that the legislation will not pose any problems to an amicable renegotiation of that contract. We urge the adoption of the amendments proposed by the Committee of Fourteen to assist in this regard.

One of the most difficult matters for some people in the administration to understand is that the United States does not own any water in the Colorado River. We urge that the language of Section 101 (e) be carefully worded so that there may be no misunderstanding that the Secretary will have the right to exchange project water from the desalting plant under terms and conditions satisfactory to the Secretary, but that he does not have the right to sell that water. We agree that the City of Yuma and other water users in the area ought to have benefits from this desalting

complex and those that have rights to water from the Colorado River could make exchanges that would make that possible, but that the water is not available for sale to those who cannot make such an exchange.

3. Irrigation Efficiency Improvements.

The bill contemplates that funds will be available to the Secretary to assist water users in installing system improvements that will reduce return flow for sizing of the desalting plant. It then goes on to provide that all costs associated with these improvements enabling them to meet applicable water standards, shall be reimbursable. We urge that this language not be included. If it is in fact to meet those standards, then it would be reimbursable and we would not like to see the applicable Water Pollution Amendments Act of 1972 enlarged to include the requirement that there be reimbursed those costs that otherwise would be non-reimbursable if they were granted under the terms of that Act. We do not desire to see an enlargement of the obligations under the terms of that Act, nor are we asking that the rights of the water users themselves be enlarged.

4. Reduction of Irrigable Acreage.

We propose that the language of Section 101 (j) be amended to permit the reduction of the authorized irrigable acreage of the District and again urge that it not be tied in with a reduction in diversion of water from the river. We are anxious that the purchase of lands be negotiated and not accomplished under condemnation. We believe by exchange many acres can be taken out of production and this goal accomplished. We urge language that will enable this to be done.

5. We urge in your report accompanying the passage of this bill that language be included that will clearly indicate that the water right of the District and other divisions of the Gila Project are not affected, neither enlarged nor diminished by the bill. We respectfully enclose as an attachment to this statement language, somewhat verbose, that will go along these suggested lines.

6. While we have not gone into Title II of the bill, we do adopt the statement of the Committee of Fourteen in regard to it and urge its passage and implementation. The dollar loss to the United States, if those protective measures are not undertaken, are tremendous. It is good economy to spend the sums necessary to accomplish the objectives of that title.

We thank you for the opportunity to appear here and urge the early passage of S.2940 to ease the burdens caused by the execution of Minute 242. These burdens established for reasons of international comity, should be shared by all of the United States and not by the few in the immediate area.

PROPOSED LANGUAGE IN THE SENATE
INTERIOR AND INSULAR AFFAIRS COMMITTEE
REPORT ON S.2940

Section 101 (f) 2 provides for the reduction of the existing 75,000 irrigable acres authorized by the act of July 30, 1947 (61 Stat. 628) with an initial reduction to 65,000 acres. The Gila Reauthorization Act (61 Stat. 628) provided that Wellton-Mohawk Division of the Gila Project comprising "approximately 75,000 irrigable acres of land, or such number of acres as can be adequately irrigated by the beneficial consumptive use of no more than 300,000 acre feet of water per annum diverted from the Colorado River,...". There were two limitations placed on the District, that of 300,000 acre feet beneficial consumptive use or of 75,000 acres. The District did not ever contemplate being able to farm 75,000 acres with a straight 300,000 acre beneficial consumptive use figure without the necessity of reusing water from within their system that would come down either from the Gila River or from inflows into the District from some other source; therefore, there is no direct relationship between the 300,000 acre feet and the 75,000 acres. It is not contemplated that the 300,000 acre foot beneficial consumptive use figure will be affected by the reduction of the irrigable acreage within the District from 75,000 acres to whatever acreage is finally determined by the Secretary. It is not the intent of this legislation to affect the water rights of any of the divisions within the Gila Project as those water rights are established by contract as authorized under the Gila Reauthorization Act (61 Stat. 628). Those rights remain exactly the same,

they are neither enlarged nor diminished, nor affected in any way by S.2940. That is true of both the Wellton-Mohawk Division of the Gila Project and the Yuma-Mesa Division of the Gila Project.

Senator FANNIN. We do have a list of statements or letters that will be inserted in the record, on S. 1807, S. 3094, and S. 2490 from the Metropolitan Water District of Southern California, from the Imperial Irrigation District of California, the San Diego County Water Authority, Coachella County Water District in California, and the Yuma Mesa Irrigation and Drainage District of Arizona. These will all be made a part of the record.

[The information referred to follows:]

Statement of the Metropolitan Water District
of Southern California on S. 2940
Colorado River Basin Salinity Control Act*

The Metropolitan Water District of Southern California joins with the many other state and local agencies of the Colorado River Basin that have appeared before your committee in support of S. 2940, the proposed "Colorado River Basin Salinity Control Act." Last year, Senator Tunney and 13 co-authors introduced S. 1807, a bill which would authorize salinity control works in the Colorado River Basin. Many of the provisions of S. 1807 have been incorporated into S. 2940.

S. 2940 represents a key step in a continuous and long-standing effort to deal with the salinity problem of the Colorado River. While much of the present thrust for this legislation is due to the salinity problem with Mexico, it is important to note that the Federal Government and the seven Colorado River states have been working on the overall Colorado River salinity problem for many years.

Your committee has received expert testimony on the Colorado River salinity problem and the proposed salinity control program from various federal and state representatives. The Metropolitan Water District was pleased to work with the Colorado

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*Before the Subcommittee on Water and Power Resources of the Senate Committee on Interior, April 26, 1974. Presented by Jerald R. Butchert, Legislative Representative

River Board of California in preparation of the statement presented by the Committee of Fourteen and we enthusiastically support that statement. Remembering the many years of controversy among the Colorado River Basin states over water rights, we find it especially gratifying for those of us from California to be joining with representatives of the other six Colorado River Basin states in this matter of great mutual concern.

In the past, most of the measures to deal with Colorado River salinity have involved doing something about the water after it reaches the service area. For instance, Metropolitan Water District constructed the world's largest water softening plant to reduce the hardness of a portion of the water it serves from about 350 ppm to about 125 ppm. This plant has been in operation since 1941 and presently softens an average of 150 million gallons a day. Another example of salinity control measures undertaken by local users are the extensive sub-surface drainage tiles installed by agricultural water users.

The various measures that have been taken to deal with salinity in the local service areas have been of limited effectiveness. Of particular long-range importance are the vast tonnages of salt that are gradually building up in the groundwater basins where Colorado River water is used on the surface and for replenishment. We therefore believe that one of the most significant features

of the control program provided in S. 2940 is that for the first time a major effort would be made to remove salt from the Colorado River system at the source of the salt.

Taking the Paradox Valley Project as an example, approximately 200,000 tons of salt a year presently enter the Dolores River and become part of the Colorado River water supply. This salt enters the river as a highly concentrated brine of 160,000 parts per million, over five times the salinity of sea water. The Bureau of Reclamation has indicated that it would be feasible to trap most of this brine before it enters the Dolores River and convey it to an evaporation pond. We believe this concept makes eminently good sense--to keep highly saline brine out of our water supply.

In a similar way, the proposed Las Vegas Wash Project and the Crystal Geyser Project would permit removal of saline brines containing 130,000 tons a year and 3,000 tons a year, respectively, from the Colorado River system.

We would also like to comment briefly on the proposed Grand Valley Project. This project has two basic phases--renovation of the irrigation canal system in the valley and development of improved irrigation management practices. This program will benefit downstream users by reducing the amount of salt leached

from the shales underlying the lands in the valley. It is estimated that the salt load from the valley can be reduced by 200,000 tons a year. The program will also benefit the farmers in the valley in that better irrigation practices should result in higher crop yields.

That part of S. 2940 dealing with the salinity of Colorado River water delivered to Mexico is particularly welcome, as this problem has been with us in one form or another since 1961. This District has followed the situation very closely and representatives of Metropolitan met with Ambassador Brownell in the fall of 1972. The Committee of Fourteen has described to you the position of the seven states with respect to the program developed by Ambassador Brownell and contained in Minute 242 of the International Boundary and Water Commission. The Metropolitan Water District fully supports the statement of the Committee of Fourteen, including the reservations expressed by the committee. Notwithstanding these reservations, we are extremely hopeful that this problem can be resolved within the general framework provided in Minute 242.

In connection with our relations with Mexico, I think your committee will be interested in an emergency arrangement that has been worked out to serve water to the City of Tijuana, Mexico, through facilities owned by local agencies in the United States.

That city's population has swelled to almost a half million persons and there has been an acute water shortage. Approximately two years ago, the Mexican Government urgently requested the United States Government to work out an emergency program for delivering a portion of Mexico's Colorado River entitlement to Tijuana through facilities in the United States. The arrangements were completed in the summer of 1972 and the water furnished under this program presently provides about one-third of Tijuana's needs.

Although there is no obligation on the part of the United States or Southern California water agencies to make any deliveries to Tijuana, four Southern California agencies made major efforts to deliver water to help solve this serious problem. The Metropolitan Water District pumps the water from Lake Havasu and conveys the water south through its system to Otay Reservoir, which is owned by the City of San Diego. Lastly, the Otay Municipal Water District conveys the water from Otay Reservoir to the Mexican Border, where there is a connection with a pipeline constructed by the City of Tijuana. Each of the California agencies involved is paid for its share of the costs involved in the water transfer. The San Diego County Water Authority acts as representative of the four agencies in administering the contract with Tijuana and the International Water and Boundary Commission oversees the program. The program is scheduled to be in operation for five years, during

which time it is hoped that Mexico will be able to complete facilities for conveying Colorado River water from Mexicali to Tijuana.

In conclusion, it should be noted that the House companion to S. 2940, H.R. 12165, was amended by the House Subcommittee on Water and Power Resources on April 2, 1974. Most of the amendments were endorsed by the Committee of Fourteen. Metropolitan Water District concurs in the amendments so endorsed.

The Metropolitan Water District appreciates the opportunity to testify before your committee.

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TELEPHONE 714-355-1112

IMPERIAL IRRIGATION DISTRICT

OPERATING HEADQUARTERS • IMPERIAL, CALIFORNIA 92251

April 17, 1974

The Honorable Members of the Senate
Water & Power Resources Committee
on Interior and Insular Affairs
U. S. Senate

Attention: Senator Frank Church, Chairman

Gentlemen:

Imperial Irrigation District submitted testimony on H. R. 12165 and H. R. 12834 before the House Committee on Interior and Insular Affairs on March 8, 1974.

Imperial Irrigation District supported H. R. 12165 with minor exceptions, as testimony indicates, and supports H. R. 12165, as amended, including those changes effected by the Water and Power Subcommittee of the House Interior Committee.

Imperial Irrigation District desires to submit a companion statement for the Committee's review and the record in connection with Senate Bill No. 2940, and requests that said information be incorporated in the Senate Water and Power Resources Subcommittee hearings as though presented and read before the Committee, as follows:

Imperial Irrigation District is a publicly-owned water and power utility organized pursuant to the Irrigation District Act of 1911, which operates under the Water Code of the State of California.

FUNCTION

The District performs three functions: (a) Diversion, transmission and delivery of Colorado River water for irrigation and domestic uses; (b) Operation and maintenance of drainage canals and facilities; and (c) Generation, transmission and distribution of electric energy to a 7,500 square mile area equal in size to the states of Connecticut and Rhode Island.

Under rights which are vested, the District annually diverts approximately 2.9 million acre-feet of water from the Colorado River at Imperial Dam, and transports the same into the main All-American Canal for a distance of 80 miles into its 1,650 mile canal system to serve 6,000 headgates which, in turn, deliver water to 444,000 acres of farmland and to the seven incorporated cities for municipal and industrial purposes within its service area. Said area is principally comprised of the Imperial Unit, which occupies the central and main portion of land within the boundaries of the District (see General Map attached as Exhibit 27F0189).

The District is the largest single diverter in the entire Colorado River system, with present perfected and vested rights to the water it diverts dating back to 1901. The District enjoys a third priority for the water it receives from the Colorado River pursuant to the Seven-Party Agreement, the California Limitations Act, the Colorado River Compact, and the Boulder Canyon Project Act.

The District further provides a 1,375 mile drainage system serving an 18,988 mile grid of subsurface farm drains, which serve 385,146 acres (as of 12/31/73, see Exhibit B). This system, in turn, helps to remove four million tons of salt from the soil annually, resulting in the net removal of 500,000 tons of salt from Imperial Valley soils each year, which is a direct reflection of the historic application of Colorado River water.

SILT PROBLEM

The contract service area of the District, including Imperial, East Mesa, West Mesa, and Pilot Knob Units, approximates one million acres (see Exhibit 27F0189). The presently developed area of Imperial Valley is part of a delta of the Colorado River. The soil, to great depths, is made up of silt brought in by the river from the seven states of the Colorado River Basin. These highly stratified alluvial deposits, comprised of fine-textured clays, silts, and fine sands, have resulted in a very complex soil which has offerred many problems in connection with providing adequate drainage.

Though these river deposits of silts and fine sands in place have produced a splendid productive record from an agricultural point of view, we must not forget the difficulty the District experienced during its early years of development when it had to adjust its operations to handle tremendous volumes of suspended solids. Obviously, this silt burden represented a high degree of pollution; but, on the other hand, we must accept the fact

that it was a problem that created a challenge to the pioneers who had to resolve it. I have heard it said that "The First Forty Years of Imperial Valley History" vividly sets forth the trials and tribulations suffered in attempting to recover enough water from the mud to grow a crop.

FROM SILT TO SALT

Though the District has been successful in controlling the silt problem to a certain degree, it now faces the pollution problem of salinity. This has yet to be resolved, although Imperial, with its own resources, has accomplished a great deal at high cost. For example, as shown in the CONCLUSION, nearly $67,000,000 has already been spent to create a massive drainage system. Further, in 1957 the District expended 1.5 million dollars to construct the Vail Cutoff Canal and the Rositas Supply Canal, intertying the East Highline Canal with lands to the west of the Alamo River. These canals serve a combined area of 50,000 acres, which were previously served by diversions from that river. It became obvious, however, in the mid 1950's that the salinity level in the Alamo River had reached an intolorable level, and that the supply of water for these acreages must, necessarily, be of a better quality.

In reviewing the records, we find that the quality of water coming into our system as late as 1953 averaged 600 ppm at a minimum, while today we are required to use water that averages approximately 900 ppm. The battle against salinity has been a continuous one. Of the 444,000 agricultural acres referred to previously, 385,000 acres had subsurface tiling installed by the end of 1973, at a cost of $43,759,700, leaving 59,000 acres to be tiled, which will cost an additional $25,400,000, thus representing a total capital investment of $69,159,700 (see Exhibit B for typical underground tile drainage system.)

In 1968, Imperial Irrigation District presented testimony before the Subcommittee on Irrigation and Reclamation, of the House of Representatives Committee on Interior and Insular Affairs during hearings concerning Bills H.R. 3300 and S.B. 1004. On page 884 of the transcript of these hearings T-1044 entitled, "Salinity of Irrigation Water Received by District and Leaching Requirement, 1964-66", (resubmitted and attached hereto under the same designation), indicates that 926 ppm water requires a leaching factor of 22%.

During the same hearings, Mr. Floyd E. Dominy, Commissioner, Department of the Interior, Bureau of Reclamation, stated that, "Our judgment at the moment, collective judgment of the Geological Survey and the water pollution people and the Bureau of Reclamation in the Department, would be that with full Upper Basin development the water quality at Imperial

Dam would gradually worsen to probably something like 1,400 parts per million of dissolved minerals." (Transcript page 854.)

Assuming that the Colorado River water delivered to Imperial Irrigation District reaches the salinity index of 1,200 ppm by the year 2000, the leaching factor requirement (based on the Blaney-Criddle formula by direct proportion) will increase from 22% to 29%. We realize that soil susceptibility is a factor in applying this quantity of leaching water. When one considers that Imperial Irrigation District diverts 2.9 million acre-feet of water, now averaging approximately 900 ppm, it is very apparent that a further deterioration in quality of the water coming into our system will mean that a considerably greater quantity of water will be required to do the same job we are doing now, based on this premise.

In view of the limitations imposed as to quantity - namely, those prescribed by the contractual agreements referenced earlier - an increased leaching requirement on the part of Imperial Irrigation District will, of course, operate to the disadvantage of the contractors without present perfected rights - or other rights of appropriation.

COACHELLA CANAL AND EAST MESA LANDS

Concerning the matter of lining the Coachella Branch of the All-American Canal, the Imperial Irrigation District is willing, under certain conditions, to relinquish its capacity interests in that canal to facilitate its lining by the United States. There are approximately 4,200 acres of East Mesa land, which have been included and have a certificate of water availability, that are contiguous to the Coachella Canal and subject to irrigation therefrom without crossing public lands. Approximately 10% of these 4,200 acres were shown to be in crop during 1973.

Realizing that the 4,200 acres of land contiguous to the Coachella Canal could be served by approximately 100 cfs of capacity, the fact remains that the District contracted for 1,000 cfs capacity in the main, as well as in the Coachella Branch of the All-American Canal to serve the East Mesa lands, approximately 220,643 gross acres (see Exhibit 27F0189). The District's 1,000 cfs capacity, if constructed, would add approximately 13 million dollars in addition to the projected 20 million dollar cost for the Coachella Valley County Water District's 1,500 cfs capacity.

A major part of the East Mesa Unit is public land, and the District's contract with the United States, namely, Contract Amendatory of and Supplemental to All-American Canal Contract of December 1, 1932, dated March 4, 1952, provides in Article 23, "Assessment of Public Land", the following,

and I quote: "Within a reasonable time, to be determined by the Secretary, from the date water is available for and can be delivered to any public lands within the boundaries of the District, such lands shall be opened to entry."

Taking this provision of the contract literally, the District, as explained above, contracted for capacity in the main, as well as in the Coachella Branch of the All-American Canal to serve said lands. However, since California, as a result of the decision in Arizona v. California, is obligated to reduce diversions less returns to 4.4 million acre-feet per year in the future, any lands opened for entry on the East Mesa would have to be served to the detriment of other users. We do not intend this.

In the matter of Hugh S. Ritter, Thomas M. Bunn (A-30415), decided February 24, 1965, the Under Secretary of the Interior ruled that, "it would be contrary to the public interest at this time to increase the pressure on the inadequate water supply available for use in California from the Colorado River by classifying * * * public lands as available for disposition under the desert land law." The lands referred to are in Imperial and Riverside Counties, California. The above is from 43 CFR 2234.3-1, and is quoted further as follows: "For the reasons stated in the Ritter-Bunn decision, supra, it is contrary to the public interest to permit the use of federally owned lands within Imperial and Riverside Counties for the construction of canals and ditches in order to effect agricultural reclamation with water from the Colorado River of desert lands in those counties. Therefore, no applications for rights-of-way for this purpose under the provisions of the Act of March 3, 1891, as amended, will be allowed or permitted on federally-owned lands within Imperial and Riverside Counties, Calif., unless the applicant shows that the water to be carried is from a source other than the Colorado River." The Secretary continues to hold that East Mesa lands non-contiguous to the main All-American Canal and to the Coachella Branch are not subject to irrigation because of the water inventory, and the Government will not grant rights-of-way across public lands for this purpose, including access across the canal bank itself.

DISTRICT OPPOSED TO PROVIDING CAPACITY IN COACHELLA BRANCH CANAL FOR EAST MESA LANDS

Furthermore, even though the District had been authorized to expand the acreage entitled to water pursuant to the All-American Canal contract, providing water is available, we would, in good conscience, have to decide not to do so insofar as these particular lands are concerned.

To reinforce this position, reference is made to two contracts with the Federal Government. The first, No. 14-06-300-614, dated April 30, 1957, covering the lease of land for agricultural purposes known as the Drop No. 3 Experimental Farm, which was terminated as of October 30, 1973 because of its failure to become economically self-supporting due to limitation of crops, excessive water duty, and inadequate drainage (see Exhibit 27F0189 for location). The second, No. 14-06-300-613, dated May 1, 1947, amended April 30, 1957, covering the lease of land for agricultural purposes known as the Drop No. 2 Experimental Farm, following initial development by the District was sublet to Brock Ranches for a long-term study to determine the feasibility of commercially producing various citrus crops on the East Mesa (see Exhibit 27F0189 for location). Water duty on the farm over the past ten years of operation has averaged 22.4 acre-feet per acre, with no indication that this rate of application will improve to any great extent.

Therefore, Imperial Irrigation District believes that the land included in the East Mesa Unit, except the experimental farm referenced herein, should not be opened to entry under any circumstances and, further, that the District should be relieved of responsibility for serving irrigated, as well as unirrigated, privately-owned lands on the East Mesa adjacent to the Coachella Canal by means appropriate to the United States including purchase, exchange, eminent domain, or condemnation of said private lands or interest therein at no cost to the District.

LEACHING REQUIREMENT - IMPERIAL UNIT

Reference is, again, made to the presentation of Imperial Irrigation District in hearings before the Subcommittee on Irrigation and Reclamation of the Committee on Interior and Insular Affairs, House of Representatives, during consideration of H.R. 3300 and S.B. 1004 on February 2, 1968, and to certain exhibits attached thereto. Exhibit T-1033, titled, "Water for Consumptive Use and Leaching Requirement and Theoretical Farm Efficiency, 1959-66", resubmitted and attached hereto under the same designation, shows an eight-year average consumptive use per acre irrigated of 4.26 acre-feet and a leaching requirement factor of 20%. Exhibit T-1063, attached hereto, updates the previous exibit and shows a ten-year average consumptive use of 4.24 acre-feet per acre irrigated and a leaching factor of 21%. It will be noted that for the year 1972, the consumptive use factor was down slightly, but the leaching factor rose to 22%, which correlates with the figure previously mentioned.

It follows, however, that if the Colorado River water quality improvement feature of the Bill is implemented, resulting in improved quality in flows

arriving at Imperial Dam then, obviously, Imperial's leaching requirement would be reduced accordingly, and water saved would be available to assist in the satisfaction of the demands of the Coachella Valley County Water District and The Metropolitan Water District of Southern California.

CONCLUSION

The Imperial Irrigation District, occupying a position at the tail end of the Colorado River system, is, perhaps, more interested in alleviation of salinity than those who are more fortunate and are located in the upper reaches.

The District has faced up to its problems of silt and salt in the past, and expects to continue to do so in the future. For example, it will be necessary, as shown in the following tabulation, to expend approximately 167 million dollars to complete the District and landowners' concrete lining and tile drain programs, and the total overall capital outlay, on completion, will exceed 264 million dollars:

With respect to: (1) the costs regarding tile installed; (2) cost of concrete lining District laterals from 1954-1972, inclusive; (3) estimated costs of private farm ditches installed by landowners at their expense from 1949-72, inclusive; (4) tile required, as programmed, based on past experience for future installation, cost of additional tile required if existing tile spacing is reduced to 100-foot intervals; (5) projected costs of concrete lining to be considered in future years; and (6) the estimated costs of concrete lining the District's main canals which, presently are unlined, the following information is submitted:

1. Value of Tile Installed since 1929 within Imperial Irrigation District Boundary:

Period		Cost Per Foot	Cost Per Period	Accumulated Total in Round Figures
1929-30	17.53 miles @ $528/mile	$.10	$ 9,250	$ 9,250
1931-40	382.08 miles @ $950/mile	.18	363,000	372,250
1941-50	2,017.14 miles @ $1,690/mile	.32	3,409,000	3,781,250
1951-60	5,754.67 miles @ $2,112/mile	.40	12,154,000	15,935,250
1961-70	7,723.99 miles @ $2,482/mile	.47	19,171,000	35,106,250
1971	919.34 miles @ $2,798/mile	.53	2,572,300	37,678,550
1972	1,019.40 miles @ $2,798/mile	.53	2,852,300	40,530,850
2. Cost of Concrete Lining District Laterals from 1954-72, inclusive (524.15 miles)		-	-	$ 10,341,950

3. Costs of private Farm Ditches Installed by Landowners at Their Expense 1949-72, inclusive (1,848.30 miles) $ 15,893,000

TOTAL COST COMPLETED INSTALLATIONS $ 66,765,800

4. Presuming a 100-foot spacing concept is accepted, the application of the appropriate formula develops the following:

Tiling requirements to complete tile systems in cultivated area IID
17,834 miles tile installed (1929-1972) - 94 million feet or 377,000 acres
Average spacing needed ± 100 feet
100-foot space per 160 acres = 65,000 feet to tile

$\frac{65,000}{160}$ = 400 feet/acre to tile complete to 100 feet

Existing tile $\frac{94 \text{ million feet}}{377,000 \text{ acres}}$ = 250 feet/acre existing

400 feet/acre - 250 feet/acre = 150 feet/acre needed for split-out
150 feet x 377,000 = 57 million feet needed for split-out
57 million feet @ $.053/foot $ 30,200,000

NEW TILE - 120,000 acres untiled (59,000 acres - no tile
(61,000 acres - partial tile

120,000 acres x 400 feet/acre = 48 million feet new tile
48 million feet @ $.053/foot $ 25,400,000

TOTAL ESTIMATED COST OF TILE FOR 105 MILLION FEET $ 55,600,000

NOTE: For the year 1972, total tile footage under new tile design numbers was 918,000 feet. Total footage for year - 5,160,000 feet. Total jobs for the year 1972 were 360, of which 36 were new grids. Therefore, 10% of all tile jobs were new grids representing 16.8% of all footage installed, or 83.2% of all tile installed was split-outs.

5. Projected Cost for Concrete Lining Balance of District Lateral Canals in Future Years $ 28,013,300

6. Estimated Projected 1983 Cost of Concrete Lining District Main Canals are as follows:

East Highline Canal (45 miles)	$ 46,500,000
Central Main Canal (31 miles)	23,400,000
West Side Main Canal (45 miles)	39,000,000
Vail Cut-off	3,000,000
Balance of the Rositas Canal unlined	2,000,000

TOTAL COST CONCRETE LINING DISTRICT LATERAL AND MAIN CANALS	$141,913,300
GRAND TOTAL CONCRETE LINING AND TILE LINES INSTALLED AND TO BE COMPLETED	$264,279,100

The information submitted covering the costs of tile lines and concrete lined ditches installed has been developed from available records.

The estimated costs of additional tile lines, as well as new lines to be installed to split out existing lines; and the concrete lining of lateral as well as main canals, has been estimated, using cost information developed from our records to which there has been added what we believe to be an appropriate increase to accomplish the work proposed.

The Imperial Irrigation District has made and is making its contribution, and we feel that it is appropriate, as well as timely, for the United States to do its part to reduce salinity of the waters reaching us.

Imperial Irrigation District does not desire a reduction of its rights or obligations with respect to the main All-American Canal, and prefers that the full capacity of the main canal be maintained.

If there are to be changes in any water delivery contracts, they will be amendments or supplements negotiated between the Secretary and the particular water user, such as Imperial Irrigation District or Coachella Valley County Water District, without effect on contractual rights of others.

We submit amendments to S. B. 2940 to carry out the foregoing recommendations (see Exhibit A).

Imperial Irrigation District takes this occasion to state its appreciation for the efforts of the Committee of Fourteen, and its support, in principle, of the Committee's recommendations.

The Imperial Irrigation District believes that the Government should move forward with its obligation to fund this legislation to accomplish the objective as a national obligation. We strongly recommend enactment of S. B. 2940, because it comes to grips with the salinity problem on a basin-wide basis.

Respectfully submitted,

Carl Bevins

CARL BEVINS, President
Board of Directors

Attachments

IMPERIAL IRRIGATION DISTRICT
Salinity of Irrigation Water Received by District
and
Leaching Requirement
1964-1966

Year	Annual Discharge A. F. * (1)	Total Salt Tons** (2)	Historic Wtd. Average Salinity T. A. F. (3)	P. P. M. (4)	$Kx10^6$*** (5)	Leaching Require. Percent (6) 1/
1964	2,770,474	3,284,284	1.19	875	1,250	21
1965	2,624,363	3,406,457	1.30	956	1,370	23
1966	2,817,912	3,650,447	1.30	956	1,370	23
Average	2,737,583	3,447,063	1.26	926 2/	1,320	22

*Total Discharge All-American Canal Below Drop 1
**Based on Weekly Salinity Samples
***Based on conversion factor of 0.7 for ppm to conductivity (micromhos/cm. to nearest 10)

1/ Based on average salt tolerance for 50% yield reduction and historic conductance of water delivered to District. Refer USDA Handbook No. 60 and Bulletin 283. Includes allowance for minimum nonuniformity of application.

2/ Weighted Average

T-1044

IMPERIAL IRRIGATION DISTRICT

Water for Consumptive Use and Leaching Requirement and Theoretical Farm Efficiency

1959-1966

Year	(1) Total Irrig. Ac. (1,000 Ac)	Per Irrigated Acre (2) Cons. Use*	(3) Leach. Require. (Percent)	(4) C. U. +L. R. (2) x 100 / (100)-(3)	(5) L. R. Only (4)-(2)	(6) Total Delivered To Users	(7) Total C. U. * (1)x(2)	(8) Total L. R. (1)x(5)	(9) Avail. for F. E. ** (6)-(7+8)	(10) F. Effic. % (6-9) x 100 / (6) **
1959	440.0	4.32	17	5.20	0.88	2,250	1,899	387	(-36)	(101.6)
1960	434.5	4.36	19	5.38	1.02	2,396	1,894	443	59	97.5
1961	435.5	4.23	20	5.29	1.06	2,415	1,840	462	113	95.3
1962	429.5	4.13	20	5.16	1.03	2,446	1,774	442	230	90.6
1963	430.5	4.30	20	5.37	1.07	2,513	1,852	461	200	92.0
1964	431.5	4.39	21	5.56	1.17	2,399	1,893	505	(1)	(100.0)
1965	432.5	4.25	23	5.52	1.27	2,312	1,839	549	(-76)	(103.3)
1966	437.5	4.15	23	5.39	1.24	2,470	1,815	543	112	95.5
8-Year Average	433.9	4.26 1/	20	5.33 1/	1.07 1/	2,400	1,851	464 1/		

Note: Columns 1, 6, 7, 8, and 9 are in 1,000 acre-feet.

*Based on Blaney-Criddle Formula

**Represents water that was available for farm losses after leaching requirements and consumptive use had been satisfied

1/ Weighted Average

Column 2 refer T-1029

Column 3 refer T-1031

Column 6 refer T-1019

T-1033

IMPERIAL IRRIGATION DISTRICT
WATER FOR CONSUMPTIVE USE AND LEACHING REQUIREMENT
AND THEORETICAL FARM EFFICIENCY
1959-1968

Year	(1) Total Irrig Acres (1,000 AC)	Per Irrigated Acre (2) Cons. Use*	(3) Leach Require (Percent)	(4) C.U. + L.R. (2) x 100 (100) - (3)	(5) L.R. Only (4) - (2)	(6) Total Delivered To Users	(7) Total C.U.* (1) x (2)	(8) Total L.R. (1) x (5)	(9) Avail. For F.E.** (6) - (7+8)	(10) F. Effic. % (6-9) x 100 (6) **
1959	440.0	4.32	17	5.20	0.88	2,250	1,899	387	(-36)	(101.6)
1960	434.5	4.36	19	5.38	1.02	2,396	1,894	443	59	97.5
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1964	431.5	4.39	21	5.56	1.17	2,399	1,893	505	1	100.0
1965	432.5	4.25	23	5.52	1.27	2,312	1,839	549	(-76)	(103.3)
1966	437.5	4.15	23	5.39	1.24	2,470	1,815	543	112	95.5
1967	445.5	4.24	21	5.37	1.13	2,365	1,889	503	(-27)	(101.1)
1968	441.0	4.04	21	5.11	1.07	2,476	1,782	472	222	91.0
10 Year Average	436.0	4.24 1/	21	5.37 1/	1.13 1/	2,404	1,848	493 1/		
1972	444.5	4.12	22	5.28	1.16	2,531	1,833	516	182	92.8

Note: Columns 1, 6, 7, 8, and 9 are in 1,000 A.F.

* Based on Blaney-Criddle formula
** Represents water that was available for farm losses after leaching requirement and consumptive use had been satisfied.
1/ Weighted average

T-1063

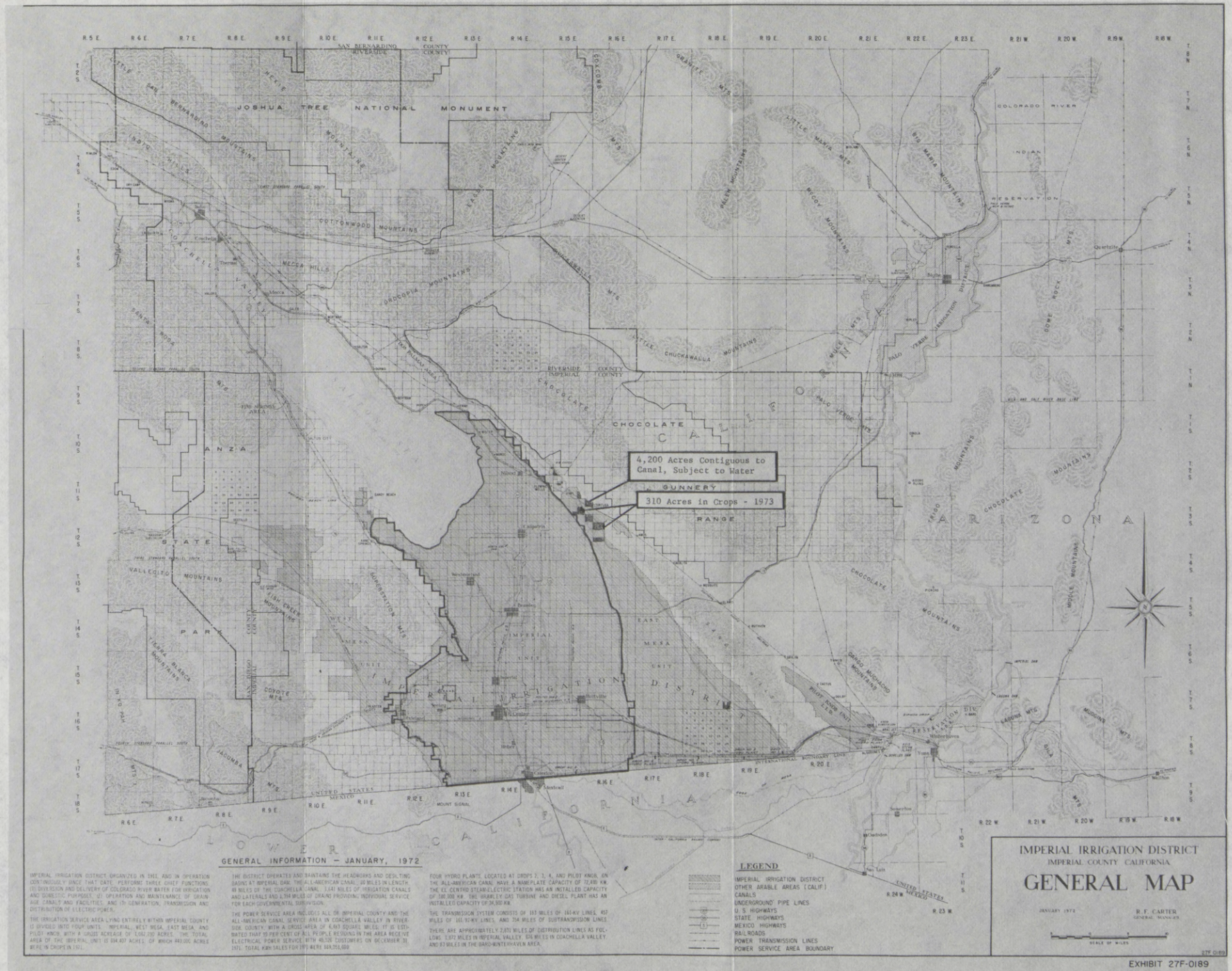
AMENDMENTS PROPOSED BY
IMPERIAL IRRIGATION DISTRICT
TO S. B. 2940, 93d CONGRESS

P. 9, line 2: Strike all commencing with "authorized" and substitute: "to return such lands to the public domain, but withdrawn from entry. The United States shall not acquire any water right by such acquisition of lands."

P. 9, line 10: Strike "All-American and".

Change "Canals" to "Canal"

Exhibit A



GENERAL INFORMATION — JANUARY, 1972

IMPERIAL IRRIGATION DISTRICT, ORGANIZED IN 1911, AND IN OPERATION CONTINUOUSLY SINCE THAT DATE, PERFORMS THREE CHIEF FUNCTIONS: (1) DIVERSION AND DELIVERY OF COLORADO RIVER WATER FOR IRRIGATION AND DOMESTIC PURPOSES, (2) OPERATION AND MAINTENANCE OF DRAINAGE CANALS AND FACILITIES, AND (3) GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRIC POWER.

THE IRRIGATION SERVICE AREA LYING ENTIRELY WITHIN IMPERIAL COUNTY IS DIVIDED INTO FOUR UNITS: IMPERIAL, WEST MESA, EAST MESA, AND PILOT KNOB, WITH A GROSS ACREAGE OF 1,042,230 ACRES. THE TOTAL AREA OF THE IMPERIAL UNIT IS 594,407 ACRES, OF WHICH 440,005 ACRES WERE IN CROPS IN 1971.

THE DISTRICT OPERATES AND MAINTAINS THE HEADWORKS AND DESILTING BASINS AT IMPERIAL DAM, THE ALL-AMERICAN CANAL, 80 MILES IN LENGTH, 89 MILES OF THE COACHELLA CANAL, 1,241 MILES OF IRRIGATION CANALS AND LATERALS AND 1,114 MILES OF DRAINS PROVIDING INDIVIDUAL SERVICE FOR EACH GOVERNMENTAL SUBDIVISION.

THE POWER SERVICE AREA INCLUDES ALL OF IMPERIAL COUNTY AND THE ALL-AMERICAN CANAL SERVICE AREA IN COACHELLA VALLEY IN RIVERSIDE COUNTY, WITH A GROSS AREA OF 4,947 SQUARE MILES. IT IS ESTIMATED THAT 95 PER CENT OF ALL PEOPLE RESIDING IN THE AREA RECEIVE ELECTRICAL POWER SERVICE. WITH 49,526 CUSTOMERS ON DECEMBER 31, 1971. TOTAL KWH SALES FOR 1971 WERE 369,055,000.

FOUR HYDRO PLANTS LOCATED AT DROPS 2, 3, 4, AND PILOT KNOB, ON THE ALL-AMERICAN CANAL HAVE A NAMEPLATE CAPACITY OF 72,400 KW. THE EL CENTRO STEAM-ELECTRIC STATION HAS AN INSTALLED CAPACITY OF 180,000 KW. ONE 16,000-KW GAS TURBINE AND DIESEL PLANT HAS AN INSTALLED CAPACITY OF 34,500 KW.

THE TRANSMISSION SYSTEM CONSISTS OF 183 MILES OF 161-KV LINES, 457 MILES OF 161-92-KV LINES, AND 354 MILES OF SUBTRANSMISSION LINES.

THERE ARE APPROXIMATELY 2,031 MILES OF DISTRIBUTION LINES AS FOLLOWS: 1,372 MILES IN IMPERIAL VALLEY, 576 MILES IN COACHELLA VALLEY, AND 83 MILES IN THE DARD-WINTERHAVEN AREA.

LEGEND

- IMPERIAL IRRIGATION DISTRICT
- OTHER ARABLE AREAS (CALIF.)
- CANALS
- UNDERGROUND PIPE LINES
- U. S. HIGHWAYS
- STATE HIGHWAYS
- MEXICO HIGHWAYS
- RAILROADS
- POWER TRANSMISSION LINES
- POWER SERVICE AREA BOUNDARY

IMPERIAL IRRIGATION DISTRICT
IMPERIAL COUNTY CALIFORNIA

GENERAL MAP

JANUARY 1972

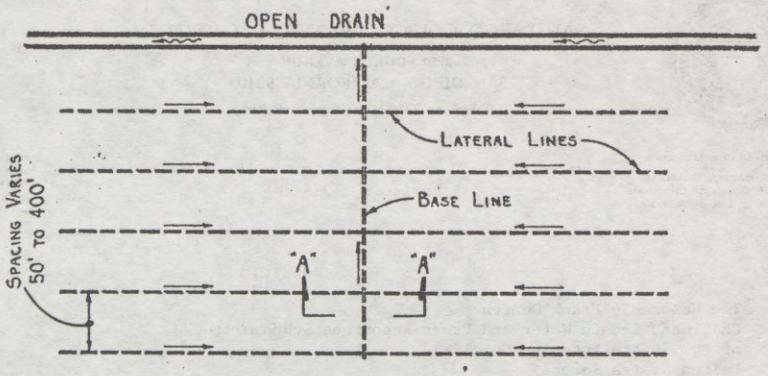
R. F. CARTER
GENERAL MANAGER

SCALE OF MILES

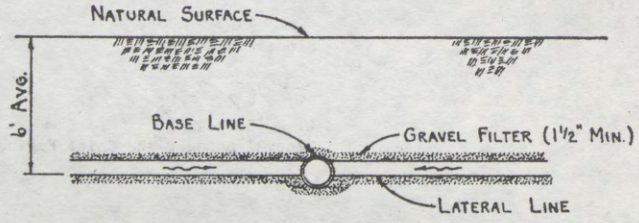
27F-0189

EXHIBIT 27F-0189

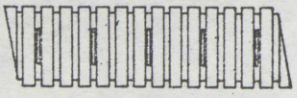
33-455 O - 74 (Face p. 311)



PLAN OF TILE GRID



SECTION "A-A"



PERFORATED PLASTIC TILE

REF. DWGS.

IMPERIAL IRRIGATION DISTRICT
ENGINEERING SECTION
IMPERIAL, CALIFORNIA

TYPICAL UNDERGROUND TILE DRAINAGE SYSTEM

ISSUE 3	ISSUE 2	ISSUE 1	DATE 2-25-74	SCALE NONE
			DRAWN M. KING	CHECKED
			APPROVED	

(EXHIBIT "B").

SAN DIEGO COUNTY WATER AUTHORITY
2750 FOURTH AVENUE
SAN DIEGO, CALIFORNIA 92103
Telephone 297-3218 — Area Code 714

BOARD OF DIRECTORS
R. E. BADGER, CHAIRMAN
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LINDEN R. BURZELL
GENERAL MANAGER
AND CHIEF ENGINEER
PAUL D. ENGSTRAND
GENERAL COUNSEL

April 19, 1974

RECEIVED
APR 23 1974

The Honorable Frank Church
Chairman, Senate Water and Power Resources Subcommittee
of the Senate Interior Committee
United States Senate
Washington, D. C.

My dear Senator Church:

The attached statement is submitted for the record in the hearings scheduled for Friday, April 26, 1974, before your Committee.

Thank you for taking time to provide for this opportunity to state our position.

Sincerely yours,

L R Burzell

L. R. Burzell
General Manager and Chief Engineer

LRB:jmr

cc: Colorado River Board
Mr. J. Butchert
Board of Directors, San Diego County
Water Authority
Mr. P. D. Engstrand

April 15, 1974

STATEMENT OF THE
SAN DIEGO COUNTY WATER AUTHORITY
ON S.2940
THE COLORADO RIVER BASIN SALINITY CONTROL ACT*

The San Diego County Water Authority comprises 761,000 acres in San Diego County, California, and was formed in 1944 by the California State Legislature, to provide water for municipal, domestic, and other beneficial uses throughout San Diego County. The Authority is a member of The Metropolitan Water District of Southern California, and obtains its supplies of supplemental water from that District. At present, all of the water delivered to the Authority by Metropolitan Water District comes from the Colorado River.

The Authority succeeded to the rights of the City of San Diego and County of San Diego to Colorado River water, and assigned its rights to Metropolitan Water District when it joined that District. In 1972-73, the Authority received over 340,000 acre feet of Colorado River water for use within its area, and also received 6,776 acre feet for subsequent delivery to the Republic of Mexico. Water distribution agencies in the Authority area, in turn, delivered 304,000 acre feet of Colorado River water to their customers, and 38,000 acre feet were available from local sources. These deliveries included 69,500 acre feet for agricultural use, amounting to 93% of the total agriculture water used within the Authority's area. Population within the Authority was estimated to be 1,460,000 as of April 1, 1973, which is 96% of the total population of San Diego County.

As the preceding indicates, San Diego County has a large stake in the Colorado River. The crops grown within the Authority area are predominantly those that have a high market value, such as avocados, citrus, cut flowers, winter vegetables, and similar crops. Growing these crops is risky; however,

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*Submitted for the record to the Senate Water and Power Resources Subcommittee of the Senate Interior Committee, April 26, 1974.

they are essential because the operating costs of farms in the Authority area are very high, among the highest paid by farmers anywhere in the country, and without receiving high returns, San Diego farmers could not continue in production.

These specialty crops are especially vulnerable to high levels of salinity in the water supply. If the salinity of the Colorado River water rises significantly, the Authority's farmers will find it difficult to continue in production.

The urban areas of the Authority, with a population approaching 1-1/2 million, also are aware of the present high level of dissolved salts in their water supplies, and are strongly opposed to increases in the water supply's salinity.

Colorado River water has reached the point where it is considered very aggressive from the standpoint of corrosion. Current estimates of the cost due to excessive levels of corrosion in water heaters and other plumbing facilities range from $10 to $20 million per year for San Diego water users.

For these reasons, the San Diego County Water Authority fully supports the statements made by the Colorado River Board of California pertaining to the need for control of the salinity of the Colorado River. The Authority concurs in the joint statement of the seven Colorado River Basin states that was presented to Congress on H.R. 12165, and we join with the recommendation that S.2940 be passed in the Senate. We believe that this legislation is necessary in order to prevent further increases of the river's salinity which would be of special concern to our farmers, our commercial and industrial establishments, and to our residents.

Because of our continuing and close relations with the Republic of Mexico, we also urge the passage of this legislation which we believe is necessary, in all its provisions, so that we may indeed achieve a definitive, equitable, and permanent solution to the salinity problem with Mexico.

ESTABLISHED IN 1918 AS A PUBLIC AGENCY

COACHELLA VALLEY COUNTY WATER DISTRICT

POST OFFICE BOX 1058 • COACHELLA, CALIFORNIA 92236 • TELEPHONE (714) 398-2651

DIRECTORS
LEON KENNEDY, PRESIDENT
RAYMOND R. RUMMONDS, VICE-PRESIDENT
GEORGE H. LEACH
C. J. FROST
WILLIAM B. GARDNER

OFFICERS
LOWELL O. WEEKS, GENERAL MANAGER-CHIEF ENGINEER
OLE J. NORDLAND, SECRETARY
WALTER R. WRIGHT, AUDITOR
REDWINE AND SHERRILL, ATTORNEYS

March 27, 1974

Hon. Frank Church
United States Senator, Idaho
Chairman, Senate Interior Committee
Subcommittee on Water and Power Resources
Senate Post Office
Washington, D.C. 20510

Dear Senator Church:

On Friday, April 26, your subcommittee will hold hearings on Senate 2940, the Colorado River salinity bill, which is similar to H.R. 12165, which this District supports.

This District's Board of Directors has authorized the enclosed statement by this District to be entered into the record of your subcommittee's hearings. We will greatly appreciate your acceptance of this statement rather than requesting time to appear and present it. We do this in the interest of time, which is important to your committee.

Thank you for your consideration.

Yours very truly,

Lowell O. Weeks
General Manager-Chief Engineer

OJN:mah

Enclosure

COACHELLA VALLEY COUNTY WATER DISTRICT

HISTORY OF COACHELLA VALLEY AND THE COACHELLA VALLEY COUNTY WATER DISTRICT

I. COACHELLA VALLEY

Coachella Valley is located in eastern Riverside County in California, and lies to the northwest of the Salton Sea. It is the northern extension of a large valley that was originally known as the Colorado Desert. This large valley, for practical reasons, is divided into three distinct areas. The part in Mexico is called Mexicali Valley, the part south of Salton Sea is called Imperial Valley, and the part north of Salton Sea is known as Coachella Valley.

II. COACHELLA VALLEY COUNTY WATER DISTRICT

As orignally formed, the Coachella Valley County Water District was located entirely within the county of Riverside. However, in recent years the boundaries of the district have been extended to include contiguous lands in Imperial County (approximately 54,000 ares) and in San Diego County (approximately 27,500 acres). All of the lands within the district are desert lands and the district now contains approximately 620,000 acres. The elevation of most agricultural lands is below sea level.

This district was formed in the year 1918 under what is now known as the County Water District Law (Division 12, California Water Code) and has continuously existed and functioned as such since that time as a public agency of the State of California. All of its authorized functions and duties are governmental in nature. The present functions of the District include: (1) water conservation and underground recharge activities; (2) stormwater protective works; (3) irrigation water delivery; (4) agricultural drainage system; (5) domestic water production,

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storage and delivery; and (6) wastewater collection and reclamation facilities.

III. WATER SUPPLY

The average rainfall is so slight in the Coachella Valley that it is practically disregarded, and the sole dependence for water in growing crops is placed in irrigation. The source of this supply lies principally in the rainfall and the melting snows on the high mountain peaks at the northwestern end of the valley and, since 1949, in a supply from the Colorado River diverted at Imperial Dam though the All American Canal to Coachella Valley, a distance of 160 miles, where it is distributed onto the farms.

The development of the valley began in 1888 when a water-bearing sand and gravel strata was found beneath the ground surface. During the first few years of development nearly all of the wells had an artesian pressure that produced a sufficient volume for irrigation, but with the increase in the number of wells, the water table soon lowered. With reduced pressure, many of the wells ceased for flow or the flow was so decreased that farmers had to resort to pumping.

It was evident at an early date that additional water must be found and brought to Coachella Valley. If no additional water were to be found, the acreage to be served by the underground supply would have to be limited to approximately 10,000 acres.

A. Natural Water

Most of the groundwater inflow into the Coachella Valley is from the Santa Rosa, San Jacinto, San Gorgonio and San Bernardino Mountains' watershed. A large part of the inflow comes from precipitation and runoff from the San Gorgonio and Whitewater Rivers. The recharges to the underground amount to more than 60,000 acre feet annually. These underground waters are largely used for domestic and

urban water purposes in the upper Coachella Valley.

B. Colorado River Water

Since 1918 this District has entered into seven separate and distinct contracts with the United States, all dealing with a supply of water from the Colorado River. The early contracts of 1920, 1921, and 1929 were brought into existence after the passage of the Kinkaid Act by the Congress in May, 1918, under which the district made contributions to the United States for its early surveys, investigations, and reports, looking forward to the construction of what we now call Hoover Dam and the building of an All American Canal to deliver water into Coachella and Imperial Valleys.

The district has four separate repayment contracts with the United States, incurring repayable obligations in the aggregate total of $34 million in round figures.

The first contract is dated October 15, 1934, and is for capacity in the Imperial Dam and the All American Canal and for the delivery of water into Coachella Valley. The second contract bears the date of December 22, 1947, and is for the construction of a distribution system and appurtenances as a means of delivering water from the All American Canal (Coachella main canal) to the lands within the Coachella Valley County Water District that were included within the service area. This distribution system is an underground, closed concrete pipe system aggregating more than 500 miles in length. All Colorado River water delivered to the agricultural areas in Coachella Valley through this underground, closed system is metered to each water user. The third contract is dated October 14, 1958, and is for the construction of an irrigation system and drainage works for 10,240 acres of Indian lands within the district. The fourth contract, dated

July 30, 1963, is for the rehabilitation and betterment of the works that were constructed under the 1934 and 1947 contracts.

The canal and distribution system constructed by the Bureau of Reclamation is one of the finest in the United States. In the suit of Arizona vs. California the Supreme Court found that the highest and most efficient use of irrigation water in the west was in Coachella Valley.

Colorado River water is diverted for the Coachella Valley County Water District at Imperial Dam which is about 18 miles upstream from Yuma, Arizona. The All American Canal roughly parallels the Colorado River on the California side down to Pilot Knob powerplant and wasteway for a distance of approximately 21 miles. The canal then swings westerly toward Imperial Valley. Drop No. 1 is the turnout for the Coachella main canal (Coachella Branch - All American Canal) and is located 15 miles downstream from Pilot Knob. The Coachella Canal is 123.45 miles in length and is concrete lined for the last 37 miles.

The quantities of Colorado River water diverted at Imperial Dam, received at check gate 6-A on the Coachella main canal, and received for distribution to the irrigated lands in Coachella Valley are shown below in Table No. 1. Check gate 6-A is approximately 49 miles from the beginning of the Coachella Canal and this is the section of the canal proposed to be lined by H.R. 12165.

TABLE NO. 1

WATER DIVERTED FOR
COACHELLA VALLEY COUNTY WATER DISTRICT

Year	Diverted at Imperial Dam	Received at 6A	Received by CVCWD
1962	564,740	393,482.6	365,427.4
1963	537,640	391,604.7	358,655.2
1964	511,080	360,545.1	340,383.9
1965	514,760	349,176.1	332,285.1
1966	480,040	339,707.6	321,452.2
1967	455,950	319,446.9	306,240.2
1968	473,490	355,995.2	319,580.0
1969	486,000	348,301.6	330,776.2
1970	443,900	317,638.6	309,859.4
1971	466,170	341,122.9	311,453.5
1972	501,040	366,553.2	339,110.4
1973	519,663	375,798.0	375,011.1

Colorado River water is used solely in Improvement District No. 1, the irrigated portion of the district served by the Coachella main canal. This portion is less than twenty-five percent of the area of the Coachella Valley County Water District.

C. State Aquaduct Water

In March, 1963, the Coachella Valley County Water District contracted with the State of California for a water supply in the ultimate amount of 23,100 acre feet of water. This water will be used exclusively for domestic, municipal and urban uses.

D. Future Water Requirements

Coachella Valley needs more water because the studies made by the United States Department of Interior, Geological Survey in 1971 indicate an average annual overdraft of about 30,000 acre feet from the upper Coachella Valley groundwater basin.

IV. IRRIGATION PROBLEMS USING COLORADO RIVER WATER

A. Salinity Problems.

The salinity of the Colorado River has been increasing for the last several years as shown in Table No. 2. Also shown are the predicted values to the year 2000 as worked out by the Bureau of Reclamation.

COACHELLA VALLEY COUNTY WATER DISTRICT

TABLE NO. 2

COLORADO RIVER SALINITY CONTENT
Coachella Canal

YEAR (1)	ANNUAL MEAN ELECTRICAL CONDUCTIVITY (E.C. x 10^3) (2)	SOLUABLE SALTS IN ppm (3)	TONS OF SALT PER ACRE FOOT (4)
1959	1.10	776	1.04
1960	1.20	793	1.06
1961	1.29	863	1.15
1962	1.30	898	1.22
1963	1.28	850	1.15
1964	1.33	899	1.21
1965	1.41	948	1.29
1966	1.37	975	1.33
1967	1.35	899	1.22
1968	1.32	894	1.22
1980 *	----	1,120	1.52
1990 *	----	1,170	1.59
2000 *	----	1,230	1.67

* Future average salinity concentration estimated by the U. S. Bureau of Reclamation at Imperial Dam.

H.R. 12165 recognizes the problem of salinity in the Colorado River as the same pertains to the Republic of Mexico and also recognizes water salinity problems of users in the United States.

H.R. 12165 addresses itself to this problem by Title II--Measures Upstream from Imperial Dam. The Coachella Valley County Water District recommends adoption of Title II as an integral part of the legislation.

B. Maintenance of Salt Balance.

Most soils of the arid Western United States contain a large percentage of soluble salts which causes many problems to the agricultural industry. Add to those problems the irrigation water from the Colorado River, which contains more than one ton of salt in each acre foot, and the problems of irrigation increase in complexity. Without taking into consideration maintenance of salt balance, irrigation water is removed from the soil by transpiration and evaporation, leaving most of the salt to accumulate in the root zone. Leaching, which dissolves and carries the salts vertically downward, is the only successful method of salt removal which is indispensable to a sustained agriculture. Leaching is accomplished by either ponding the water on the surface of the ground, or by application of irrigation water in excess of the crops' consumptive use requirement. This increased amount of water percolates through the soil carrying the salts below the root zone and is ultimately discharged through the farm tile drainage system.

The farmers in this valley are well trained and are experts in producing crops from this desert soil. Valley farmers have installed 1,975 miles of tile drainage lines to reduce the problems. Correct irrigation practice and the maintenance of salt balance are probably the most important functions for economic success or failure in an agricultural endeavor in Coachella Valley.

Increasing salinity of the Colorado River is a progressive problem as shown on Table No. 3. If the Coachella Valley were to maintain its present agricultural acreage and crop pattern because of the increasing salinity of the Colorado River, there would be required annually in the year 2000 an additional 29,277 acre feet of water solely for maintenance of salt balance. This is the concern of the people of Coachella Valley who are supporting H.R. 12165.

TABLE NO. 3

ADDITIONAL WATER REQUIREMENTS
ACRE FEET PER ACRE

YEAR (1)	DUTY IN ACRE FEET (2)	CROP ACRES * (3)	TOTAL WATER REQUIREMENT IN ACRE FEET (4)	ADDITIONAL WATER REQUIREMENT IN ACRE FEET (5)
1968	7.36	52,282	384,796	-----
1980	7.74	52,282	404,663	19,867
1990	7.82	52,282	408,845	24,049
2000	7.92	52,282	414,073	29,277

* Assumes 1968 crop acreage will remain constant to year 2000.

The salinity problems of this District are similar to those of Mexico which will be given salinity relief by the immediate works proposed in Title 1--Programs Downstream from Imperial Dam. The proposed lining of the Coachella Canal, and the saving of seepage waters to aid in reducing salinity of water delivered to Mexico, will be of great value to the United States in meeting its Treaty obligations in the interim period until the desalting works are built and upstream measures are implemented.

V. IN SUPPORT OF H.R. 12165

The first 86 miles of the Coachella main canal are unlined while the last 37 miles are lined with concrete. Table No. 1, showing years 1962 through 1972, indicate conveyance losses in the unlined portion, about 160,000 acre feet annually according to the Bureau of Reclamation, whose studies show that about 141,000 acre feet of the losses occur in the first 49-mile reach. A concrete lined canal for those first 49 miles would save an estimated 132,acre feet.

The water saved by the concrete lining will be available to the United States for an iterim period which ends when the Secretary of Interior delivers less Colorado River water to California than requested by California's Colorado River water users. It can be used to supplement water from storage that could be released to Mexico during this interim period to meet the objectives of Minute 242 of the International Boundary and Water Commission and to replace Wellton-Mohawk drainage water.

In reference to H.R. 12165, this District proposed that Title I, Section 102 (a) and (b) be revised to read:

"Section 102 (a). To assist in meeting iterim salinity control objecti of Minute 242 of the IBWC, the Secretary is authorized to construct a new concrete-lined canal or to line the presently unlined portion of the Coachel

Canal of the Boulder Canyon Project in California from Station 2426 to the beginning of Siphon No. 7, a length of approximately 49 miles. The United States is to be credited an amount of water during an interim period equal to the amount of water conserved by constructing or lining said canal. The interim period shall commence the year following completion of construction or lining said canal and shall end the first year that the Secretary delivers mainstream Colorado River water to California in an amount less than the sum of the quantities requested by (1) the California agencies under contracts made pursuant to section 5 of the Boulder Canyon Project Act, and (2) Federal establishments to meet their water rights acquired in California in accordance with the Decree in Arizona v. California.

"(b) The charges for total construction shall be repayable without interest in equal annual installments over a period of 40 years beginning in the year following completion of construction; provided, that repayment shall be prorated between the United States and the Coachella Valley County Water District, and the Secretary is authorized to enter into a repayment contract with Coachella Valley County Water District for that purpose. The annual repayment installments shall be nonreimbursable during the interim period defined in Section 102 (a) and shall provide that after the interim period, certain of said annual repayment installments or portions thereof shall be paid by Coachella Valley County Water District, and all other repayment installments shall be non-reimbursable."

The Coachella Valley County Water District will be willing to enter into negotiations with the Secretary for a repayment contract, as contemplated by H.R. 12165.

The Coachella Valley County Water District strongly recommends that H.R. 12165 "Colorado River Basin Salinity Control Act of 1974" be enacted with the revisions proposed for Title I, Section 102 (a) and (b).

TESTIMONY OF ELLIOTT WAITS, REPRESENTING THE YUMA MESA IRRIGATION AND DRAINAGE DISTRICT, BEFORE THE WATER AND POWER RESOURCES SUBCOMMITTEE, SENATE INTERIOR AND INSULAR AFFAIRS ON S.B. 2940, APRIL 26, 1974

Mr. Chairman and members of the Committee, my name is Elliott Waits. I am a farmer by occupation residing in Yuma, Arizona, past president and present member of the Board of Directors of the Yuma Mesa Irrigation and Drainage District. On behalf of the Board of Directors of the District, I would like to direct my comments to S.B. 2940, which embodies the Committee of Fourteen's recommendations. On March 8, 1974, I testified before the House Interior and Insular Affairs -- Water and Power Subcommittee on H.R. 12165, the companion legislation to S.B. 2940. Our purpose at both hearings is not concerned with the philosophy or purpose of the legislation but deals with a narrow problem concerning one section of the bill. We do, however, support the legislation introduced at the request of the Committee of Fourteen, as this approach contemplates a total and sensible resolution of the Mexican water problem.

Briefly, and by way of background, the Yuma Mesa Irrigation and Drainage District is a part of the Yuma Mesa Division of the Gila Project as authorized by Congress under the Gila Project Reauthorization Act 1947. Pursuant to this Act, there are 25,000 authorized irrigable acres

in the District and constructed works for 19,970 acres. The District is substantially all planted to citrus and is a major force in the economy of Yuma and in the State of Arizona. The District lies immediately to the South and East of the City of Yuma. By reason of the expansion of the City and increased activity of the Yuma Marine Corps Air Station, the present service area of the District has been reduced to 18,372 acres. Attached to this statement is a small map of the Irrigation District (Appendix A). The present farming area and for which irrigation facilities exist is indicated by a black line on the map. The area indicated in red is within the boundaries of the Irrigation District approximating 12,000 acres of undeveloped lands and for which no irrigation facilities have been constructed. Title to these lands is either in the State of Arizona or in the United States. Throughout the past years, and particularly since the encroachment of the City of Yuma has become evident, the District has been concerned with possible new developments in this area in order to spread our tax base and reduce operating costs for the whole district. In the past, the District has advanced funds to the Bureau of Reclamation in contemplation of feasibility studies to consider a possible alternative development of this area, either as a pumping district or part pump and part gravity development.

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Section 103(A)(2) of S.B. 2940 contemplates the purchase or exchange of 23,500 acres along a five-mile strip adjacent to the Mexican Border. This number of acres, it would appear, are in addition to lands still titled in the United States. This acquisition will take out approximately 7,040 acres of lands lying within our Irrigation District. As the attached map demonstrates, this taking will emasculate the lower end of our District and render further planning impractical. The contemplated mining of this quantity of water will also affect present irrigated lands within the district and adjacent areas. Under development by our District, we estimate this acreage to have had a potential full cash value for county and district assessments of some $42,240,000.00. The withdrawal, therefore, removes a potential asset to the District for which no compensation is possible. Since the Government presently owns the acreage, this loss to us under the present bill would go uncompensated.

As an alternate to this provision, we would suggest that authority be given the Secretary of Interior to substitute an additional 5,000 acres of land which are adjacent to our present constructed works and which can be more readily brought into our service area. These lands are indicated in blue on the attached map. At the same time, we request that authority be granted to service this area

by authorizing the use of any excess and/or unused capacity in the Gila Gravity Main Canal. This authority would remove technical objections to the use of these additional lands.

As a result of the hearings before the House Sub-Committee, an amendment was approved at the mark up of the Bill amending Section 103(A)(2) by adding thereto the following language:

> "Any lands removed from the jurisdiction of the Yuma Mesa Irrigation and Drainage District available for use under the Gila Projects Reauthorization Act 61 Stat 628, shall be substituted for like lands within the Yuma-Mesa Division of the Project. In the development of these substituted lands or any other lands within the Gila Project, the Secretary may provide for full utilization of the Gila Main Gravity Canal in addition to contracted capacities."

Since the insertion of this amendment, it has been suggested this change would only eliminate irrigation by pumping and not gravity flow. The present pumping limitations in the Act would unduly restrict our District in the development of this land, as it is conceivable that the new lands could be part pump and part gravity flow water. To avoid a narrow interpretation of this Act, we suggest that the word "pumping" be inserted above in the proposed amendment. It is requested, therefore, that Senate Bill 2940, Section 103(A)(2) be amended by adding the following additional language:

"Any lands removed from the pumping jurisdiction of the Yuma Mesa Irrigation and Drainage District available for use under the Gila Projects Reauthorization Act 61 Stat 628 shall be substituted for like lands within the Yuma-Mesa Division of the project. In the development of these substituted lands or any other lands within the Gila Project, the Secretary may provide for full utilization of the Gila Main Gravity Canal in addition to contracted capacities."

In addition to the specific amendment requested, I would also like to comment upon the statement filed by the Wellton-Mohawk Irrigation District. The statement of this District both before the House Committee and before your honorable body expresses concern that the reduction in acreage of that project be not taken as a restriction of its rights under the Gila Project Reauthorization Act (61 Stat 628). Since our District, along with the North Gila Irrigation District and Yuma Irrigation District, comprises the Yuma Mesa Division of the Gila Project, we would be similarly affected by any adverse interpretation of this legislation. It should be made crystal clear, therefore, that the reduction in size of the Wellton-Mohawk District in no way abridges any of its basic rights under its authorizing legislation.

Thank you for your consideration.

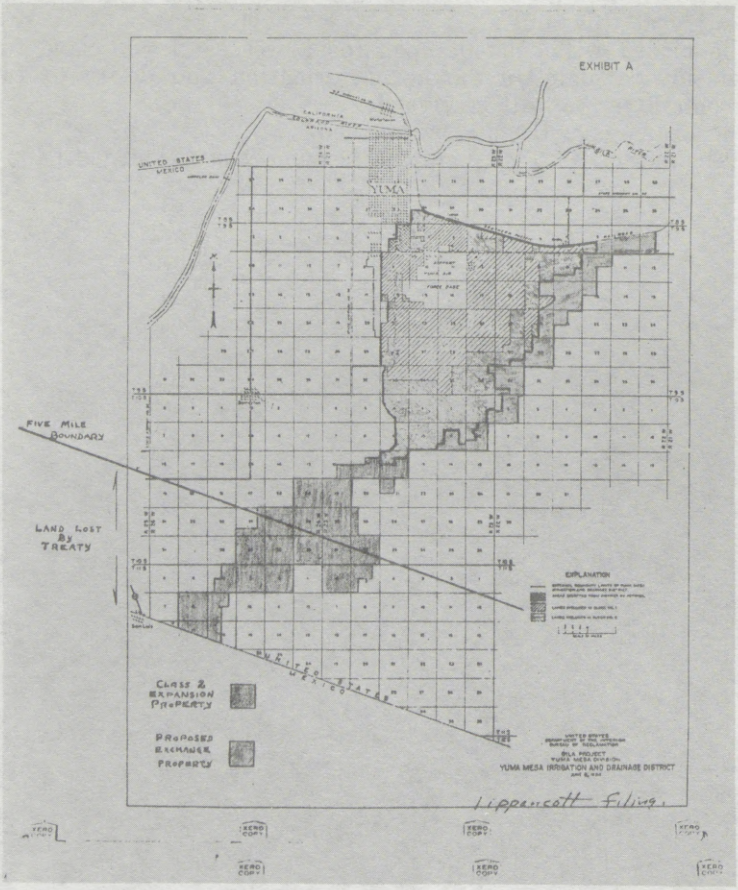
EXHIBIT A
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GILA PROJECT
YUMA MESA DIVISION
YUMA MESA IRRIGATION AND DRAINAGE DISTRICT
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Senator FANNIN. Do we have any other witnesses that would like to testify at this time?

The record will be kept open for 2 weeks. If you have further statements to make or further information you desire to furnish the committee we will receive it.

The hearings will stand adjourned.

[Whereupon, at 3:20 p.m., the hearing was adjourned.]

APPENDIX

Under Authority Previously Granted, the Following Statements and Communications Were Ordered Printed

STATE OF CALIFORNIA,
GOVERNOR'S OFFICE,
Sacramento, Calif., April 24, 1974.

Hon. FRANK CHURCH, *Chairman,*
Committee on Interior and Insular Affairs,
Subcommittee on Water and Power Resources,
U.S. Senate,
Washington, D.C.

DEAR SENATOR CHURCH: Thank you for your letter of March 12, which advised of the hearing of the Subcommittee on Water and Power Resources of the Senate Committee on Interior and Insular Affairs regarding S. 1807, S. 2940 and S. 3094.

The State of California has an important stake in the waters of the Colorado River. This resource supports a highly valuable agricultural economy of nearly 700,000 acres in the Imperial, Coachella, Palo Verde and Yuma Valleys, and provides supplemental supplies for over 10 million people in the Southern California coastal plain. S. 2940 provides water quality improvement for both the Colorado River Basin states and Mexico. This was the major requirement expressed in my August 4, 1972, letter to President Nixon on this subject (copy enclosed).

The Committee of Fourteen, representing the seven states of the Colorado River Basin will present a statement at your hearing. The State of California participated in and supports this statement, and we do not plan to submit a separate statement.

I would appreciate it if this letter would be entered in the record of the hearings.

Sincerely,

RONALD REAGAN,
Governor.

Enclosure.

Hon. RICHARD M. NIXON,
The White House,
Washington, D.C.

DEAR PRESIDENT NIXON: I have read with interest the part of the Joint Communique and related press releases regarding salinity of the Colorado River following talks between you and President Echeverria on June 15 and 16, 1972. The quality of water delivered to Mexico has been a significant issue between the two countries for more than ten years, and I am pleased that you have discussed it with President Echeverria in the interest of seeking a "definitive, equitable and just solution to this problem at the earliest possible time."

I should like to offer the full support of the State of California to you and your special representative in seeking a solution to this complex problem; I understand you expect a report from him by the end of 1972. I wish to stress the importance of your representative discussing this matter with the seven states of the Colorado River Basin, both individually and collectively via the Committee of Fourteen, which has worked so effectively for the past several years. Through such discussions he may be fully informed of the problems confronting the states and the relative merits of all of the alternative ways in which the Mexican problem may be solved.

I want to emphasize that water users in Arizona, Nevada, and California also have problems resulting from water quality of the Colorado River. Any program to provide benefits to users of Colorado River water must also provide water quality improvement to both the Colorado River Basin States and Mexico. Any solution or solutions that the special representative recommends should be compatible with solution of the overall water quality problem of the Colorado River.

Please call upon me or my representatives for any assistance we can provide in solving this most serious international problem.

Sincerely,

RONALD REAGAN,
Governor.

STATEMENT OF SENATOR HOWARD W. CANNON BEFORE THE SUBCOMMITTEE ON WATER AND POWER RESOURCES OF THE SENATE INTERIOR COMMITTEE AUTHORIZING A PROGRAM OF SALINITY CONTROL FOR THE COLORADO RIVER, S. 1807, 2940 AND 3094, APRIL 26, 1974

Mr. Chairman and Members of the Subcommittee: The Colorado River is important to the entire southwestern part of the United States. It is of great importance to my state of Nevada because for many years the waters have provided energy resources, recreational facilities and irrigation for Southern Nevadans.

Our use of Colorado River water in Nevada has substantially increased since 1971, when operation of the first stage of the Southern Nevada Water Project began. The state will rely on expansion of this project for future needs, but salinity controls and pollution levels must be given priority attention.

The Bureau of Reclamation in early 1972 estimated that the salinity of the river would increase from its present level of under 900 parts per million (ppm) of salt to over 1300 parts per million. If we delay action in preventing this, the situation could snowball into a disaster for recreational and agricultural interests in Nevada and nearby Western states. The food-producing capacity of America is of overwhelming importance and the winter crops available from farms dependent upon Colorado River water are important throughout the country. Nor can the implications for recreation and tourism be considered lightly as it is the second leading retail industry in the United States, and critical to the stability of the Nevada economy. The Members of the Colorado River Commission have agreed that the river should maintain or lower the present levels of salinity now found in the Lower Basin. I wholeheartedly concur.

In a legislative effort to meet the guidelines suggested by the Commission, I have joined with 13 Senators in co-sponsoring the Colorado River Basin Salinity Control Act (S. 1807). The objective is to give recognition to the problems caused to the States of Nevada, Arizona and California due to the increasing salinity of the Colorado River. The bill would institute a salinity control program based upon policy adopted in the Commission conclusions and recommendations following an in-depth study. The recommendations were also approved by the Environmental Protection Agency.

Since the introduction of S. 1807 in May, 1973, the State Department, acting through the International Boundary and Water Commission, negotiated an agreement with the Government of Mexico. This agreement is to assure that the Colorado River water which *enters* Mexico will have "an annual average salinity of no more than 115 ppm±30 ppm over the annual average salinity of Colorado River water." Although the State Department's efforts are necessary to end a dispute of the use of the Colorado River between the U.S. and Mexico, it did not address the particular problem of salinity control and water pollution north of the Imperial Dam in California. The scope and complexity of the salinity problem mandates a comprehensive basin-wide approach to control measures.

It has been stated by Special Ambassador Brownell, "that unless the United States does control this threatened and almost certain increase of salinity above Imperial Dam, the water we deliver to Mexico may become unacceptable, and we shall, in the future, have a new salinity problem with that country."

In order to implement the provisions of the agreement signed in August 1973 by Mexican and American officials concerning the use of the River, another bill, S. 2940, was introduced by Senator Fannin early this year. The bill includes provisions for enforcement of the agreement, but also would implement some salinity control policies evident in S. 1890. In other words, salinity control in both Mexico and the United States would be assured under S. 2940. The Administration proposal (S. 3094) and State Department agreement recognizes only salinity problems "downstream" from the Imperial Dam. S. 2940, which I fully support, makes allowances for the U.S. farmers, tourists and consumers "upstream" or North of the Imperial Dam.

Title I of S. 2940 directs the Secretary of the Interior to construct, operate, and maintain a desalting complex, including: (1) a desalting plant to reduce the salinity of drain water from the Wellton-Mohawk division of the Gila project, Arizona; (2) the necessary appurtenant works including the intake pumping plant system, production waterline, power transmission facilities, and permanent operating facilities; (3) the necessary extension of the existing

bypass drain to carry the reject stream from the desalting plant and other drainage waters to the Santa Clara Slough in Mexico, subject to arrangements made pursuant to this Act; (4) replacement of the metal flume in the existing main outlet drain extension with a concrete siplon; (5) reduction of irrigation return flows through acquisition of lands to reduce the size of the division, and irrigation efficiency improvements to limit return flows; and (6) regulation of Gila River floodwaters entering the division, including possible acquisition of private lands above Painted Rock Dam in Arizona.

Title II deals with measures upstream from Imperial Dam and would direct the Secretary of the Interior to implement the salinity control policy adopted for the Colorado River in the Commission "Conclusions and Recommendations." It also authorizes the appropriation of $121,200,000 to carry out this title. It is estimated that the initial phase of the program could remove over 400,000 tons of salt each year from the Colorado River.

The Las Vegas Wash provision includes the Las Vegas Valley Water District's plan to intercept, collect and transport saline groundwater in the Wash to the Henderson Pump Station. These saline groundwater flows account for about 220,000 tons of salt per year to Lake Mead.

The removal of this salt load is expected to benefit the overall salinity control program for the lower Colorado River.

Mr. Chairman, I am pleased to lend my strong endorsement to S. 1807 and S. 2940 which I feel will provide meaningful solutions to this important segment of the Southwestern United States.

STATEMENT OF JOHN A. MCCOMB, SOUTHWEST REPRESENTATIVE OF THE SIERRA CLUB, BEFORE THE SUBCOMMITTEE ON WATER AND POWER RESOURCES, COMMITTEE ON INTERIOR AND INSULAR AFFAIRS, HOUSE OF REPRESENTATIVES ON MARCH 8, 1974 CONCERNING H.R. 12165 TO AUTHORIZE WORKS TO CONTROL THE SALINITY OF THE WATERS OF THE COLORADO RIVER.

I am John A. McComb. I am employed by the Sierra Club as their Southwest Field Representative. I have an office located at 2014 East Broadway, Tucson, Arizona 85719. My territory includes virtually all of the Colorado River Basin. The Sierra Club has a long history of active interest in water resources and related development programs in the Basin. It is in large measure as a result of these programs that we are now confronted with the problems of increasing salinity of the waters of the Colorado River.

The problems, both domestic and international, resulting from salinity increases are well documented. A continuation of the present trend is clearly not desirable. The Sierra Club generally agrees that a program to control the salinity of the Colorado is badly needed. However, we do have some specific concerns about the institutional arrangements and types of projects that might be used to control salinity. The remainder of my statement deals with these concerns.

TITLE I

The largest feature of the proposed construction program to implement Minute 242 is a desalting plant whose sole purpose is to control the salinity of the drain waters from the Wellton Mohawk Division of the Gila Project. Estimated capital costs of this project and related facilities are nearly $100 million. Operating costs are expected to be nearly $10 million annually. The facility will require about 276 million kwh of electrical energy annually. The present worth of the capital costs plus the operational costs is approximately $250 million. Included in this program is a limited reduction in acreage within the Wellton Mohawk Division in order to reduce the amount of saline drain water which needs treatment.

The analysis of options prepared for the Department of State indicates that the same end in terms of salinity control might be achieved by total shutdown of the Wellton Mohawk Division at a cost of about $150 million, substantially below the cost of the program outlined by the administration. Admittedly the alternative of total shutdown would have a serious impact on the local human environment. However, in view of the high cost of the desalting plant and its accompanying wasteful use of energy, we believe that much more emphasis should be placed on shutdown (total or partial) of the Wellton Mohawk Division. This irrigation project has been plagued by problems from its very

incepetion and we seriously question the wisdom of any further unnecessary expenditures of federal funds in order to keep it in operation. Since the cost estimates referred to above may not be strictly comparable, we ask that further study be given to the costs associated with shutdown of the division. Only with such information can a logical balance be achieved between the capital and resource intensive desalting plant and the nonstructural alternative of acreage reduction.

Page 7, lines 1 through 4 of H.R. 12165 contains an authorization for control measures below Painted Rock Dam. None of the documents we have seen describe just what control measures might be contemplated nor is there any information on their environmental impact. The Gila River channel and associated riparian vegetation below Painted Rock Dam is critical wildlife habitat. We are concerned that this provision might be construed to authorize or otherwise encourage channelization of this river or other works that could be very detrimental to this habitat. We urge that this provision be deleted.

TITLE II

Title II of H.R. 12165 authorizes a program of salinity control works in the Colorado River Basin. These works are all directed towards the end of reducing salt loads. While we have no specific objections at this time to any of the three projects (Grand Valley, Paradox Valley, or Las Vegas Wash) authorized by this bill, we are concerned about the general philosophy which appears to favor capital and resource intensive projects over non-structural programs which might achieve the same end.

In particular we believe that the alternative of limiting further water resource development deserves much more study and emphasis even though this alternative would be viewed as a heresy or a denial of some absolute right by the water resource development agencies of the Upper Basin States. It is not clear, however, that this alternative is unacceptable to many of the residents of the area. We believe that more emphasis on this alternative would be welcomed by that increasing segment of the public which is concerned with out present indiscriminate quantitative growth mania without any regard for quality. The combined economic and environmental cost of "complete" water resource development in the Colorado River Basin may well exceed the benefits of such development.

The existing compacts and other legal measures which apportion the water among the various states should not be regarded as a license for development as any cost. The alternative of limiting development has many political, economic, and environmental ramifications, but it should definitely not be casually dismissed.

The Sierra Club generally agrees that a program to reduce salt loads should be pursued. However, we believe that such control programs should be directed primarily at man caused increases in the salt load. The Grand Valley and Las Vegas Wash projects are good examples. Many of the natural sources of salt are also features of outstanding natural interest. Attempting to control them could result in destruction or impairment of significant natural values.

One example of this is Blue Spring on the Little Colorado River. Blue Spring is the largest single point source of dissolved solids in the Colorado River Basin. Projects to control this source have been under consideration. We are pleased to see that they are not a part of the present proposal.

Blue Spring itself is one of the largest springs in the West and thus is of interest for that reason alone. The canyon in which it is located is an integral part of the Grand Canyon in addition to being spectacular in its own right. Thirdly, the high mineral content of the water has formed a series of beautiful travertine dams in the thirteen miles between Blue Spring and the confluence of the Little Colorado River with the main stream. Another factor is the religious significance of these springs to several Indian tribes.

Many other natural sources of dissolved solids have similar values which deserve protection. Programs which would affect these sources should very carefully weigh the economic benefit of reduced salt load against the adverse effects, the control program might have on features of natural interest.

Our last major concern with Title II lies in the financing system proposed. Even though this legislation specifically refers only to the three projects authorized, it may well become a model for financing future salinity control projects if adopted.

On the surface it appears to provide that 75% of the total cost shall be borne by the federal government with 25% to come from local interests via the basin funds. In reality, much if not all of the latter 25% is also non-reimbursible since the basin funds in themselves are an integral part of the heavy federal subsidy of water resources development projects.

We strongly believe that the costs of any salinity control program should be borne by the beneficiaries, or those responsible for the salinity increases, or perhaps some combination. In the case of future water resource development projects or other activities that increase the salinity, we urge that costs of salinity control be considered as an integral part of the cost of the development and be entirely paid by the beneficiaries of that development, rather than being considered as an obligation of the federal government.

One example I would like to mention concerns the potential impact on salinity of the oil shale developments proposed for the Upper Basin. It seems obvious to me that the salinity control costs associated with this development should be borne by the oil shale industry, and not the public at large. We believe that this same principle should apply to all projects (large and small) which contribute to the salinity problem of the Colorado River.

The attempt to justify 75% of salinity control project costs as non-reimbursible on the basis of the policy established by the Federal Water Pollution Control Act Amendments of 1972 is not in accord with either the intent of or the specific language of that Act. This Act suggests such a subsidy only for domestic waste treatment facilities and it very carefully excluded industrial and agricultural sources of pollution from receiving such largesse. The salinity increases in the Colorado River system are due primarily to agricultural and industrial users and not domestic sewage. If there is to be any subsidy for salinity control projects it should be limited to financial assistance to projects designed to control domestic sewage.

Thank you for this opportunity to present our views.

STATEMENT OF ARCHIE MELLON, PRESIDENT, YUMA COUNTY WATER USERS' ASSOCIATION

The Yuma County Water Users' Association operates the Valley Division of the Yuma Project, a Federal Reclamation Project located in the Yuma Valley in Arizona. The Yuma Valley lies generally west and southwest of the City of Yuma. The Colorado River is on the west and north forming the boundary between Arizona and the Republic of Mexico and the State of California respectively. The southern land boundary is the Republic of Mexico. It now encompasses approximately 52,000 acres of highly productive farm land.

Irrigation in the Yuma Valley commenced prior to the turn of the century. During the 1890's and early 1900's three private ditch companies were organized for the purpose of distributing water to farms near the City of Yuma. Private capital was not adequate but the Reclamation Act of June 17, 1902, provided the opportunity for an orderly development of the entire Valley. In 1903 the Association was incorporated under the laws of the Territory of Arizona as a nonprofit corporation. The Association was approved by the Secretary of the Interior as the entity to contract with the United States for the repayment of the cost of the diversionary and distribution system necessary for the distribution of Colorado River water.

The first contract with the United States was executed by the Association in 1906, and the United States proceeded to construct Laguna Dam and a siphon under the River to carry water from the diversion point on the California side to the Yuma Valley. The Valley Division of the Yuma Project is the oldest reclamation development on the lower Colorado, having been authorized by an Act of Congress in 1904 (33 Stat. 189, 224).

The Bureau of Reclamation operated the Project until 1951, at which time the Association entered into a contract for the care, operation and maintenance of most of the Project works. The remaining Project works were transformed to the Association in 1962. The Project was completely paid out by the Association in 1962, making it one of the few such Reclamation Projects to repay its construction costs.

All of the canals and laterals serving the Project were of dirt construction except for a few stretches of laterals which were concrete lined by WPA

labor during the depression. It was basically the same when turned over to the Association in 1951. Since that time approximately 10% has been lined but it is essentially an unlined Project.

Adjacent to and east of the Project lies the Yuma Mesa which is approximately 70 feet higher than the Valley floor. A small Reclamation Project was constructed on this Mesa over fifty years ago within a short distance of the Yuma Valley. In 1946 a Reclamation Project, adjacent to but slightly north and east of the previous Project, was developed. There are now over 20,000 acres in cultivation in the two Projects. The application of irrigation water on the land within these Projects resulted in the creation of a large groundwater mound. Commencing about 1950, the water table rose on the east side of the Valley to such an extent as to prevent the efficient farming of several hundred acres.

Remedial measures at first consisted of the use of comparatively shallow wells. These proved ineffective because of the hydraulic pressure caused by the groundwater mound resulting in an artesian effect from the application of irrigation water on the Yuma Mesa. In 1954 the Association drilled its first deep drainage well. In the succeeding years additional wells were drilled and a total of ten are now operated continuously.

The water from these wells discharges into the open drainage system of the Association where it flows to the Boundary Pumping Plant near the International Boundary at San Luis, Sonora. There it is pumped over the old levee and into a ditch which carries it into Mexico by gravity flow.

The method finally determined as the most suitable to relieve the drainage problem has been effective but extremely costly. The drainage wells and the Boundary Pumping Plant represent an investment of approximately $500,000.00. The operation of the drainage wells, the Boundary Pumping Plant and the maintenance of the open drains amounts to approximately $140,000.00 a year. All of these costs have been borne by the Association with the exception of a token contribution of $8,000.00 a year now paid by the Mexican Government toward the cost of lifting the water at the International Boundary, thus eliminating the necessity of recovering the return flow from the Colorado River.

The Association has always contended that the inflow of drainage water resulting from irrigation on the Yuma Mesa caused the drainage problem with its consequent heavy burden of expense. The Bureau of Reclamation has insisted that irrigation in the Yuma Valley and loss from the unlined distribution system also contributed to this problem. In an attempt to resolve the controversy, the Association retained the services of the late Dr. C. E. Jacob, noted groundwater consultant, in 1958 to make a study of the source of the water creating the drainage problem. This study continued for over two years with a cost to the Association in excess of $100,000.00. Dr. Jacob reached the conclusion that there was a contribution of some 83,000 acre feet annually resulting from irrigation on the Yuma Mesa, or about 60% of the total Association pumping. This percentage has been conceded by those concerned as being substantially correct.

The Association endorses the provisions of S.B. 2940 relating to the recovery and delivery to Mexico of the groundwaters of the Yuma Mesa Division, Gila Project, for this may relieve the Association of further pumping. The Association, however, urges that wells designed to accomplish such objective be located east of the Valley Division of the Yuma Project in order to intercept these groundwaters before they reach the aquifer below the Yuma Valley.

In connection with the proposal contained in S.B. 2940 of utilizing groundwaters of the Valley Division, Yuma Project, the Association believes that it should not only be consulted as to the location of any such wells, but that it should have control over the amount thereby removed. This is absolutely necessary not only to protect domestic water wells in the lower valley, but also to insure that a proper groundwater level is maintained to promote efficient farming practices. Experience indicates that if the water table is drastically lowered, greater applications of surface water will be necessary to sustain the crops grown. Such a result would be self defeating in that it would require greater releases of main stream water to irrigate the land in the Valley Division.

The views I have expressed are endorsed by the Board of Governors of the Association. I want to express my appreciation to this Committee for permitting this statement to become a part of the record.

Respectfully submitted.

ARCHIE MELLON.

STATEMENT OF VIRGIL JONES, ON BEHALF OF PALO VERDE IRRIGATION DISTRICT IN SUPPORT OF S. 2940 BEFORE THE SUBCOMMITTEE ON WATER AND POWER RESOURCES OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS, U.S. SENATE

I am Virgil Jones, a farmer in the Palo Verde Valley located on the Colorado River in eastern Riverside and Imperial Counties, California. Our valley has more than 90,000 acres of irrigated agriculture, much of which is double cropped. The valley has a population of approximately 15,000. In 1973 the gross value of our crops approached 50 million dollars exclusive of a multi-million dollar sheep and cattle feeding industry.

Our agriculture is wholly dependent on the Colorado River for water. The water is diverted and distributed to the farms by Palo Verde Irrigation District, a local agency of the State of California. I am an elected trustee of the District and a member of the Colorado River Board of California. I have been asked by the Palo Verde Irrigation District Board of trustees to appear before this Committee in support of S. 2940.

Our District's water right dates back to the 1870's. The District was formed in 1923. Our farmers and the District have seen the Colorado River in all its stages. We have fought its floods, cleaned out its silt, and survived its drouths. We worked for the Colorado River Project Act, survived the depression, fought for an adequate diversion dam and irrigation works, and conceived and built drainage networks. Our valley has been slowly and painfully reclaimed from a desert wasteland.

Now we face a new ever-increasing threat from rising salinity. Our crops use water, not salt. The saltier our water becomes, the more water we must use to flush out the salt carried in and the more salt we must discharge. It is an ever-increasing spiral. We are trying to be good neighbors. We are doing what we can. In the last 10 years we have accomplished extensive improvements to our drainage. With the aid of the University of California and at our own expense, we have conducted an in-depth study of irrigation practices, water application, salinity, leaching requirements, and irrigation efficiency. We are currently participating in a joint program with the Bureau of Reclamation to improve irrigation water scheduling, which has as one of its objectives increased irrigation efficiency. We no longer return more salt to the River than we receive.

We cannot, however, solve the increasing salinity problems locally. We must take the water as we receive it. We must pass on the salt we receive. Salinity is an interstate problem along the entire River. As this Bill illustrates, it has become an international problem. Full use of the River means even higher salinity.

S. 2940 deals concretely and directly with specific sources of highly saline water. Unless Congress helps, there appears to be no way such problems can be solved in the foreseeable future. Our River has been slowly but surely increasing in salinity. This is an appropriate time to take a step in the opposite direction.

Palo Verde Irrigation District joins with other water users in the Colorado River Basin States in support of the Colorado River Basin Salinity Control Act of 1974 (S. 2940) and urges its passage.

April 24, 1974.

DEPARTMENT OF WATER AND POWER,
Los Angeles, Calif., April 11, 1974.

HON. FRANK CHURCH,
Chairman,
Senate Water and Power Resources Subcommittee,
Old Senate Office Building,
Washington, D.C.

Re S. 2940, Colorado River Basin Salinity Control Act.

SIR: The Department of Water and Power of the City of Los Angeles (Department) is very concerned with the increasing salinity of the Colorado River. We have supported and will support measures to control this increase. We reviewed with great interest H.R. 12165, the proposed Colorado River Basin Salinity Control Act, and we supported the objectives of this measure at the hearing of the House Subcommittee on Water and Power held last month.

It is our understanding that S. 2940, introduced by Senators Bible and Fannin, contains the same objectives as H.R. 12165. By this letter we are reaffirming the Department's support of these objectives. We also concur with the testimony which will be provided by the Committee of Fourteen regarding the bill.

S. 2940 would authorize a desalting plant and other features to improve the quality of water flowing to Mexico. We have followed closely the negotiations leading to the signing of Minute 242 of the Internal Boundary and Water Commission and reviewed the various proposals to implement this Minute.

The Department's position is that any legislation to improve the quality of Colorado River water delivered to Mexico should include steps to benefit all users of these waters, in the United States as well as in Mexico. S. 2940 would authorize Upper and Lower Colorado River Basin salinity control projects with the objective of maintaining the salinity of the Lower Colorado River at or below present salinity levels. This objective has been endorsed by all the Colorado River Basin states, the Environmental Protection Agency and the Department of the Interior.

Although Minute 242 specifies that water delivered to Mexico will have an average salinity not more than 115 parts per million (ppm) over the average salinity at Imperial Dam, it does not guarantee that the quality of water delivered to Mexico will never exceed an absolute limit. The intent of the Minute, of course, is to furnish acceptable quality water to Mexico. It can be expected that Mexico would reopen the recent controversy with the United States if its water quality degraded substantially, even though the 115 ppm criterion was being met. The best way to kep a problem of this sort from developing is to control the salinity of water at Imperial Dam in addition to operation of the desalting plant.

The Upper and Lower Colorado River Basin salinity control projects proposed by S. 2940 would not only comply with the intent of Minute 242 but would also benefit users of Colorado River water in the United States.

We urge that S. 2940, incorporating the suggestions of the Committee of Fourteen, receive favorable consideration.

Sincerely,

ROBERT V. PHILLIPS,
General Manager and Chief Engineer.

COLORADO WATER CONGRESS,
Denver, Colo., April 23, 1974.

Hon. FRANK CHURCH, *Chairman,*
Subcommittee on Water and Power Resources,
Committee on Interior and Insular Affairs,
U.S. Senate,
Washington, D.C.

DEAR SENATOR CHURCH: Enclosed is a Colorado Water Congress statement regarding Colorado River salinity control legislation being considered by your Subcommittee. Please include the enclosed statement in the record of hearings on S. 2940.

Respectfully,

VAL G. KILLIN,
Executive Director.

Enclosure.

STATEMENT OF THE COLORADO WATER CONGRESS ON S. 2940

This statement is respectfully submitted to the Water and Power Resources Subcommittee, Committee on Interior and Insular Affairs, United States Senate, in relation to its consideration of Colorado River salinity control legislation.

The Colorado Water Congress understands that the Executive Branch of the Federal Government has sought to make certain assurances to the Republic of Mexico concerning the salinity of the waters of the Colorado River passing the international boundary. The satisfaction of those assurances, if required in

the performance of lawfully incurred international obligations, could, in the absence of the construction of very substantial water quality enhancement works, contemplate the use of the flow of the Colorado River for dilution purposes. This would reduce its availability for beneficial uses within the United States in the manner contemplated by the Colorado River Compact.

We firmly believe that if the United States makes international assurances with water belonging to the people of the States of the Colorado River Basin, the United States should make provision out of the Federal Treasury for such water quality enhancement programs as may be necessary to keep those assurances without imposing a direct cost upon the people dependent upon the Colorado River, and without causing any reduction in the availability for beneficial uses of that stream as allocated by compact ratified by Congress.

After thorough study of possible means to control the salinity in waters of the Colorado River, the seven basin states have promulgated recommendations to be presented to the Water and Power Resources Subcommittee, Committee on Interior and Insular Affairs, United States Senate. The Colorado Water Congress fully supports the recommendations of the seven basin states, the principles of which are incorporated in S. 2940.

The Colorado Water Congress is a State-wide organization of private entities and individuals dedicated to the wise use and management of water supplies. Our membership includes cities, counties, irrigation districts, conservancy districts, business and industrial firms, banks, chambers of commerce, and electric power suppliers. The opportunity to submit this statement is appreciated.

Respectfully,

VAL G. KILLIN,
Executive Director.

SOUTHERN CALIFORNIA WATER CONFERENCE,
Los Angeles, Calif., April 23, 1974.

Hon. FRANK CHURCH,
Chairman,
Water and Power Resources Subcommittee of the
Senate Interior and Insular Affairs Committee,
Senate Office Building,
Washington, D.C.

DEAR SENATOR CHURCH: The Southern California Water Conference meeting in session April 22, 1974 after much study and forethought passed without dissenting vote the attached resolution on the Colorado River Basin Salinity Control.

Sincerely yours,

HANS H. DOE,
Chairman.

RESOLUTION ON COLORADO RIVER BASIN SALINITY CONTROL

WHEREAS, the Colorado River represents a major source of Southern California's water supply; and

WHEREAS, the salinity of Colorado River water will increase significantly unless steps are taken to control that salinity; and

WHEREAS, increases in Colorado River salinity will create serious water management problems in Southern California; and

WHEREAS, many California Congressmen along with Congressmen of the other Colorado River Basin states have introduced a proposed Colorado River Basin Salinity Control Act in The United States Congress as HR 12165 and S 2940 that would:

A. authorize construction, operation and maintenance of four salinity control projects in the Colorado River Basin, to remove over one half million tons per year of dissolved salt from the River System, thereby reducing the impact of continuing increases in the river's salinity on users both in the United States and Mexico; and

B. authorize construction, operation, and maintenance of facilities and non-structural measures needed to implement the recent Colorado River salinity agreement with Mexico (Minute 242, of the International Boundary and Water Commission); and

33-455 O - 74 - 23

C. Implement the salinity control policy adopted for Colorado River by the Seventh Session of the Conference on Pollution of the Interstate Waters of the Colorado River, including efforts to maintain River Salinity at or below existing levels,

NOW, THEREFORE, BE IT RESOLVED, by the Southern California Water Conference that it supports The Colorado River Basin Salinity Control Act proposed in HR 12165 and S 2940, now pending before the Second Session of the 93rd Congress.

(Adopted by The Southern California Water Conference at its April 22, 1974, meeting, held in Los Angeles, California.)

HANS H. DOE,
Chairman.

LOS ANGELES AREA CHAMBER OF COMMERCE,
Los Angeles, Calif., April 23, 1974.

Hon. FRANK CHURCH,
Chairman,
Water and Power Resources Subcommittee of the
Senate Interior and Insular Affairs Committee,
Senate Office Building,
Washington, D.C.

DEAR SENATOR CHURCH: The Los Angeles Area Chamber of Commerce is vitally concerned with sound fiscal responsible legislation that would support the Colorado River Salinity Control Program.

Beyond certain limits, saline water causes economic problems to municipal and agricultural users. Under certain conditions, saline water can shorten the life of pipeline systems, home piping, water heaters and fixtures. On farms, more water must be applied to flush salts below the root zone and extensive drainage works must be built to prevent salt buildup in the soil. If irrigation water becomes too salty, it cannot be used.

In certain parts of the Colorado River system salinity has increased from 700 parts per million in the early 1950's to 865 parts per million in 1972. Several governmental agencies have attached penalty costs to increased salinity. The United States Bureau of Reclamation estimates such costs to be $160,000 per part per million per year.

A reduction of 100 parts per million in salinity could result in a benefit of up to $16 million annually to users in the lower river.

The Board of Directors of the Los Angeles Area Chamber of Commerce urges the Water and Power Resources Subcommittee of the Senate Interior and Insular Affairs Committee, to approve current bill, S.B. 2940, supporting the Colorado River Salinity Control Program.

The Colorado River constitutes the source of 40 percent of the water used on the coastal plain of Southern California. In addition, the river is the sole source of water used by the vast agricultural enterprises in the Imperial, Coachella and Palos Verde desert areas.

The basin of the Colorado River, as you well know, contains many natural sources of salts in springs and geysers. Moreover, runoff from rain and snowmelt naturally picks up dissolved salts.

In countless other ways this great river picks up salts as it moves along. It is expected, moreover, that continued development in the basin will aggravate the problem of salinity in the lower river as time goes on.

A Colorado River Salinity Control Program is economical common sense. High salinity costs money. As with other forms of pollution, we pay the penalty not only in terms of a less desirable water, but also in hard dollars taken from the pockets of homeowners, businessmen and farmers. If salinity control measures are not taken the annual damages in California alone could exceed $400 million by the year 2000.

The Los Angeles Area Chamber of Commerce urges your support of the Colorado River Salinity Control Program.

Sincerely yours,

MAURICE J. DAHLEM,
President.

COLORADO RIVER BOARD OF CALIFORNIA,
Los Angeles, Calif., April 29, 1974.

Hon. FRANK CHURCH, *Chairman,*
Senate Water and Power Resources Subcommittee of the Senate Interior Committee, U.S. Senate, Washington, D.C.

DEAR SENATOR CHURCH: Enclosed is a copy of a resolution adopted by the Colorado River Board of California in support of the "Colorado River Basin Salinity Control Act of 1974" (S. 2940).

The Colorado River Board of California is the state agency charged with the responsibility for protecting the rights and interests of California, its agencies and citizens, to the water and power resources of the Colorado River system. The Board is represented on the seven-state Committee of Fourteen through its Chief Engineer, Myron B. Holburt. On April 26, 1974, the Committee of Fourteen presented a statement on behalf of the Governors of the seven Colorado River Basin states that recommended enactment of S. 2940, subject to specific amendments to the bill. The views of the Colorado River Board of California are reflected in that statement.

The Board is composed of six members, each from one of the major public agencies of California having established water or power rights from the Colorado River. These agencies are: The Metropolitan Water District of Southern California, City of Los Angeles—Department of Water and Power, Imperial Irrigation District, San Diego County Water Authority, Coachella Valley County Water District, and Palo Verde Irrigation District. Each of the aforementioned agencies have also supported S. 2940 in statements to your committee.

We would appreciate it if this letter and resolution were made a part of the record of the April 26, 1974, hearings on S. 2940.

Respectfully yours,

RAYMOND R. RUMMONDS,
Chairman and Colorado River Commissioner.

Enclosure.

APRIL 10, 1974.

To: Senator Frank Church.

During a Postponed Regular Meeting of the Colorado River Board of California held on February 21, 1974, a resolution was adopted in support of the Colorado River Basin Salinity Control Act of 1974 (H.R. 12165 and S. 2940) legislation pending before the 93rd Congress. A copy of the resolution is enclosed for your information.

HAROLD F. PELLEGRIN,
Executive Secretary.

Enclosure.

RESOLUTION OF COLORADO RIVER BOARD OF CALIFORNIA

The Colorado River Board of California supports in principle the Colorado River Basin Salinity Control Act of 1974 (H.R. 12154 and S. 2940) introduced in the Second Session of the 93rd Congress, which encompasses the following objectives:

1. To provide for the construction, operation and maintenance of four salinity control projects in the Colorado River Basin that would remove 514,000 to 594,000 tons per year of dissolved salt from the river system, thereby reducing the impact of continuing increases in the river's salinity on users both in the United States and Mexico.
2. To provide for the construction, operation and maintenance of those facilities and non-structural measures to implement the recent agreement with Mexico (Minute 242, of the International Boundary and Water Commission) pertaining to the salinity of the Colorado River.
3. To expedite the investigation, planning, and implementation of the salinity control program generally as described in Chapter VI of the Secretary of the Interior's 1972 report "Colorado River Water Quality Improvement Program", and
4. To implement the salinity control policy adopted for the Colorado River in the Conclusions and Recommendations of the Seventh Session of the Conference in the Matter of Pollution of the Interstate Waters of the Colorado River, which includes the objective of maintaining the salinity of the River at or below existing levels, while the Upper Basin continues to develop its compact-apportioned waters.

State of California }
County of Los Angeles } ss.

I, HAROLD F. PELLEGRIN, Executive Secretary of the Colorado River Board of California, do hereby certify that the foregoing is a true copy of a resolution unanimously adopted by said Board at a Postponed Regular Meeting thereof, duly convened and held at its office in Los Angeles, California, on the 21st day of February 1974, at which a quorum of said Board was present and acting throughout.

Dated this 22nd day of February 1974.

HAROLD F. PELLEGRIN,
Executive Secretary.

COLORADO RIVER COMMISSION OF NEVADA,
Las Vegas, Nev., May 3, 1974.

Air Mail
Hon. FRANK CHURCH, *Chairman,*
Subcommittee on Water and Power Resources, Senate Committee on Interior and Insular Affairs, U.S. Senate, Washington, D.C.

DEAR SENATOR CHURCH: Please find enclosed copies of resolutions adopted by the Colorado River Commission of Nevada, the State Environmental Commission of Nevada, and the Clark County Commission of Nevada. These resolutions support S. 2940, the Colorado River Salinity Control Act now being considered by your committee. Copies of these resolutions have previously been forwarded to you which you may have placed in the record of the hearings held April 26, 1974. In the event they have not been placed in the record please consider this as a request to do so.

Sincerely,

DONALD L. PAFF,
Administrator

Enclosures.

74–1 RESOLUTION COLORADO RIVER COMMISSION OF NEVADA

WHEREAS, the Colorado River Commission is empowered to receive, protect and safeguard and hold in trust for the State of Nevada all water and water rights and all other rights, interests or benefits in and to the waters of the Colorado River, and

WHEREAS, the Colorado River Commission of Nevada has participated in and endorsed all efforts to enhance the water quality of the Colorado River, and

WHEREAS, with the support of the Colorado River Basin States specific efforts have been made by the United States Bureau of Reclamation to study and establish salinity control projects for the enhancement of the quality of Colorado River water, and

WHEREAS, such salinity control projects are expected to be beneficial to the citizens of the State of Nevada, to the Colorado River Basin States and to contribute towards international comity between the United States and the Republic of Mexico, and

WHEREAS, the scope and complexity of the salinity problem mandates a comprehensive basinwide approach to the control measures, and

WHEREAS, to provide such control of the salinity of the waters of the Colorado River as will permit the United States to implement the Agreement of August 30, 1973, as set forth in Minute No. 242 pursuant to the Mexican Water Treaty, consistent with the continued orderly development, conservation and use of the natural resources associated with the Colorado River and consistent with the protection and enhancement of the quality of the environment and without the impairment of the rights of water and power users of the Basin States, legislation has ben introduced in the House of Representatives, H. R. 12165, and the United States Senate, S. 2940, to accomplish these objectives;

NOW, THEREFORE, BE IT RESOLVED, that the Colorado River Commission of Nevada endorses and supports the objectives and concepts set forth in H. R. 12165 and S. 2940, and

BE IT FURTHER RESOLVED, that copies of this resolution be transmitted to Senator Alan Bible, Senator Howard W. Cannon, Representative David G. Towell, Governor Mike O'Callaghan, Secretary of the Interior Rogers C. Morton, Senator Frank Church, Chairman of the Water and Power Resources Subcommittee of the Senate Committee on Interior and Insular Affairs, and Representative Harold T. Johnson, Chairman of the Water and Power Resources Subcommittee of the House of Representatives Committee on Interior and Insular Affairs.

State of Nevada }
County of Clark } *ss.*

I, Theodore F. Whitmoyer, Secretary of the Colorado River Commission of Nevada, do hereby certify that the foregoing is a true copy of Resolution 74–1 unanimously adopted by said Commission at a regular meeting thereof, duly conveyed and held in the office of the Colorado River Commission of Nevada, Room 318 First National Bank Building, 302 East Carson Avenue, Las Vegas, Nevada, on the 26th day of February 1974, at which a quorum of said Commission was present and acting throughout.

Dated this 26th day of February 1974.

THEODORE F. WHITMOYER,
Secretary.

NEVADA STATE ENVIRONMENTAL COMMISSION,
Carson City, Nev.

RESOLUTION

WHEREAS, Chapter 786 of the Statutes of Nevada 1973 provides for the State Environmental Commission to advise, consult and cooperate with other agencies of the State, the Federal Government, other States, interstate agencies and other persons in furthering the provisions of the Nevada Water Pollution Control Law, and

WHEREAS, Chapter 786 further states that it is the public policy of this State to restore and maintain the chemical, physical and biological integrity of water within this State; to prevent, reduce, and eliminate pollution; to plan the development and use, including restoration, preservation and enhancement of land and water resources; and to consult and otherwise cooperate with other States, State and interstate agencies and the Federal Government in carrying out these objectives, and

WHEREAS, the Colorado River is a water resource which serves more than one-half of the people of the State of Nevada and the quality of said resource has a major impact affecting the health, welfare, environmental and economic status of the State as a whole, and

WHEREAS, the control of a major portion of the salinity of the Colorado River as an interstate stream is a Federal responsibility, and

WHEREAS, the control of salinity of the Colorado River will also promote international good will, and

WHEREAS, legislation has been introduced in the House as H. R. 12165 and in the Senate at S. 2940 which is designed to enhance the waters of the Colorado River in providing for salinity control.

NOW, THEREFORE, BE IT RESOLVED, that the Nevada State Environmental Commission urges adoption of the comprehensive salinity control program as provided in the aforementioned bills, S. 2940 and H. R. 12165 now before the Congress, and

BE IT FURTHER RESOLVED, that copies of this resolution be transmitted to Senator Alan Bible, Senator Howard W. Cannon, Representative David G. Towell, Governor Mike O'Callaghan, Secretary of the Interior Rogers B. C. Morton, Senator Frank Church, Chairman of the Water and Power Resources Subcommittee of the House of Representatives Committee on Interior and Insular Affairs.

Approved and adopted this 25th day of February, 1974.

NORMAN GLASSER, *Chairman,*
State Environmental Commission.
By: KEN BOYER,
Executive Secretary.

RESOLUTION ENDORSING FEDERAL LEGISLATION

WHEREAS, the Nevada State Legislature, in Chapter 790 of the Statutes of Nevada 1973, recognized there may be alternative solutions to pollution abatement in the Las Vegas Wash-Lake Mead area and, further, specifically stated it was the intention of the Legislature that those charged with the responsibility of correcting the water quality problem of Lake Mead to avail themselves of all assistance that may develop through advances in technology and changing circumstances and regulations, Federal or State, that have an impact on the problem; and

WHEREAS, the above legislation also set forth a Clark County Sewage and Waste Water Advisory Committee which is authorized to diligently inform itself as to all laws, matters, and things which may be of significance in maintaining the consequent purity of water within the County, and to advise the Clark County Board of County Commissioners of conditions which, in the judgment of the Advisory Committee, require action by the Board; and

WHEREAS, the Clark County Sewage and Waste Water Advisory Committee has advised the Board of County Commissioners concerning the objectives of S. 2940 and H.R. 12165 now before the 93rd Congress and desires the Board to endorse enactment of comprehensive Federal salinity control legislation:

NOW, THEREFORE, BE IT RESOLVED that the Clark County Board of County Commissioners urges adoption of S. 2940 and H.R. 12165 by Congress and urges the Federal government to enter into implementation of a comprehensive, immediate, and continuing salinity control program for the Colorado River; and

BE IT FURTHER RESOLVED that copies of this resolution be transmitted to Senator Alan Bible; Senator Howard W. Cannon; Representative Davis W. Towell; Governor Mike O'Callaghan; Secretary of the Interior Rogers C. Morton; Senator Frank Church, Chairman of the Water and Power Resources Subcommittee of the Senate Committee on Interior and Insular Affairs; and Representative Harold T. Johnson, Chairman of the Water and Power Resources Subcommittee of the House of Representatives Committee on Interior and Insular Affairs.

PASSED, ADOPTED AND APPROVED this 28th day of February, 1974.

BOARD OF COUNTY COMMISSIONERS,
Clark County, Nevada.

By: TOM WIESNER,
Chairman.

Attest:

LORETTA BOWMAN,
County Clerk.

COMMITTEE FOR AN OPEN SOCIETY, INC.
Washington, D.C., May 4, 1974.

U.S. Senator HENRY M. JACKSON,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate,
Washington, D.C.

DEAR MR. CHAIRMAN: The Committee for an Open Society is a small committee of interested citizens with particular concern that our government be an open one in fact as well as in theory and that its actions, abroad as well as at home, be just in regard to the poor and disadvantaged.

We are writing you in respect to legislation pending before your committee concerning the implementation of the U.S.-Mexico agreement on the question of the salinity of the Colorado River waters delivered to Mexico under the terms of the 1944 Treaty.

We understand that this legislation is embodied in three bills before the Committee—S. 1807, S. 2940, and S. 3094.

We also understand that this legislation is designed to represent concrete U.S. compliance with the terms of the agreement (minute 242 of the International Boundary and Water Commission, signed August 30, 1973) negotiated by the Hon. Herbert Brownell for the U.S. and by the Hon. Emilio O. Rabasa for Mexico. That agreement is according to its own terms "the permanent and definitive solution of the salinity problem" (Art. 8 of the minute).

(Documentation for the points that follow come from: (1) the 1944 U.S.-Mexico water treaty and minute 242; (2) the transcript and statements made before the Subcommittee on Water and Power Resources of the Senate Committee on Water and Power Resources of the Senate Committee on Interior and Insular Affairs on April 26, 1974, (3) the texts of S. 1807, S. 2940, and S. 3094 of the present Congress, (4) letters from the relevant executive agencies, including the Department of State, to the Committee, (5) the Special Report of the Department of the Interior of September, 1973, entitled "Colorado River International Salinity Control Project," and (6) the document of the U.S. Department of the Interior entitled "Environmental Statement—Colorado River Interior Salinity Control Project" dated April 1, 1974.)

We wish to point out the following:

1. Minute 242 requires the U.S. to maintain the salinity levels of the water delivered to Mexico at no more than 115 parts per million (plus or minus thirty parts per million) greater than the water taken by the U.S. for U.S. users at Imperial Dam, which is the last point of diversion of the Colorado River water for uses within the U.S.

2. Mexico has taken the position that water with more than 1245 ppm (parts per million) is totally unusable and has refused to allow such water to flow onto the Mexicali agricultural area. Under orders from President Echeverria waters supplied to Mexico by the U.S. that would bring the concentrations of salt to more than this level have been diverted by Mexico directly into the Gulf of California. Waters with far less than 1245 ppm of salt are unusable for many agricultural purposes, especially without advanced technology and drainage works.

3. Present salt levels at Imperial Dam are about 900 ppm, thus producing salt levels in the water now being delivered to Mexico of about 1015 ppm—a quite high level.

4. Only with extensive drainage and other technology, together with other advanced techniques and projects (including much heavier use of now-scarce fertilizers) can the U.S. farmers in the Imperial Valley of California continue their agriculture with the water they receive from the Imperial Dam at its present salt level. These anti-salt projects and drainage systems have cost already $66 million and will cost another $84 million within the next few years if Imperial Valley is to maintain its productivity.

5. The Mexicali Valley of Mexico is wholly unequipped to handle even the salt levels that the Imperial Valley can deal with, much less the levels substantially higher (115 ppm) that it is obligated to take under the recent U.S.-Mexico agreement (minute 242).

6. Every year the salt level of the water at Imperial Dam is increasing and will continue to increase unless measures far beyond what the U.S. has promised to Mexico in the agreement (minute 242) are undertaken. Such measures will cost much more than the present $134 million for the desalting plant and related works.

7. At present rates of salt increase the water received by Mexico under the agreement will be totally unusable (1245 ppm) by President Echeverria's standards by about the year 1993—19 years from now. Some facts and studies would indicate that this point may be reached far sooner. We emphasize that many crops would simply die from the sale far before the point of 1245 ppm was reached.)

8. Even at the present time the salt content of the water now being delivered to Mexico is so high that it would appear to be usable for agriculture only with measures even considerably more costly and extensive than are being employed by the U.S. farmers in the Imperial Valley.

9. Studies presented to the Congress show that large scale projects such as power plants, including nuclear plants, are being both planned and built that are going to use water from the Colorado River and thus make the water even more saline at Imperial Dam. The massive energy development project in the oil shale region of Colorado and Wyoming may also have considerable effect in making the water saltier at Imperial Dam.

10. It is clear from documents now before the Congress that the U.S.-Mexico agreement (minute 242) on the Colorado River water is not "the permanent and definitive solution of the salinity problem." Even Mr. Brownell, the U.S. negotiator, has candidly admitted this as long ago as June 1, 1973, when he told a U.S. audience "that unless the United States does control this threatened and almost certain increase of salinity above Imperial Dam, the water we deliver to Mexico may become unacceptable, and we shall, in the future, have a new salinity problem with that country."

11. It appears from the terms of the agreement that, unless the Congress acts affirmatively prior to July 1, 1974, that the agreement itself is void and of no effect.

12. The proposed desalinization plant that is the key to the effectiveness of the entire agreement will be the largest ever built and 30 times larger than any such plant in existence. The plant (1) may not work at all, (2) may last for only a short period (as is the case with the nuclear power plants), or (3) may have an effectiveness far below what is hoped and planned. It and the other related projects will only be in operation by about 1980.

13. Already at least one U.S. group that uses water from Imperial Dam is planning to run the water it receives through another desalting plant, thus allowing its users to have good water even though the water at Imperial Dam becomes very saline indeed. In other words, by placing desalters and other technological developments between the U.S. users and the Imperial Dam waters, the U.S. water users would receive good waters while the Mexican users—though fully consistent with the actual words of the agreement—would be receiving totally unusuable water of very high salt content. Historically a similar situation occurred with the original 1944 U.S.-Mexico water treaty when the U.S. knew at that time that it would eventually deliver water to Mexico of such a salt content as to be useless and destroy the Mexican crops, thus creating the original problem which is still with us.

14. The State Department, along with the rest of the executive branch, is actively opposing the two bills before the Congress that would, in part, help alleviate the impact both on Mexico and on our own users through salt control throughout the Colorado River Basin (S. 1807 and S. 2940). Thus, knowing full well that the salinity problem with Mexico has not been solved, the State Department is opposing legislation that would at least go part way to an effective solution.

15. S. 2940, introduced by Senators Fannin and Bible, on the other hand, seems to provoke (Sec. 103) a pumping war in the Yuma-San Luis area as the U.S. would thus move to begin pumping the maximum amount of water just across the Mexican border and from the same water pool that Mexico is using to pump water at the present time. The U.S. plan is to pump the water and return it to Mexico as part of the water provided under the agreement. Such pumping will, apparently, rapidly deplete then entire water reserves of the area for Mexico and leave her wells nearly useless.

16. It is presently being planned, apparently, that any excess water from the desalinization plant will not go to improve the quality of the water received by Mexico, but will in fact be diverted to other U.S. uses, such as the City of Yuma, Arizona.

17. The U.S. is presently diverting about 20% of the Colorado River water completely outside of the Colorado River Basin, and these diversions are expected to increase.

18. The State Department's signing of the agreement was apparently largely motivated by the conviction that Mexico would win if she took the matter to the World Court.

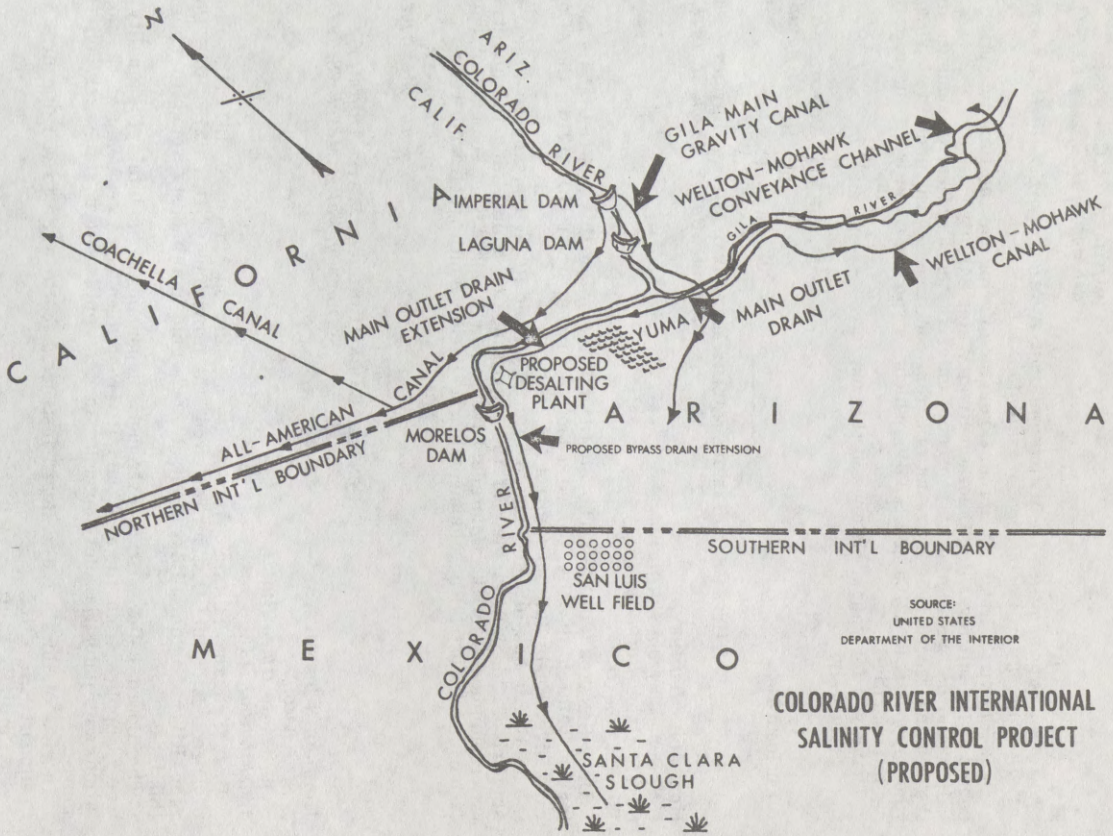
From the above it is apparent that (1) the agreement signed by the U.S. and Mexico as "the permanent and definitive solution of the salinity problem" is not in fact such a solution, (2) the agreement will provoke further problems as greater and greater amounts of salt are poured onto the lands of the farmers of the Mexicali Valley, (3) the Department of State is actively working against real relief for either the Mexican farmers or for our own farmers who would also benefit from the constructive parts of S. 2940, aand (4) the whole business might more frankly be characterized as a blatant fraud and deception of the Mexican people.

We urge that the Committee adopt legislation giving a true guarantee of an adequate and realistic quantity of water to Mexico with salt levels considerably below that presently at Imperial Dam, while at the same time taking the measures to insure this commitment and improve the waters received by our own citizens.

We feel that our international obligation to be fair to Mexico is paramount, especially in light of the already devastating damage we have inflicted upon her agricultural lands in the Mexicali Valley.

Yours sincerely,

WILLIAM HIGGS,
Executive Director.



COLORADO RIVER INTERNATIONAL SALINITY CONTROL PROJECT (PROPOSED)

U.S. SENATE,
COMMITTEE ON COMMERCE,
Washington, D.C., May 6, 1974.

Hon. FRANK CHURCH,
Chairman, Subcommittee on Water and Power Resources, Senate Interior and Insular Affairs Committee, Washington, D.C.

DEAR FRANK: First, may I thank you for offering me the time to testify on behalf of my bill regarding Colorado River Water Salinity.

It would be appreciated if you could enter the enclosed correspondence into the hearing record. These are letters from concerned constituents and persons who support H.R. 12165 and S. 2940, which, as you are well aware, incorporates my bill as Title II.

Thank you for your assistance in this matter.

Sincerely,

JOHN V. TUNNEY,
U.S. Senator.

Enclosures.

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT,
El Monte, Calif., March 27, 1974.

Hon. JOHN TUNNEY,
U.S. Senator from California,
Senate Office Building,
Washington, D.C.

DEAR SENATOR TUNNEY: The Board of Directors of this District, at its meeting held March 19, 1974, passed a motion in support of H.R. 12165, the "Colorado River Basin Salinity Control Act."

The Board has directed me to inform you of its action, and to urge your support of this bill, in view of the importance of maintaining the quality of water supplies from the Colorado River, upon which a vast segment of population and industrial development in the Pacific Southwest region relies.

CARL FOSSETTE,
General Manager.

CENTRAL BASIN MUNICIPAL WATER DISTRICT,
Downey, Calif., March 28, 1974.

Hon. JOHN TUNNEY,
U.S. Senator,
New Senate Office Building,
Washington, D.C.

DEAR SENATOR TUNNEY: During its meeting on March 20, 1974, the Board of Directors of this District reviewed the provisions of H.R. 12165, the "Colorado River Basin Salinity Control Act", and unanimously voted to approve this measure.

The Board believes it is extremely important to maintain the quality of water supplies from the Colorado River because large segments of the population and industrial developments in the southwestern states rely on this source.

In view of this fact, the Board instructed me to write to you and urge you to support H.R. 12165.

Cordially yours,

CARL FOSSETTE,
Secretary.

WEST BASIN MUNICIPAL WATER DISTRICT,
Redondo Beach, Calif., April 1, 1974.

Hon. JOHN TUNNEY,
U.S. Senate,
Washington, D.C.

DEAR SENATOR TUNNEY: At its meeting held on March 25, 1974, the Board of directors of West Basin Municipal Water District instructed me to write to you and respectfully request your support of H. R. 12165, the "Colorado River Basin Salinity Control Act".

Passage of the bill is urgently needed in order to authorize works to maintain salinity levels in the lower Colorado, or at below present levels. The bill satisfies the obligations imposed on the United States by Minute 242 of the Mexican Water Treaty agreed to by the United States and Mexican Governments last August.

Passage of this act would provide national and international benefits, and, therefore, we respectfully request that you support H. R. 12165.

Very truly yours,

CARL FOSSETTE,
General Manager.

FOOTHILL MUNICIPAL WATER DISTRICT,
La Canada, Calif., April 2, 1974.

Hon. JOHN TUNNEY,
U. S. Senate,
Senate Office Building,
Washington, D.C.

DEAR SENATOR TUNNEY: The Foothill Municipal Water District, a member agency of The Metropolitan Water District of Southern California, by action of its Board of Directors taken at its last regular meeting endorsed the passage of H.R. 12165, the "Colorado River Basin Salinity Control Act".

Foothill Municipal Water District is a retail agency providing Colorado River water to service water agencies in the La Crescenta, Montrose, Flintridge, Altadena areas of Los Angeles County. The District is well aware of the extreme salinity of Colorado River water delivered by The Metropolitan Water District and the rising salinity levels of such water. It is the opinion of the District that the salinity of Colorado River water must not be permitted to rise above its present levels and that the water quality must be maintained or the salinity level lowered.

The District urgently requests your support in the passage of H.R. 12165, the "Colorado River Basin Salinity Control Act".

Yours very truly,

FOOTHILL MUNICIPAL WATER DISTRICT,
By: J. A. MULLER,
President.

WESTERN MUNICIPAL WATER DISTRICT,
Riverside, Calif., April 15, 1974.

Senator JOHN V. TUNNEY,
Senate Office Building,
Washington, D.C.

DEAR SENATOR TUNNEY: As you are aware, Western Municipal Water District of Riverside County is a public agency distributing both wholesale and retail water within the western portion of Riverside County. The primary supply presently delivered by Western comes from the Colorado River, and it is expected that this source will be an important part of our supply for many years to come. Western, therefore, has a particular interest in the passage of H.R. 12165 known as "Colorado River Basin Salinity Control Act."

It is important that measures be taken to prevent the further degradation of the Colorado River supply, and this bill would provide the necessary works to accomplish that result. California has a strict program designed to improve water quality. Use of Colorado River water within Western has already been the subject of governmental regulation because of its present salinity. Water quality plans which are presently being considered call for either a limitation on the use of Colorado River water within Western, or a reduction in the salinity of such supply.

Western's Board of Directors has carefully considered this legislation, and strongly urges your support.

Yours very truly,

WESTERN MUNICIPAL WATER DISTRICT,
JOHN M. MYLINE, JR.,
President.

DEPARTMENT OF WATER AND POWER,
Los Angeles, Calif., April 11, 1974.

Hon. FRANK CHURCH,
Chairman, Senate Water and Power Resources Subcommittee, Old Senate Office Building, Washington, D.C.

Re S. 2940 Colorado River Basin Salinity Control Act

SIR: The Department of Water and Power of the City of Los Angeles (Department) is very concerned with the increasing salinity of the Colorado River. We have supported and will support measures to control this increase. We reviewed with great interest H.R. 12165, the proposed Colorado River Basin Salinity Control Act, and we supported the objectives of this measure at the hearing of the House Subcommittee on Water and Power held last month.

It is our understanding that S. 2940, introduced by Senators Bible and Fannin, contains the same objectives as H.R. 12165. By this letter we are reaffirming the Department's support of these objectives. We also concur with the testimony which will be provided by the Committee of Fourteen regarding the bill.

S. 2940 would authorize a desalting plant and other features to improve the quality of water flowing to Mexico. We have followed closely the negotiations leading to the signing of Minute 242 of the International Boundary and Water Commission and reviewed the various proposals to implement this Minute.

The Department's position is that any legislation to improve the quality of Colorado River water delivered to Mexico should include steps to benefit all users of these waters, in the United States as well as in Mexico. S. 2940 would authorize Upper and Lower Colorado River Basin salinity control projects with the objective of maintaining the salinity of the Lower Colorado River at or below present salinity levels. This objective has been endorsed by all the Colorado River Basin states, the Environmental Protection Agency and the Department of the Interior.

Although Minute 242 specifies that water delivered to Mexico will have an average salinity not more than 115 parts per million (ppm) over the average salinity at Imperial Dam, it does not guarantee that the quality of water delivered to Mexico will never exceed an absolute limit. The intent of the Minute, of course, is to furnish acceptable quality water to Mexico. It can be expected that Mexico would reopen the recent controversy with the United States if its water quality degraded substantially, even though the 115 ppm criterion was being met. The best way to keep a problem of this sort from developing is to control the salinity of water at Imperial Dam in addition to operation of the desalting plant.

The Upper and Lower Colorado River Basin salinity control projects proposed by S. 2940 would not only comply with the intent of Minute 242 but would also benefit users of Colorado River water in the United States.

We urge that S. 2940, incorporating the suggestions of the Committee of Fourteen, receive favorable consideration.

Sincerely,

ROBERT V. PHILLIPS,
General Manager and Chief Engineer.

SOUTHERN CALIFORNIA WATER CONFERENCE,
Los Angeles, Calif., April 23, 1974.

Hon. FRANK CHURCH,
Chairman, Water and Power Resources Subcommittee of the Senate Interior and Insular Affairs Committee, Senate Office Building, Washington, D.C.

DEAR SENATOR CHURCH: The Southern California Water Conference meeting in session April 22, 1974 after much study and forethought passed without dissenting vote the attached resolution on the Colorado River Basin Salinity Control.

Sincerely yours,

HANS H. DOE,
Chairman.

RESOLUTION ON COLORADO RIVER BASIN SALINITY CONTROL

WHEREAS, the Colorado River represents a major source of Southern California's water supply; and

WHEREAS, the salinity of Colorado River water will increase significantly unless steps are taken to control that salinity; and

WHEREAS, increases in Colorado River salinity will create serious water management problems in Southern California; and

WHEREAS, many California Congressmen along with Congressmen of the other Colorado River Basin states have introduced a proposed Colorado River Basin Salinity Control Act in The United States Congress as HR 12165 and S. 2940 that would:

A. Authorize construction, operation and maintenance of four salinity control projects in the Colorado River Basin, to remove over one half million tons per year of dissolved salt from the River System, thereby reducing the impact of continuing increases in the river's salinity on users both in the United States and Mexico; and

B. Authorize construction, operation, and maintenance of facilities and non-structural measures needed to implement the recent Colorado River salinity agreement with Mexico (Minute 242, of the International Boundary and Water Commission); and

C. Implement the salinity control policy adopted for Colorado River by the Seventh Session of the Conference on Pollution of the Interstate Waters of the Colorado River, including efforts to maintain River Salinity at or below existing levels,

NOW, THEREFORE, BE IT RESOLVED, by the Southern California Water Conference that it supports The Colorado River Basin Salinity Control Act proposed in HR 12165 and S 2940, now pending before the Second Session of the 93rd Congress.

(Adopted by The Southern California Water Conference at its April 22, 1974, meeting, held in Los Angeles, California.)

HANS H. DOE,
Chairman.

LAS VIRGENES MUNICIPAL WATER DISTRICT,
Calabasas, Calif., April 8, 1974.

Hon. ALAN CRANSTON,
U.S. Senator,
Senate Office Building,
Washington, D.C.
Hon. JOHN V. TUNNEY,
U.S. Senator,
Senate Office Building,
Washington, D.C.
Hon. BARRY M. GOLDWATER, JR.
Member of House of Representatives,
House Office Building,
Washington, D.C.

Re Colorado River Basin Salinity Control Act (HR 12165).

GENTLEMEN: The above-referenced Act, introduced by Congressman Harold T. Johnson, represents a key step in the continuous and long standing effort to deal with the salinity problem of the Colorado River. While much of the present thrust for this legislation is due to the salinity problem with Mexico, it is important to note that the Federal Government and seven Colorado River states have been working on the overall Colorado River Salinity problem for many years.

You have undoubtedly previously received correspondence from The Metropolitan Water District of Southern California supporting this bill. The Las Virgenes Municipal Water District is a member agency of the Metropolitan Water District of Southern California and must depend in large part upon the success of the efforts of The Metropolitan Water District in securing a good and adequate supply of water for its residents.

As a result, the District's Board of Directors has determined to officially support HR 12165. Further, by this letter we also encourage any efforts which you may expend to insure the success of this bill.

BY ORDER OF THE BOARD,
RALPH W. VENUS, *President,*
Las Virgenes Municipal Water District.

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