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ALL-GRAVITY AMERICAN COLORADO RIVER CONSTRUCTIVE PLAN

REMARKS

OF

HON. RALPH H. CAMERON

OF ARIZONA

IN THE

SENATE OF THE UNITED STATES

SATURDAY, JULY 3, 1926

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REMARKS

OF

HON. RALPH H. CAMERON

Mr. CAMERON. Mr. President, I ask unanimous consent to have inserted in the RECORD a statement filed before the House Committee on Irrigation and Reclamation by George H. Maxwell relative to the all-gravity American Colorado River constructive plan for the harmonious adjustment of all interests in the United States of America.

The VICE PRESIDENT. Without objection, it is so ordered. The matter referred to is here printed, as follows:

[Statement filed before the House Committee on Irrigation and Reclamation by George H. Maxwell, as executive director of the National Reclamation Association, and of the Arizona Highline Reclamation Association, and also as a citizen of Arizona in behalf of Arizona as a sovereign State, following his oral statement before the House Committee on Irrigation and Reclamation on March 10, 1926, and under leave then granted]

THE ALL-GRAVITY AMERICAN COLORADO RIVER CONSTRUCTIVE PLAN FOR THE HARMONIOUS ADJUSTMENT OF ALL INTERESTS IN THE UNITED STATES OF AMERICA

In the matter of the protest against the military menace, the competitive agricultural and industrial conflict, and the economic and racial international controversy that would result from the use of the waters of the Colorado River in Mexico instead of in the United States of America

Statement submitted at the hearings before the Committee on Irrigation and Reclamation of the House of Representatives of the Congress of the United States on the bill H. R. 9826, Sixty-ninth Congress, first session, introduced by Mr. SWING on February 27, 1926, providing for the construction of the Black Canyon Dam and Boulder Canyon Storage Reservoir, and providing that "the short title of this act shall be 'Boulder Canyon Project Act'"

The following is a brief outline of the all-gravity American Colorado River constructive plan for the harmonious adjustment of all American interests that will—

1. Provide for the development of the Colorado River within and for the benefit of the United States of America instead of for the benefit of American land speculators in Mexico, who are scheming to establish a vast competitive Asiatic agricultural colony and Asiatic manufacturing and seaport city in America at the head of the Gulf of California.

2. Reclaim 3,280,000 acres in Arizona and 2,000,000 acres in California and thereby insure the utilization for irrigation of the regulated flow of the now wasted flood waters of the Colorado River within our own country instead of in Mexico.

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3. Guarantee every protection, benefit, and advantage for every community and section of the United States of America that has been urged as a reason for building the Black Canyon or Boulder Canyon Dam, without any of the national dangers that would result from the construction of the Black Canyon-Boulder Canyon project.

A STATEMENT OF THE FACTS

A brief statement of the facts is essential to an understanding of the all-gravity American Colorado River constructive plan hereinafter set forth.

The plan contemplates the harmonious adjustment of all conflicting interests, plans, and projects which are for the benefit of the United States of America.

The plan will benefit our own country and our own people. It will benefit the whole United States of America instead of putting a huge personal profit into the pockets of the speculators who are promoting the subtle scheme to secure 8,000,000 acre-feet annually of the waters of the Colorado River for the reclamation of 2,000,000 acres in Mexico on which to establish an Asiatic annex in America.

This all-gravity American constructive plan for the harmonious adjustment of all American conflicting interests should be acceptable to all interests in the United States of America, because it gives to each of them all they require from the control of the Colorado River.

It gives to all who have heretofore advocated the "Boulder Canyon project" everything they contend for as an advantage, benefit, or protection which it has been urged would flow from the construction of the Black Canyon Dam to utilize for storage the Boulder Canyon Reservoir site.

And it does all that without surrendering the water to Mexico for the reclamation of desert lands in that country, to create Asiatic competition in America for every American factory and farm.

This all-gravity American constructive plan for the harmonious adjustment of all conflicting interests in the United States of America will—

1. Fortify the Imperial Valley against the devastating forces of nature as well as against those of a war in the air. It will give to the Imperial Valley complete protection from the floods of the Colorado and Gila Rivers. It will lift the flood menace from every acre of the valleys of the Colorado River below the Glen Canyon dam. It will guarantee absolute immunity from flood devastation for every home and community in that region, and it will—

2. Build the all-American canal to safeguard the people of the Imperial Valley in California from all future dangers arising from the use of a canal though Mexican territory. It will provide for the building and upkeep of the all-American canal not only for that purpose but also as a national military measure to prevent international friction resulting from the use of the waters of the Colorado River in Mexico, either by diversion from the surface flow or by pumping from underground seepage, and it will—

3. Provide for a development of hydroelectric power that will meet all the immediate needs of southern California, Arizona, and Nevada, and, in addition, provide for all the future requirements of those States and the States of the upper basin for power from the Colorado River, generated at or below the Glen Canyon Dam, and it will—

4. Store and control, in the Glen Canyon Reservoir, all the now wasted flood waters of the Colorado River coming from above Glen Canyon; and thereby regulate the annual flow of the river and stand-

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ardize it not only for flood control, but also for irrigation and for the development of more than 4,000,000 hydroelectric primary horsepower at and below Glen Canyon, and it will—

5. Insure the building of the Arizona-California high-line canal by providing for a diversion from the river at the Bridge Canyon Dam at an elevation of 2,000 feet above sea level, high enough to reclaim and irrigate 3,000,000 acres of desert in Arizona under the Arizona high-line canal, in addition to the 280,000 acres of low river-level lands irrigable in Arizona under the Black Canyon-Boulder Canyon project, thus reclaiming in Arizona a total of 3,280,000 acres, and it will—

6. Reclaim 1,000,000 acres in the Colorado River Basin of California, and also furnish by gravity the water necessary to supplement local supplies for the irrigation of another 1,000,000 acres in the coast basin of southern California now inadequately irrigated. It will do this in addition to supplying all present and future requirements of every city and town in the coast basin of southern California for water for domestic and municipal purposes.

NATIONAL WEALTH TO BE CREATED BY THE ALL-GRAVITY AMERICAN COLORADO RIVER CONSTRUCTIVE PLAN IN THE UNITED STATES OF AMERICA

Let the people of our own country once understand the value of the waters of the Colorado River as a national asset of the United States of America, and that moment the Black Canyon-Boulder Canyon project, with its subtly concealed purpose to surrender 8,000,000 acre-feet of water annually to Mexico perpetually, will be dead beyond hope of resurrection.

No matter what new bill may be introduced—no matter what new schemes may be proposed—no matter what bait or bribe may be offered to Arizona in the form of a royalty on power developed in Arizona for use elsewhere—the acid test that will be applied to that new bill or new scheme, from the point of view of the Nation and by the Congress of the United States, will be: Will it give that 8,000,000 acre-feet annually to Mexico to reclaim and irrigate 2,000,000 acres in the Imperial Valley of Mexico and on the great citrus mesa in Sonora, Mexico?

If it does, then no matter how carefully the wolf may have been concealed in sheep's clothing, the people of the Nation will repudiate the scheme and Congress will reject any proposed bill that will bring the scheme to fruition.

The people of the United States of America, and the Congress of the United States, must know the facts demonstrating the value of this great national asset of the Nation which now lies latent in the flood waters of the Colorado River.

The first fact necessary to be known is the available annual water supply that will be provided for the lower basin after the floods of the Colorado River have been completely reservoired in the United States of America, and the flow of the river thereby regulated and standardized, so that it will flow substantially the same volume of water evenly through the year in all years.

1. The available water supply for use in the lower basin: The most satisfactory table establishing the water supply that will be made available for the lower basin of the Colorado River by the building of the Glen Canyon storage reservoir and Bridge Canyon diversion dam is to be found on page 37 of the Fall-Davis report, Senate Document No. 142, Sixty-seventh Congress, second session.

That table establishes the discharge of the Colorado River at Yuma, averaged from 1902 to 1920, at a total annual regulated flow of

17,550,000 acre-feet. This includes the 150,000 acre-feet diverted above Yuma at the Laguna Dam for the Yuma project. It also includes the now wasted average discharge of the Gila River, estimated at 1,080,000 acre-feet.

That estimate of 17,550,000 acre-feet is a dependable estimate. It may be taken as an established fact in dealing with the problem of the use that is to be made of that water.

One "acre-foot" is water enough to cover an acre 1 foot deep.

Attention is called to the fact, on page 37 of that Fall-Davis report, that the lands on which the waters would be used which were stored at Boulder Canyon are so situated that there would be little return seepage from those lands.

The lands referred to are the 280,000 acres in Arizona and 940,000 acres in California which are elsewhere in that report shown to be irrigable from the Black Canyon-Boulder Canyon project.

Right there is one of the most important advantages of the Glen Canyon-Bridge Canyon-Arizona high-line project hereinafter advocated over the Black Canyon-Boulder Canyon project.

The Glen Canyon-Bridge Canyon-Arizona high-line project provides for the irrigation of high mesa lands sloping always to the river.

1. All the lands irrigated from the Arizona High-line Canal, from the intake of the canal at the Bridge Canyon Dam to Lone Mountain Pass, would drain into the Colorado River between Bridge Canyon and the Laguna Dam.

2. From Lone Mountain Pass to the end of the Arizona High-line Canal, where it would empty into the Waterman Wash, after encircling the Salt River Valley and Casa Grande Valley, the return seepage would be into the Gila River above the Gillespie Dam.

3. That return seepage would be redistributed through canals heading at the Gillespie Dam for use on lands adjacent to and draining into the Gila River between the Gillespie Dam and the mouth of the river.

4. The return seepage coming into the river below the Gillespie Dam and flowing down the Gila River to its mouth, with a low pump lift, could be used to supply lands under the Yuma project for which water is to be pumped, or for the Imperial Valley, or it could be used by gravity to irrigate the 200,000 acres in Mexico heretofore irrigated.

The return seepage from the original diversion at Bridge Canyon would increase the total volume of water available for use in Arizona and in the Imperial Valley of California not less than 4,000,000 acre-feet.

The total water supply for the entire system would thus be increased 4,000,000 acre-feet as time passed and the underground reservoirs became filled and the water table raised.

The proportion of return seepage would steadily increase until it exceeded 4,000,000 acre-feet annually.

Another increase of 1,000,000 or more acre-feet in the total available water supply would result from diverting the water from the river at Bridge Canyon and distributing it in a cemented canal system instead of having it run down the long, shallow, tortuous channel from Bridge Canyon to Yuma.

The flow of the river is increased over 1,000,000 acre-feet between Glen Canyon and Boulder Canyon, but it now loses that increase by evaporation between Boulder Canyon and Yuma. That saving would add another million acre-feet to the total supply available for the lower basin.

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The total supply available for the lower basin would thus be:

	Acre-feet
1. Discharge at Yuma, including 150,000 acre-feet diverted above for Yuma project, and also including the 1,080,000 acre-feet coming from the Gila River	17,550,000
2. Return seepage from waters originally diverted into the Arizona high-line canal at Bridge Canyon Dam	4,000,000
3. Saving of evaporation losses between Bridge Canyon and Yuma	1,000,000
Total annually	22,550,000

The question of subsequent depletion of this total available quantity for irrigation in the lower basin is an intricate and complicated question, and has never been sufficiently studied to make it possible to reach an entirely satisfactory conclusion.

This thorough study is one of the things most necessary to be done before any plan is irrevocably adopted for the development of the Colorado River.

There are those who have studied the question for many years, and are qualified to form an expert opinion on the subject, who are satisfied that future irrigation in the upper basin will never appreciably deplete the flow of the river at the north line of Arizona or at the Glen Canyon Dam.

There are those who have made the most careful estimates and studis based on thorough investigation of the known facts who believe that the upper basin never could use more than half of the 7,500,000 acre-feet reserved for the upper basin in the Colorado River compact and that the only effect of that reservation would be to increase the quantity that would go to Mexico if the compact were ratified.

The Fall-Davis report, Senate Document No. 142, above referred to, gives the following estimate of future depletion from use in the upper basin and from reservoir evaporation, on page 37:

	Acre-feet
Future depletion from development in upper basin	4,230,000
Future depletion from evaporation from reservoirs in canyon section	2,070,000
Total future depletion	6,300,000
As heretofore shown, the total available supply, including return seepage, for the lower basin, amounts to	22,550,000
Deduct from this the total estimated depletion	6,300,000
And it leaves the total annually available for use	16,250,000

2. The areas that can be irrigated in the lower basin: The 16,250,000 acre-feet that ultimately will be available for use in the lower basin includes 4,000,000 acre-feet from return seepage into the natural channels which can again be diverted and used for irrigation in Arizona and California.

It takes several years for this return seepage to develop. Until that happens the quantity available is limited to the original flow of the stream, but the return seepage is a steadily enlarging reflow into the river, increasing each year for a long period of time.

If the 4,000,000 acre-feet of return seepage be deducted from the 16,250,000 acre-feet estimated to be the ultimate quantity available, it leaves 12,250,000 acre-feet available from the moment the construction of the irrigation works is completed.

But that is not all the water that will be available.

The 4,320,000 acre-feet estimated in the Fall-Davis report as the eventual depletion in the upper basin will continue to come to the lower basin for many years to come. It will flow down the river to the Glen

Canyon Reservoir until in the course of time it has been actually consumptively used in the upper basin.

The process of depletion will be slow, extending over many years, before the water will all be used in the upper basin. The period that will elapse before that consumptive use has been fully accomplished has been variously estimated at from 25 to 150 years.

In the meantme, until the water has been so used in the upper basin, it will continue to flow down to the lower basin, and the total quantity available in the lower basin to start with when the irrigation works are first built and irrigation begun will be as follows:

	Acre-feet
Available quantity without return seepage	12, 250, 000
Amount reserved for upper basin depletion	4, 230, 000
Total quantity annually available for lower basin	16, 480, 000

If the depletion were not offset by return seepage, that annual supply might slowly decrease from year to year as the depletion resulting from irrigation of larger areas in the upper basin increased from year to year.

But this fact must never be overlooked: Any depletion in the lower basin of the supply available for that basin resulting from a larger use in the upper basin would be more than offset each year by the steadily increasing reflow due to return seepage from lands irrigated under the Arizona Highline Canal.

Consequently the total quantity available for the lower basin would never be less than the quantity available when the water was first turned out of the river into the canals.

The importance of that fact can not be realized unless thought is given to it, so that the mind will fully grasp the fundamental fact that before the depletion by a larger use in the upper basin has been felt in the lower basin, it will be more than compensated for by the increased return seepage in the lower basin.

The return seepage will always more than counterbalance the depletion, and there will always continue to be 16,250,000 acre-feet or more available for use in the lower basin, provided the Arizona Highline Canal is built.

This remarkable creation by the Arizona Highline Canal of reflow or return seepage, which will make it possible to increase the total supply available until the return seepage exceeds 4,000,000 acre-feet, and at all times exceeds the greatest possible depletion resulting from the enlarged use in the upper basin, never has been taken into consideration heretofore as one of the values created by the Arizona Highline Canal.

Four million acre-feet of return seepage is water enough to irrigate more than 1,000,000 acres of land in Arizona and southern California, and is worth for that purpose more than $300,000,000.

Three hundred million dollars is more than enough to build the Arizona Highline Canal. The George W. Sturtevant estimate of its cost from Bridge Canyon to the end of the canal at Waterman Wash is $212,000,000.

He estimates the cost of the Glen Canyon and Bridge Canyon Dams at $90,000,000.

If the Black Canyon Dam were built, and the Arizona Highline Canal were thereby made impossible, the loss of this return seepage from the Arizona Highline Canal would be a loss large enough to cover the cost of building both the Glen Canyon and Bridge Canyon Dams,

in place of the Black Canyon Dam, with a surplus left over that would build the Arizona Highline Canal.

With such facts as these staring anyone in the face who will take the trouble to ascertain them, can it be possible that the public can be permanently deceived or deluded by any smoke screen that can be thrown out to get the Black Canyon Dam built and a profit of close to a billion dollars put into the pockets of American speculators in Mexican lands and the Japanese capitalists who would become their successors in interest?

Therefore, from the completion of the Bridge Canyon Dam and the Arizona-California Highline Canals, the full quantity of the permanent supply of 16,250,000 acre-feet for the lower basin will be available.

	Acre-feet
That 16,250,000 acre-feet will adequately irrigate the following lands:	
In Arizona—	
280,000 acres, comprising 130,000 acres in the Yuma project, 110,000 in the Parker Indian Reservation project, and 40,000 acres of other river-level lands, requiring for its irrigation	740,000
3,000,000 acres irrigable from the Arizona Highline Canal system, requiring for its irrigation	8,000,000
In California—	
1,000,000 acres in the Colorado River basin, in the Imperial, Palo Verde, and Coachella Valleys	4,000,000
1,000,000 acres in the coast basin of southern California, and including all irrigable lands not now irrigated between Ventura and San Diego	1,750,000
The Mulholland project for pumping water 1,400 feet over Shavers Summit for a domestic water supply for Los Angeles, if built, will require	1,000,000
Total in the United States of America	15,490,000
In Mexico—	
The above apportionment and use of the available water supply will leave a surplus of 760,000 acre-feet for use in Mexico, which is enough to irrigate 200,000 acres. That is all they can claim a right to irrigate in Mexico. This 760,000 acre-feet would flow down to the international border in the channel of the Colorado River	760,000
Total uses of available supply for the lower basin	16,250,000

3. *Land values created in the United States of America*

The Black Canyon-Boulder Canyon project, as shown by the Fall-Davis report, will irrigate 1,220,000 acres in the United States of America, of which 280,000 acres are in Arizona and 940,000 acres in California, all worth, when irrigated, within 20 years	$610,000,000
The Glen Canyon-Bridge Canyon project, in addition to this 1,220,000 acres, will irrigate the following lands, which will remain unirrigated forever if the Black Canyon Dam is built:	
3,000,000 acres under the Arizona high-line canal, in Arizona, worth, when irrigated, within 20 years	$1,500,000,000
1,000,000 acres in the coast basin of southern California, between San Diego and Ventura, worth, when irirgated, within 20 years	1,000,000,000
Total additional land values created by the Glen Canyon-Bridge Canyon project	$2,500,000,000

These additional land values in the United States of America will never come into existence if the Black Canyon Dam is built, because the water necessary for the irrigation of the land will be surrendered to Mexico irrevocably if that dam is built.

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Can the United States of America afford to make such a stupendous national sacrifice as that merely to enable a group of American speculators in Mexican lands and their Japanese successors in interest to realize a profit of approximately a billion dollars from their speculation of selling to Asiatics lands irrigated with the water of the Colorade River, when that water, if used in the United States of America, would create land values of $2,500,000,000 within 20 years?

There will be no return seepage if the water goes to Mexico.

The losses from evaporation between Bridge Canyon and Yuma, which will be saved if the waters are diverted at Bridge Canyon, will continue forever if the waters are first used in Mexico.

The losses from those two causes will aggregate 5,000,000 acre-feet annually, and continue forever, if the right is established to use the waters in Mexico, as must happen if the Black Canyon Dam is built.

The Glen Canyon-Bridge Canyon project will provide enough water to irrigate the 200,000 acres heretofore irrigated in Mexico, which is all they can by any possibility claim a right to under the comity of nations.

The Black Canyon-Boulder Canyon project will provide not less than 8,000,000 acre-feet of water for Mexico, which will increase the irrigated area in that country ten times and bring 2,000,000 acres under irrigation, to be sold to Asiatics to compete with American agriculture.

American agriculture has troubles enough now without subjecting it to the competition of 2,000,000 acres in Mexico intensively cultivated with Asiatic coolie labor and irrigated from the Colorado River.

The contrast between the plan for the highest utilization of the regulated flow of the waters of the Colorado River, which constitutes the all-gravity American Colorado River constructive plan, and is based on the construction of the Glen Canyon Dam for storage and the Bridge Canyon Dam for diversion, on the one hand, and on the other hand, the Mexican-Asiatic low-line river level plan based on the Black Canyon Dam utilizing the Boulder Canyon Reservoir site, ought to be enough to satisfy any fair and unprejudiced American citizen that the Black Canyon Dam should be abandoned, and the Glen Canyon Dam built as a substitute for it.

4. The Black Canyon Dam gives 8,000,000 acre-feet to Mexico: The reason the Black Canyon Dam gives 8,000,000 acre-feet annually to Mexico is that the dam is located so far down the river that after the water has dropped over the dam to develop power it has fallen to so low an elevation above sea level that it can never be afterwards diverted from the river high enough for the lands that are to be irrigated in Arizona, or high enough to be taken by gravity to the coast basin of southern California.

The level of the bed of the river at the base of the proposed Boulder Canyon Dam is 706 feet above sea level. Black Canyon is farther down the river and still lower. The elevation of the base of the Black Canyon Dam is only 645 feet above sea level.

The water must be diverted from the river at an elevation of 2,000 feet if it is to be used for irrigation in Arizona or taken by gravity to the coast basin of southern California.

Any scheme for pumping for reclamation is uneconomic and impracticable, and many years before it could be put through the waters would have been used in Mexico so long that the claim to them would have ripened under the comity of nations.

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As a natural and inevitable consequence, once the waters have fallen to the base of the Black Canyon Dam, they must go to Mexico by the law of gravity, and there they will continue to go forever.

The quantity going to Mexico is easily established.

On page 5 of the Fall-Davis report, Senate Document No. 142, is a table showing the average discharge of the Colorado River at the Laguna Dam, not including the Gila River.

It is fixed at 16,400,000 acre-feet.

From this must be deducted all that can be used for irrigation in the States of Arizona and California, if the Black Canyon Dam is built.

This irrigable area in Arizona and California is fixed by the Fall-Davis report at 1,220,000 acres.

	Acre-feet
The water required for its irrigation is	5,000,000
Add the quantity required for the Mulholland-Los Angeles aqueduct scheme	1,000,000
And the total quantity that can be diverted from the river below the Black Canyon Dam, so that it will not go to Mexico, is	6,000,000
From the amount going to Mexico a further deduction must be made of the quantity estimated on page 37 of the Fall-Davis report as the reservoir evaporation	2,070,000
This makes a total deduction of	8,070,000

Deduct this 8,070,000 acre-feet from the total discharge at the Laguna Dam of 16,400,000 acre-feet, and it leaves to go to Mexico 8,330,000 acre-feet.

That is more than enough to irrigate the 2,000,000 acres for the Asiatic principality in America.

The foregoing facts are absolutely and unqualifiedly true.

They are "the truth, the whole truth, and nothing but the truth."

They are as conclusively demonstrated by undeniable facts as that the Washington Monument stands in Washington or that the United States of America exists as a Nation.

It would be a national crime to despoil Arizona, a sovereign State of this Union, and rob her of a natural resource of such stupendous magnitude as the waters to reclaim from the desert 3,000,000 acres of irrigable land, leaving it an irreclaimable desert forever, and give that water to a group of conscienceless if not criminally treasonable conspirators against the peace and welfare of their own country.

If the water goes to Mexico, it will be used to drive an Asiatic wedge into the heart of America at the head of the Gulf of California and establish an Asiatic world seaport at the back door of Los Angeles and Arizona.

That proposed national iniquity raises an "irrepressible conflict," as to which there can be no compromise, no concession, no adjustment.

It is a shock to the moral sense and patriotic instincts of the American people.

Eliminate that contemplated national crime from the problem, and every difference between citizens or sections of the United States of America, or projects proposed for the benefit of the people of our own country, can be amicably adjusted.

Arizona insists that the Colorado River shall not be stolen from her for the benefit of American speculators in Mexican lands.

The objections of southern California will be just as vigorous and just as implacable whenever the people of the coast basin discover

that water enough to furnish an abundant water supply for Los Angeles and every other city and town in the coast basin from Ventura to San Diego, and every acre of inadequately irrigated land in that territory, aggregating at least a million acres, can be taken by gravity from Bridge Canyon to Los Angeles and to that entire region between the mountains and the ocean.

Let it be once definitely determined that waters shall not be surrendered to American speculators in Mexico to which they have no right, morally or legally, under international law or under the comity of nations, and no controversy remains that can not be amicably adjusted between the interests in the United States of America.

The total area irrigated in Mexico from the Colorado River was fixed by the Fall-Davis report in 1922 at something less than 200,000 acres, requiring for its irrigation not more than 760,000 acre-feet annually.

If it were assumed that Mexico should be conceded a right under the comity of nations to the water necessary for the continued irrigation of that 200,000 acres, the claim could not be for more than 760,000 acre-feet annually.

Seven hundred and sixty thousand acre-feet annually is the maximum limit of Mexico's moral claim under the comity of nations.

Whether that claim should be allowed for the benefit of the American speculators who would profit by it depends on facts which cast a doubt upon it.

The American Government, before conceding the claim, should demand to know the whole truth as to the methods that have been adopted to frustrate every effort to bring about the utilization of the waters of the Colorado River in the United States of America instead of in Mexico.

"He who comes into equity must come with clean hands" is a motto of courts of equity that would apply with full force to that speculative conspiracy against the United States of America.

There can be no doubt that there is in Mexico more than 2,000,000 acres of irrigable land which could be irrigated from the waters of the Colorado River if the Black Canyon dam were built.

A large map which has hung in the office of the Committee on Irrigation and Reclamation of the House of Representatives for many months specifies the lands irrigable in Mexico, as follows:

"AREAS IN MEXICO

"(A) Under present canal system: Land & Water Co., of Lower California, 72,000 acres; small tracts near Mexicali, 10,000; International Co., 12,000; Imperial Development Co., 15,000; Easton tract, 15,000; Government lands, 8,000; Colorado River Land Co., 208,000; total under present canals, 340,000 acres.

"(B) Additional lands: Mesa lands under all-American canal, 43,000 acres; delta lands, chiefly Colorado River Land Co., 510,000; Sonora lands, 550,000; Pattie Basin, 400,000; total, 1,503,000.

"Making a total irrigable area in Mexico of 1,843,000 acres."

And this estimate does not include more than 200,000 acres of the finest citrus-fruit land in the world, in an absolutely frostless region, on the great citrus mesa in the Mexican State of Sonora, lying farther east than the 550,000 acres of "Sonora lands" referred to above. Those Sonora lands would ultimately be irrigated for citrus-fruit culture by pumping, as the Yuma mesa is now being irrigated.

The total area eventually irrigable in Mexico exceeds 2,000,000 acres.

If the water to irrigate that 2,000,000 acres goes to Mexico, it deprives the United States of America of water which if used first

in the coast basin of southern California and on the high mesa lands of Arizona lying under the Arizona high-line canal will make 1,000,000 acres of land in southern California worth $1,000,000,000 more than it is worth to-day and will make 3,000,000 acres in Arizona worth $1,000,000,000 more than it is worth to-day.

It will transform that 3,000,000 acres in Arizona into a fertile and populous region large enough to be the equivalent of 10 units each the equal in wealth and population of the Salt River Valley unit under the Roosevelt Dam.

Arizona's revenue from State, county, and municipal taxation on that vast wealth-producing territory would exceed $25,000,000 per annum.

That is what Arizona loses if the Black Canyon-Boulder Canyon project is built.

Is it conceivable that the Congress of the United States, representing the whole American people, will wreck that vast national resource in order to present a fortune of $1,000,000,000 or more to a group of American land speculators in Mexico and their Japanese successors in interest?

It is unbelievable!

And it is still more unbelievable when the fact is known that by building the Glen Canyon-Bridge Canyon project this huge national sacrifice becomes unnecessary.

Arizona can not, under any circumstances, consent to the Black Canyon-Boulder Canyon project without consenting to her own ultimate ruin.

The question to be first determined is whether some other plan can be evolved which will not ruin Arizona and will at the same time afford to all other interests and sections in the United States of America all the advantages they seek from the development of the Colorado River.

If everything those interests or sections require can be given to them without injuring or destroying the future development of Arizona, the plan that will do that will be adopted, whenever the facts are made known to the people of the entire Nation.

The Black Canyon-Boulder Canyon project should be known as the Asiatic-Mexican low-line river-level Colorado River project, because if built it will surrender 8,000,000 acre-feet a year of water to Mexico and create an Asiatic annex in America.

The Glen Canyon-Bridge Canyon project should be known as the all-gravity American Colorado River project, because it will utilize that same water in Arizona and California, where it will irrigate over 3,000,000 acres in Arizona that must remain a desert forever if the water goes to Mexico, and 1,000,000 acres in the coast basin of southern California having no other source for an adequate water supply.

ENGINEERING WORKS NECESSARY TO BE BUILT FOR THE ALL-GRAVITY AMERICAN COLORADO RIVER CONSTRUCTIVE PLAN

1. The all-American canal: Whatever plan may be adopted for the financing of the proposed "Boulder Canyon project," including the Black Canyon Dam, will fit just as well the Glen Canyon-Bridge Canyon project, so in that respect there is no difference between the two.

The all-American canal for the Imperial Valley is an integral part of both plans, and it matters not to the people of the Imperial Valley which plan may be adopted, so far as the all-American canal is concerned.

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It is urged under both plans that the all-American canal should be built and its cost eventually financed and paid for from the power resource, so that no burden shall rest on the local landowners, either now or hereafter, as the result of its construction.

The Glen Canyon-Bridge Canyon project as embodied in the American Colorado River constructive plan, goes further, however, and contemplates that the all-American canal shall be cemented for the entire distance that it parallels the international boundary line, and covered wherever necessary to protect it from shifting sands.

This additional cost should be regarded as a measure for military safety for the Nation and should be financed from the power resource, the same as the cost of construction for the all-American canal as included in the Black Canyon-Boulder Canyon project.

2. Flood protection for Imperial Valley and other communities: The Glen Canyon Dam will provide flood protection for the Imperial Valley, the Palo Verde Valley, the Yuma Valley, and all communities and lands in the entire flood-menaced region of the Colorado River country from Glen Canyon to the international boundary line.

All the waters coming into the river below the Glen Canyon Reservoir from every source could never create a flood below that reservoir that could by any possibility endanger the Imperial Valley.

The Glen Canyon Dam and storage reservoir would furnish complete flood protection from the Colorado River.

The Sentinel Dam on the Gila River should be built as an additional safeguard, solely as a flood-control dam, like the Miami River flood-control dams.

The cost of the Sentinel Dam would not exceed from three to five million dollars, and should be added to the project and its construction cost financed the same as other construction units.

The necessity for flood protection for the Imperial Valley has been the point most vociferously urged by those whose interest in the Black Canyon-Boulder Canyon project is chiefly because it will send the waters to Mexico.

That protection is completely given, without sending the waters to Mexico, by the Glen Canyon Dam and storage reservoir.

3. Regulation of the flow of the Colorado River.

(a) The people of the Imperial Valley want the flow of the river regulated so as to increase the low-water flow for irrigation.

(b) The people of Los Angeles want the low-water flow increased to supply their infilteration canal from which Mulholland proposes to pump the water 1,400 feet over Shaver's summit to Los Angeles for a municipal supply.

(c) The people of Los Angeles want the flow of the river regulated and standardized throughout the year so it may be used for hydro-electric power development.

For all three of these purposes the flow of the river will be regulated just as well, and, in fact, far better, by building the Glen Canyon Dam as by building the Black Canyon Dam.

For increased irrigation supplies in the low-water season, for a municipal supply for Los Angeles, and for power development, the Glen Canyon Dam will serve just as well, and it has many advantages even for those three purposes over the Black Canyon Dam.

The Black Canyon Dam is referred to by its proponents as creating a storage reservoir with a capacity of 26,000,000 acre-feet.

This is a delusion.

The Black Canyon Dam will hold behind the dam 26,000,000 acre-feet but 10,500,000 acre-feet of that reservoir capacity is "dead

storage." Once filled, it will never again be emptied. If that space were filled with silt, it would serve every useful purpose just as well. The available storage is only 15,500,000 acre-feet.

The Glen Canyon Dam can be built to a height that will create available storage of 26,000,000 acre-feet for less money than the Black Canyon Dam can be built to provide only 15,500,000 acre-feet of available storage.

And even though the Glen Canyon Dam were only built to a height sufficient to hold 8,000,000 acre-feet, as suggested in the La Rue report, Water Supply Paper 556, it would provide all three of the requirements above specified: (a) Increased water for irrigation in the low-water season; (b) the increased flow necessary to provide the 1,000,000 acre-feet annually to be diverted into the Mulholland-Los Angeles-Colorado River aqueduct system; (c) hydroelectric power development for Los Angeles.

4. Hydroelectric power for Los Angeles: The most insistent influence behind the Black Canyon-Boulder Canyon project has been the municipal power bureau of the city of Los Angeles. They have spent huge sums conducting a local campaign in behalf of it, subsidized the Boulder Dam Association, and spent a large amount in newspaper advertisements of the project in the Los Angeles newspapers.

The Boulder Canyon Dam originally advocated, has been abandoned because of the great depth to bedrock making it impracticable to build a dam at Boulder Canyon.

The Black Canyon Dam is now advocated as a substitute for the Boulder Canyon Dam.

The objections to the Black Canyon Dam hereinbefore set forth furnish a much weightier reason for abandoning the Black Canyon Dam and the whole "Boulder Canyon project" and substituting for it the Glen Canyon storage dam and the Bridge Canyon diversion dam.

There is nothing that the Black Canyon Dam can provide for Los Angeles in the way of power development that can not be provided better by the Glen Canyon-Bridge Canyon project.

The Black Canyon Dam sends 8,000,000 acre-feet of water to Mexico and the Glen Canyon-Bridge Canyon project does not send that water to Mexico.

Los Angeles has filed on the Parker site for a power dam which their application states will develop 100,000 horsepower.

The Glen Canyon Dam will regulate the flow of the river so as to make the immediate utilization of this Parker power plant by the city of Los Angeles practicable.

This site will supply Los Angeles with all immediate needs for power. If Los Angeles wishes to build the Parker Dam and power plant, well and good. It is entirely within the resources of the city.

If Los Angeles wishes to have this Parker Dam and power plant made one unit of the Glen Canyon-Bridge Canyon project, well and good. In either way it provides Los Angeles with power for immediate use while the larger units of the system are being built.

No California interest need have any anxiety about whether or not the Arizona-California transmission canal from Bridge Canyon to the Needles is or is not practicable, or whether the waters of the Colorado River can be taken from Bridge Canyon to southern California by gravity.

If California does not want the 1,750,000 acre-feet of water required for the irrigation of 1,000,000 acres of the coast basin, and does not want the Los Angeles municipal supply to be taken to Los Angeles by

gravity instead of pumping it 1,400 feet forever, it is not necessary to force it upon her.

All the water California does not use can and will be used in Arizona, and that will prevent it from going to Mexico.

The Bridge Canyon Dam being built, the drop is so much greater at Bridge Canyon than at Black Canyon that half the regulated flow of the river at Bridge Canyon will develop more power than all the flow at Black Canyon.

If California should take only the 4,000,000 acre-feet required for the irrigation of the lands in that State in the Colorado River Basin, and the additional 1,000,000 acre-feet required for the Mulholland aqueduct pumping scheme, making 5,000,000 acre-feet in all, that water, supplemented by the Arizona water to be used on low river-level lands, falling over the Bridge Canyon Dam and producing power there, and again falling over the Parker Dam and developing more power there, would generate as much power as would be developed at Black Canyon.

California would have to go about 50 miles farther than to Black Canyon for the power at Bridge Canyon, but the power at Parker would be nearer to Los Angeles than at Black Canyon.

And California would get just as much power without additional cost.

5. Taking the whole project into consideration: (1) The cost of the all-American canal for the Imperial Valley would be the same under either project. If the cost were increased to cover cementing the canal and covering it where necessary, that additional cost would be advanced by the National Government and repaid out of the revenues from the power resource.

(2) The Glen Canyon Dam for flood prevention and protection and for river regulation would cost no more than the Black Canyon Dam and would develop at the Glen Canyon Dam 334,000 horsepower, enough to finance the cost of the dam. That power would be immediately needed and used in Arizona, Utah, Colorado, and New Mexico.

(3) The cost of the Parker Dam and also of the Sentinel Flood Control Dam could be added to that of the Glen Canyon Dam, and the cost would still be less than the Black Canyon Dam if built to provide the same storage capacity.

When the situation is thus analyzed it becomes manifest that if the Mexican scheme is eliminated every other interest in the United States of America can be provided with every benefit sought from the Colorado River, without any additional cost, under the Glen Canyon-Bridge Canyon project.

6. The financing of the Bridge Canyon Dam: No matter which of the alternative systems may be adopted for the use of water from the Colorado River in California, that State can be supplied with as much power from the Bridge Canyon system as from the Black Canyon system and at no greater cost.

The power developed by the building of the Bridge Canyon Dam will entirely finance the cost of the dam, and the power developed from the Arizona high-line canal will finance the construction of that canal, just as it financed the Roosevelt Dam and the Salt River reclamation project and is now expected to finance the all-American canal.

The entire development of primary power at the Black Canyon Dam will be only 550,000 horsepower. The dam will be 552 feet in height, but the static head for power development will be only 417 feet.

At the Bridge Canyon site, if the dam were built to a height of 566 feet, as suggested on page 75 of the La Rue report, U. S. G. S. Water Supply Paper 556, the power development would be 1,015,000 primary horsepower.

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If the dam were built to its full height of 800 feet, the static head being 785 feet, as stated on page 77 of the La Rue report, the development of primary power would be 1,280,000 horsepower.

Note here again that one-third of the water required to develop 550,000 horsepower at Black Canyon would develop over 400,000 horsepower at Bridge Canyon, and one-half of the water would develop 640,000 horsepower.

This gives an idea of the power that would be developed at Bridge Canyon with the California water if it were dropped over the dam at Bridge Canyon and power developed with it there and all the water for Arizona taken out into the Arizona high-line canal at Bridge Canyon Dam.

If 60 per cent of the water were taken out at Bridge Canyon for Arizona, it would develop 660,000 horsepower from the drops in the Arizona canal.

Any way it may be figured, there is over 600,000 horsepower available to finance the cost of the Bridge Canyon Dam and more than another 600,000 available to finance the cost of the Arizona high-line canal.

If California does not participate in the benefits of the transmission canal from Bridge Canyon to the Needles, more power can be developed for California under the Glen Canyon-Bridge Canyon project, at the Bridge Canyon Dam, and at less comparative cost than can be developed at the Black Canyon Dam, because of the large share of the cost of the Bridge Canyon Dam that would be allocated to the Arizona high-line canal.

Why, then, must the Black Canyon-Boulder Canyon project be built instead of the Glen Canyon-Bridge Canyon project, and why do its promoters cling with such desperate tenacity to the Black Canyon Dam if it is not because it gives the water to Mexico?

Under the Glen Canyon-Bridge Canyon project (1) the Imperial Valley gets the all-American canal; (2) the Imperial Valley gets complete flood protection; (3) the Imperial Valley gets increased irrigation water; (4) the city of Los Angeles gets more hydroelectric power; (5) the city of Los Angeles gets 1,000,000 acre-feet for its Colorado River municipal aqueduct; and, in addition to all this, (6) southern California gets by gravity water to adequately irrigate 1,000,000 acres; (7) Arizona gets 3,000,000 acres reclaimed that will remain a desert forever if the Black Canyon Dam is built.

Respectfully submitted.

GEORGE H. MAXWELL.

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