

Mr. BURTON of Utah. I think you mentioned in your statement, as I recall, Mr. Secretary, 1985 as the target date—

Mr. DOMINY. Yes, we testified earlier, Mr. Burton, that even under full development of the upper basin and even under a more advanced schedule of development for the upper basin than we think possible, the central Arizona project is still a viable undertaking. If the water supply decreases at an earlier date it might be necessary to increase the municipal-industrial water rate somewhat in order to pay out on schedule. But the project would still have a favorable benefit-cost ratio and be justified.

Mr. BURTON of Utah. In your judgment, Mr. Commissioner, this would not be prejudicial to the interests of central Utah, is that right?

Mr. DOMINY. No, sir; I do not think it would be.

Mr. BURTON of Utah. I would like to ask you, Mr. Secretary, or the Commissioner, what the building of this steam-generating plant to finance central Arizona means in terms of the Kaiparowits development we have been talking about for a long time?

Secretary UDALL. Congressman, the WEST group has identified three major areas that have excellent coal deposits that are susceptible of development for these very large plants that they hope to build for the whole Southwest and mountain region, because Colorado and Utah electric power companies are in the WEST organization as well. These are the deposits in the four corners area, the Black Mesa deposits on the Navajo and Hopi Reservations, and the Kaiparowits in southern Utah. There are coal reserves that have been already developed in Colorado and some very fine reserves in Utah, but I am talking about the ones along the river.

Mr. BURTON of Utah. Kaiparowits fits that description, "along the river."

Secretary UDALL. Yes, it does, indeed. As matters now stand, I think for some logical reasons, development began first in the four corners area. We have already put together the Mohave plant in Nevada, where coal will be slurried in. Due to the lack of water, which is the key—you cannot develop this coal without water—the Page plant will be the only other large plant using this Indian coal, as we just do not have enough water to accommodate others. The Kaiparowits coal, which is in Utah and near Lake Powell, is the third major source.

I have corresponded at length with your Governor and others on this. There has never been a problem of developing one or the other, it has merely been a question of which comes first. Powerloads are growing so rapidly that in any event, whether or not Page moves ahead of the first Kaiparowits plant—there would be more than one or two—we are only talking about a difference of 2 or 3 years. I want to make it plain to the Congressman that I do not regard these plants as competing with one another. They are competing only in the sense of which comes first. Since Peabody probably is going to begin stripping and developing the Navaho coal this year, it is logical in order to achieve economies to build both of the plants that will use this Navajo-Hopi coal at one time. Therefore, the judgment was not my judgment. The judgment of the WEST group, those who need the power, was that the Page plant in sequence ought to come before the

first Kaiparowits plant. We are going to get to the Kaiparowits development and I expect it to move forward right on schedule.

Mr. BURTON of Utah. I thank you, Mr. Secretary. That is a most reassuring comment.

And your comment is that it is not a case of one against the other. Secretary UDALL. Exactly.

Mr. BURTON of Utah. My people have a feeling that if development takes place in the Kaiparowits coal, the Indian deal is out completely. I have never been satisfied myself that that is necessarily the case. I think each one is a different project and can stand on its own merits.

Secretary UDALL. My understanding of it, and I think we ought to make the record perfectly clear here, is that the Kaiparowits coal deposits are large, they are of good quality. They are also near the water, and the WEST group, the planners that I have talked with, are very enthusiastic about this. I expect to see this moved in the next phase. If we can put it together, it will certainly be a very fine project.

Mr. BURTON of Utah. I would like to ask you, is this steam-generating power that is proposed at Page really competitive with the hydropower that might have been produced in Hualapai? What is the economic relationship between the two?

Secretary UDALL. A thermal unit produces base load power. The big modern machines operate full time and generate enormous quantities of base load power, as contrasted to hydropower, which is more useful for peaking. The two are different types of electric power and it is hard to compare them. They are both needed and they both have usefulness.

It is safe to say, however, that the 3-mill figure we gave you for irrigation pumping, will depend on the power produced by these very large new thermal units. This has been one of the major developments in the electric power industry in the last few years.

Mr. BURTON of Utah. You are saying, then, for the record, Mr. Secretary, that the thermal power at Page would be relatively competitive with possible hydropower at Hualapai?

Secretary UDALL. Yes, indeed. It is more suited to project pumping needs.

Mr. BURTON of Utah. There is another point I had here, Mr. Secretary.

One of the problems we have had on the river, you know better than anyone else, are the squatters that are there, people who are drawing water out when they have no right to do so.

What is the Bureau doing about that, or what do you intend to do about that?

Secretary UDALL. You mean the Lower Colorado?

Mr. BURTON of Utah. Yes, sir.

Secretary UDALL. Well, this is a problem that I inherited as Secretary and was very familiar with as Congressman from this area. We moved on it 7 years ago when I first became Secretary. I have taken a little pride in this because in recognition of the reclamation, fish and wildlife, recreation and other interests, we set up a Lower Colorado River land use office in Yuma. We developed, working with the counties and with the States, a master plan that is unique for this whole flood plain, with attention to recreation, fish and wildlife, and other things.

We entered into an agreement with almost all of the squatters, some of whom had right of equity, and we heard from both Congressman Udall and Congressman Tunney with regard to those rights rather strenuously. We are in the process of phasing this action out and I think it is working very well.

I think we came out with a solution that is going to work for the long run.

In fact, this land use plan, if you have not seen it, is, I think, a very exciting one, because the lands involved are of increasingly great value to the people for outdoor recreation and other purposes.

I think I can say to you that in a matter of 2 or 3 years that we will have the problem largely resolved.

Mr. BURTON of Utah. Well, that is reassuring to know that you are now in the process of phasing out this problem, because we in the upper basin feel sometimes that we have been supplying this water to people above and far beyond their entitlement or legal right to it.

Another question, Mr. Secretary: Will the passage of your proposal—that is, the steam generating plant to finance central Arizona, necessarily preclude sometime in the future the Hualapai Indians losing out their damsite or building their own dam?

I offer for your attention the fact that I am sure all the other members of this committee as well as myself have received letters from attorneys representing them, indicating that they hope that their rights to the future development would not be impaired by anything we might do here.

Secretary UDALL. Congressman, I think we ought to be quite candid on that point. What has been proposed and what the Senate bill did and what I hope the House does is to reserve the decision on the Hualapai Dam to the Congress. Hualapai Indians do not own the damsite. Their land borders on one side of the river only. I do not think that the Federal Power Commission ought to make the decision on this. I think the Congress of the United States ought to make the decision on it. I think the Congress ought to reserve in this legislation the right to make that decision, because the Hualapais are just like some of the other Indian tribes, where they find themselves on one side of the river but they do not own the damsite. Let's be honest about that.

Mr. SAYLOR. Will the gentleman yield?

Mr. BURTON of Utah. I will be happy to yield in just a second, because it seems to me in H.R. 3300, we have appropriated money to buy the damsite for them, to the tune of \$23 million.

Secretary UDALL. In the previous legislation, there was money to pay damsite value. Now, the lawyers have always said that there is no such value. However, with the approval of this committee, and I think we did the right thing, we paid powersite value to the Crow Indians in Montana in the Yellowtail project. It was proposed to treat the Hualapais the same way in respect to the proposed Hualapai Dam as if they owned a site value.

Mr. BURTON of Utah. I thought with this appropriation we were conceding the fact that they own the damsite.

Secretary UDALL. No, they own land that would be flooded.

Mr. BURTON of Utah. I yield to Mr. Saylor.

Mr. SAYLOR. I call the attention of my colleagues on the committee to an article that just appeared in this month's issue of Venture maga-

zine by the Secretary after he had taken this trip down the Colorado River.

Mr. Secretary, I want to commend you for that article.

Secretary UDALL. Well, you know, we all have our own views. There is no substitute, I have found, for seeing something on the ground. My real feeling, as I tried to say at the end, is that if this hydropower is needed, and I think this is where it stands or falls, you ought to have a high dam. You ought to develop the full potential.

On the other hand, if the needs of the country, in the view of the Congress at some time in the future, are that balancing that need, whatever it might be at some future time, against the other values that are present, if the decision is to preserve it, why, then, you can decide it at that time.

But I do strongly feel, as I did when I got through with the trip, that the Congress ought to reserve to itself the right to make this decision and not let it be made by the Federal Power Commission.

Mr. SAYLOR. I want to say, Mr. Secretary, I am delighted you took that trip. I am delighted you relied on your own experience rather than pictures that Mr. Dominy takes.

Mr. HOSMER. Will the gentleman yield?

Mr. BURTON of Utah. I will just recapture the balance of my time to say I think Mr. Dominy takes some darned good pictures. What is more, I intend to send the gentleman from Pennsylvania a copy of an article I wrote following my trip down the river.

I yield to the gentleman from California.

Mr. HOSMER. I would just like to ask the Secretary in terms of modern history, what number were you as a visitor to this area? Number 600 or something?

Secretary UDALL. You mean to go down the river? I don't know. There is a lot of traffic on the river. It is a great trip. You ought to take it.

Mr. HOSMER. I think in all of recorded history, there are less than 2,000 that have ever seen that area.

Secretary UDALL. There are about 2,000 now that take the trip each year.

Mr. HOSMER. Since this legislation came up. It will drop off afterward, I am sure.

Secretary UDALL. I would predict that we are going to have a problem of rationing those trips. You can only accommodate so many people. I am sure the Congressmen that went on the trip would agree. There are only so many camping places. It is a fine trip and there will be 2,000 or 3,000 people every summer who take the trip. I think it is one of the greatest outdoor trips in the Nation, no question about it.

Mr. HOSMER. Was it not you, Mr. Secretary, who pointed out that recreation space was becoming scarce in this country, particularly in the West, that population was increasing and one of the best ways to provide for the most people was to create some lakes on which they could recreate?

Secretary UDALL. Quite frankly, there is no question at all but that fresh water lakes can provide for more use by more people than almost any other recreation facility.

One of the other thoughts I came back with after my trip was a greater appreciation of Lake Powell as a resource. I think if you were

to have a great fresh water lake in that region, Lake Powell is the place to have it, because it has such an enormous shoreline, it has so many points of access. This is one of the things that was very clear to me in making the trip.

Mr. HOSMER. Thank you.

Mr. BURTON of Utah. Mr. Secretary, I would like to say for the record and for the benefit of my colleagues that I have been a pretty good soldier on this central Arizona. When we charged up the Hill when the Department recommended Marble Canyon, I was there in such diverse company as Barry Goldwater and Morris K. Udall. When they dropped Marble Canyon and decided to go for Hualapai, I was in the middle of the canyon, at 15°, with my colleague from Arizona invoking various whammies for rain.

Secretary UDALL. Trying to walk on the water.

Mr. BURTON of Utah. Yes. As a matter of fact, Mr. Secretary, your brother did try to walk on the water and he was unsuccessful. One of my colleagues from the committee suggested that next time he determine if he can walk on the water with "acre-feet."

I assure you that I am trying to learn my proper place in the ranks now that we march toward steam generation. It is nice to be relieved of the withering volleys that are fired from John Saylor and Dave Brower in trying to build a dam.

Now, I sat up Monday and drew up pages and pages of questions that I had intended to ask you, Mr. Secretary; but after you sit through 4 days of hearings and have to follow Wayne Aspinall and John Saylor and Craig Hosmer, there is not a heck of a lot more to be asked.

So, Mr. Chairman, I want to wish the Secretary a happy birthday, last Wednesday, and reserve the balance of my time.

Mr. JOHNSON. The gentleman from Nevada?

Mr. BARING. No questions.

Mr. JOHNSON. The gentleman from Washington, Mr. Foley.

Mr. FOLEY. Mr. Secretary, as my friend from Utah has pointed out, there have been a good many changes over the months and years in which this subject has been discussed. I believe you said that recently, the decisions regarding the dams in the Colorado represented an application of commonsense. I would like to discuss another question that I think involves an element of commonsense, and that is the question of augmentation of the Colorado River.

Would you please relate again the requirements in terms of acre-feet which must be augmented to the Colorado River if the effect of the central Arizona development is to be restored from the standpoint of water?

Secretary UDALL. We are talking about a range of a two to two and a half million acre-feet as the amount of augmentation water that would make the river whole, as it were. We have the Mexican Treaty burden, which was added in 1944, and which is a paramount responsibility of the river and of the whole basin. Based on the present hydrologic record, the river ultimately will be short in the neighborhood of something like 2 million acre-feet if the lower basin States are to receive 7.5 million acre-feet annually for consumptive use.

Mr. FOLEY. In terms of the central Arizona project only?

Secretary UDALL. In terms of the total.

Mr. FOLEY. You are not including in there the effect of mixing the water?

Secretary UDALL. I am including everything. I am including full development in the upper basin, the central Arizona, and full use of California's entitlement. In other words, I am assuming full development and use of the river.

Mr. WYATT. Mr. Chairman, will the gentleman yield?

Mr. FOLEY. Yes.

Mr. WYATT. With the indulgence of my colleague, I have an engagement I have to keep. I wonder if I might interrupt and presume on the committee to ask a few questions at this time?

Mr. FOLEY. I yield to the gentleman.

Mr. WYATT. Thank you, sir.

Mr. Secretary, I am not as suspicious as my good and beloved friend from Florida that what the Department is really intending to do here is go to the Columbia River for augmentation. But I think for the record, perhaps you might like to comment on that and somewhat dispel the charge.

Secretary UDALL. I thought we made a pretty good record about a year ago and I would say the judgment of the administration has not altered since that time with regard to augmentation.

We are basically committed to the idea that there is time and that there is a national interest in having something like the National Water Commission take a broad look at the Nation's future, at the difficult alternatives, at economics, the kind of broad water look that has not been taken, and that we should prudently look at all of the alternatives, study them thoroughly, and make our judgments in a very deliberate way with regard to what we want to do. That means that at this point certain studies of the kind I have indicated are in order, but decisions are not in order until studies are complete, until we know more about it.

Mr. WYATT. What I am really inquiring about is to confirm that there has been no prejudgment as of this time by the Department on the ultimate need to augment by an interbasin transfer?

Secretary UDALL. I would say that is a very good summary of it and I think the whole tenor of our statement has shown that.

Mr. WYATT. I have a few questions of the Commissioner if I may.

Relative to the reconnaissance report, Commissioner Dominy, I am sure the record is clear on this, but what is the projection for the cost of the desalted water at the oceanside?

Mr. DOMINY. Our reconnaissance studies show, based on the advancement of the science that can be expected to occur in the next 25 years in the judgment of the Atomic Energy people and desalinization experts, that we could produce the water from the ocean at the plant at about 9.8 cents a thousand gallons. That is roughly \$30 an acre-foot.

Mr. WYATT. Approximately \$30 an acre-foot.

Mr. DOMINY. Yes, sir.

Mr. WYATT. What is the cost that you have projected for conveyance for pumping the water from the ocean to Lake Mead?

Mr. DOMINY. This would add about another \$50 to it. The conveyance cost, in other words, would be the greater part of the total cost.

Mr. WYATT. Could you state the \$50 in cents per thousand gallons?

Mr. DOMINY. That would be around 15 to 16 cents a thousand gallons.

Mr. WYATT. So actually, the conveyance cost is the greater cost according to your present feelings on it?

Mr. DOMINY. That is correct. Incidentally, that ought to give quite a little aid and comfort to the Northwest, because the length of that conveyance was only 313 miles. The high point at which we would have to lift the water is only 2,800 feet above sea level.

Mr. WYATT. How does that compare to the distance between the Columbia River below Bonneville Dam to Lake Mead, both in distance and lift?

Mr. DOMINY. That would be about 1,200 miles of conveyance aqueduct, and the high point of the lift is about 5,000 feet.

Mr. WYATT. I assume there would be substantially greater conveyance costs, pumping costs, in any diversions from the Columbia River for the reasons you have indicated.

Mr. DOMINY. Not only because of the extra lengths and heights of pumping, but also because of climate conditions, too. We would have a lot of icing and problems like that coming across the northern mountains that we would not have coming across the southern mountains.

Mr. SAYLOR. Will you yield at that point?

Mr. WYATT. Yes; I will yield.

Mr. SAYLOR. Do not tell me, Mr. Dominy, that you admit on the witness stand that you get ice in the mountains? You sat there before this committee and told us when we discussed the Frying Pan-Arkansas project that you didn't worry about ice, that you were going to freeze it over the top and run it through the bottom. Millennium has come to this committee. I never thought I would hear such honesty on the part of the Commissioner.

Mr. DOMINY. I might say, Mr. Saylor, you have frequently attempted to put words in my mouth and twist them a bit. All I am saying in effect is that it does cost more money to handle icing conditions. It is not impossible to handle them, it is not impractical to solve them, and it is not or will not be on the Frying Pan-Arkansas project. But we are relating here to the differences in cost in conveyance from the ocean on the California coast and the cost of conveying the water from the Columbia River below Bonneville Dam.

Mr. WYATT. Mr. Commissioner, you have projected in your reconnaissance report 9.8 cent oceanside cost of water.

When the Bechtel Corp. made its study of the MWD project in 1965—I am not sure of the year—their feasibility study was in much detail, based upon the present technology, and forecast 21.9 cents oceanside water, if my memory serves me correctly.

I would like to know for the record just what the people who have made the reconnaissance report know, what factors they include that maybe were not known to Bechtel Corp. or were not included by the Bechtel Corp. in determining their water costs oceanside.

Mr. DOMINY. It is their judgment as to the great improvements and technology that can be expected to be achieved in the next 25 years. If we look back on the past 25 years and see what we have done in this field and marvel at the progress that has been made, I do not think it

is difficult to assume that these judgments may be on the conservative side. The achievements that have been made since that first nuclear chain reaction took place just 25 years ago are tremendous.

Mr. WYATT. You are relying on two basic improvements in technology as I understand.

One of them is the fast breeder reactors and the other is basic improvement in the technology of desalting itself, is that correct?

Mr. DOMINY. Yes; it is both the improvement of the atomic reaction, cheapening of the cost of fuel and the application of it to the heat process, as well as the improvement in the materials and processes of desalting. But who would have thought after that first chain reaction in 1942 that 25 years later, half of the new thermal generation capacity being ordered in the United States would be nuclear plants. In just 25 years we have made that kind of progress.

Mr. WYATT. I have just a couple of questions for the Secretary.

Mr. Secretary, I would like to ask whether or not there is a policy of the administration as to the Mexican treaty obligations, whether this is a national obligation or not?

Is there any policy of the administration in this regard at the present time?

Secretary UDALL. The Mexican treaty was entered into, it was ratified by the Senate. It is a primary treaty and as such, it becomes an obligation of the Nation to honor it. Whether one treats it as a national obligation in the sense that seeing that it is fulfilled, seeing that the water is of a sufficiently good quality and so on, are matters that the Congress itself still can decide. We have indicated that if the Congress by legislation wanted to, in effect, make this a national obligation in a thoroughgoing way, beyond the treaty itself, this could be done.

If it is the judgment of the Congress that it is the national interest to so operate this river that serves one of the most arid and one of the fastest growing regions of the country, the administration has simply indicated that it would have no objection to that.

Mr. WYATT. Mr. Secretary, if there is no policy, we should know it. If there is, I think we should know it.

Is there a policy presently of the administration as to whether or not replacement for water that is diverted to Mexico plus water that is lost in transmission, whether or not replacement of that water is a national obligation?

Secretary UDALL. This is what I am implying when I say that if Congress chose to take that view of the river and in effect of replacing this water, it could do so.

I would like to say, too, that I think already, the way we have handled things, the Nation is assuming an obligation with regard to the Mexican Treaty. I will give you one example: The bypass channel that we built to take care of the very salty water out of the Wellton Mohawk Irrigation District. We did not ask the farmers to pay for this; the National Government did it, and I think quite properly so.

Mr. ASPINALL. Will my colleague from Washington yield to me at the present time?

Mr. FOLEY. Yes, I will.

Mr. ASPINALL. Was that charged to the reclamation fund or did that come out of the general Treasury?

Secretary UDALL. From the general Treasury, and I think quite properly.

Mr. WYATT. What you are really saying, as I take it from your testimony, is that this is a question to be determined by the Congress.

Secretary UDALL. Yes.

Mr. WYATT. Mr. Secretary, is there a present policy, and I am talking about February 1968 of the administration as to whether or not Marble Canyon and Hualapai Dams should be part of this legislation we are considering now?

Secretary UDALL. The administration position is that the Marble Canyon area should go into the Grand Canyon National Park and, as I described a moment ago, Congress should reserve to itself the decision on the Hualapai situation.

The Marble Canyon provision, and we have no objection to this, is not in this legislation. It will be handled separately and I think this is a good way to handle it.

Mr. WYATT. And the decision on Hualapai you think should be reserved, which implies it should not be included in this specific legislation.

Secretary UDALL. That is right, let Congress reserve to itself the right to make that decision.

Mr. WYATT. One final question.

Will you state whether or not the administration has a policy position on whether there should be a study of interbasin transfers in connection with this specific legislation we are considering today?

Secretary UDALL. The administration's basic position, and that is the reason for its support of the National Water Commission, is for broad authority for studies of water problems by such a Commission. This has been our basic position all along.

Mr. WYATT. Of the entire United States?

Secretary UDALL. Of the entire United States and of all aspects of water—economics, water rights, the whole broad picture.

Mr. WYATT. Then by implication, I would assume that you would not specifically favor an interbasin transfer study of this specific area in this specific legislation?

Secretary UDALL. We have not proposed this. If the Congress wants to have some studies made and have them fed through the National Water Commission, I think this is a prerogative of the Congress. But this is not what we have proposed. We have proposed that a National Water Commission be the focus and also that the National Water Resources Council and the Federal Government, too, be in the process.

Mr. ASPINALL. Would the gentleman from Washington yield to me?

Mr. FOLEY. Yes, sir.

Mr. ASPINALL. You already have the authority in the Bureau of Reclamation through the Council to do this very thing, do you not?

Secretary UDALL. You are referring to making reconnaissance studies?

Mr. ASPINALL. Yes.

Secretary UDALL. The answer, I am told, is yes.

Mr. ASPINALL. Why, of course you do, and we put it in the National Water Commission authority. So far, this bill, H.R. 3300, is just duplicating what we already have; is that not right? I just want the record clear.

Secretary UDALL. As far as the reconnaissance studies, I would say that there is not necessarily any conflict.

Mr. ASPINALL. That is right.

Mr. WYATT. I have no more questions.

Thank you, Mr. Secretary, and Mr. Foley.

Mr. JOHNSON. We will now return to Congressman Foley, of Washington.

Mr. FOLEY. Mr. Secretary, almost 2 years ago, I think it was Mr. Dominy who testified that there had been a comparative cost study undertaken by the Bureau of Reclamation balancing the estimated costs of desalting as a method of augmentation of the Colorado River with interbasin transfers.

Is that correct?

Mr. DOMINY. No, sir: I testified that there had never been any real reconnaissance study. There had been the United Western study back about 1950, there had been some reviews of possibilities of moving water from the Pacific Northwest including some directed to the Snake River. Now, everybody recognizes that with the potential developments already underway and planned and under construction, if there is any surplus water in the Columbia, it would have to be assumed to be in the very lower reaches of the river. There have not been any real studies on that basis.

Mr. FOLEY. You did not testify that there had been some studies limited to cost comparisons of desalting and more conventional methods?

Mr. DOMINY. Only the kind of study you might make using existing topographical sheets and very broad judgment calculations.

Mr. ASPINALL. Will the gentleman yield?

Mr. FOLEY. Yes.

Mr. ASPINALL. This cost the U.S. taxpayers about \$500,000, if I am correctly informed, and it took place at the headquarters at Salt Lake City. We do not have these studies available to us here. We do not necessarily need a copy of this, Mr. Dominy, as far as the matters before us at the present time. But would it be possible for you to supply the committee with a copy of the report you made at that time? This is not to be inserted in the record, but just to let the committee have it for its deliberations.

Mr. DOMINY. The United Western report has been made available in the past. We will certainly be happy to make a copy available to the committee.

Mr. ASPINALL. We do not have it. The gentleman from Washington is bringing up, I think, a very fine point with regard to the studies which have been made in the past on what is proposed here—not what has been recommended, but what is proposed.

Mr. DOMINY. We certainly will be happy to make available the United Western report. It went nowhere, and just died on the vine. Of course, the cost statements and everything else would be completely unrealistic as of today.

Mr. SAYLOR. Will the gentleman yield to me?

Mr. FOLEY. Yes.

Mr. SAYLOR. I just wanted to say for the defense at least, to the Director of the Bureau of Reclamation, that I have copies of them. Of course, I got a lot of things that a lot of other people did not

because I hounded all of his predecessors to get some of these things. And some of my pipelines told me certain things were available. So they are available, and I think it would be excellent for all members of the committee to have them as we continue with this discussion and just find out what the Bureau has done.

Mr. FOLEY. My recollection is that whatever cost comparison studies were made of desalting and diversion in recent years, they have been inconclusive; that is, without further investigation it was difficult for the Department to say—

Mr. DOMINY. Yes, I recall the discussion you and I had on this point now. I said we had not made any studies that were definitive at all, but just broad horseback estimates. We could not tell definitely unless we had specific engineering studies of a pretty basic nature.

Mr. FOLEY. Has the trend of that judgment changed to favor desalting in recent years?

Mr. DOMINY. For my own part, this reconnaissance study we just made makes it look more and more apparent that the economics of providing augmentation in the Southwest may well lie in desalting when you compare it with importing water as far away as the Columbia River.

Mr. FOLEY. Even your reconnaissance report suggests that the actual estimated costs of desalting the water are roughly half the costs of transporting it where modest lift distances are involved.

Mr. DOMINY. That is correct.

Mr. FOLEY. As I think you answered in reply to Mr. Wyatt's question, the costs of moving water from; for example, the Columbia Basin area would be very substantially larger because of the distance, lift and climatic conditions?

Mr. DOMINY. That is correct, sir.

Mr. FOLEY. Do you have any general estimates on what we are talking about in terms of acre-feet costs?

Mr. DOMINY. On a straight projection basis, if it costs \$50 an acre-foot to transport the water 313 miles over a lift of 2,800 feet, it looks like it could well cost you \$125 to \$150 an acre-foot to transport it 1,200 miles because of the extra length and extra pumping head to move it from the Columbia.

The one thing that would favor the Columbia, perhaps, would be that you might go for a bigger quantity and build a larger size aqueduct and thereby reduce the unit costs.

Mr. FOLEY. That is an interesting subject, because we have been talking here in terms of meeting the needs of the Colorado River based on the effect of authorizing the central Arizona project. I think you know that part of the concern in the Northwest is that diversions would merely be an excuse for moving infinitely larger quantities of water because of the need for enhancing feasibility.

Mr. DOMINY. To go back to your exchange with the Secretary just a moment ago, all of us who are dealing with this problem and who are making estimates of the depletions and losses and salvageable percentage of the losses are all in agreement that somewhere between 2 and 2.5 million acre-feet augmentation is necessary if we are going to assure the Lower Basin States the consumptive use of 7.5 million acre-feet annually. Anything beyond that would provide water for future growth.

Mr. FOLEY. But amounts above that would not be required to make the Colorado River whole?

Mr. DOMINY. That is right, we would say 2.5 million acre-feet maximum.

Mr. FOLEY. They would be required in order to justify a movement from the Columbia River westward in any kind of feasibility arrangement?

Mr. DOMINY. That is right. The theory I would endorse is that if there is to be an aqueduct from the Columbia River, it would have to be much larger in size to justify what the gentleman suggests.

Mr. HOSMER. Will the gentleman yield?

Mr. FOLEY. Yes.

Mr. HOSMER. Is it not a fact, Mr. Commissioner, that nobody has any idea within reasonable accuracy what in the world it would cost to transport how much water from any place in the West to the Colorado system, from any place in northern California to the Colorado system; that nobody has any hard figures on desalting or any other proposed method of augmentation; and that the purpose of the clauses in this legislation to get in some studies is to give the answers that you are trying to give this morning,

Mr. DOMINY. I am not trying to give definitive answers as to costs. I am giving some judgments which I am confident are realistic.

Mr. HOSMER. Then is it just an idiotic effort to have some studies for the purpose of getting these answers, when you apparently have them.

Mr. DOMINY. No, sir; I have no specific answers as to costs.

Mr. HOSMER. If you do not have them, why don't you tell the gentleman from Washington that you don't have them? You are just making a lot of guesses.

Mr. DOMINY. I merely said it is quite obvious that you can build a conveyance channel for a large quantity of water cheaper per acre-foot than you can build a conveyance for a small quantity of water.

Mr. HOSMER. I would say on construction costs, everybody knows that.

Mr. DOMINY. I have no specific cost estimates.

Mr. HOSMER. Don't you think when these studies are turned out, when they do take in all these alternatives, they will find anything from the Northwest is equally prohibitive, that nobody would consider trying to go that route?

Mr. DOMINY. I think that is right, sir.

Mr. FOLEY. Is it not a fact, Mr. Commissioner, that there is really not much of an impression in your Department that it is economic to move water from the Columbia Basin southwest compared to other available alternatives?

Mr. DOMINY. We have no final judgment and, of course, the quantities involved would play an important part in it.

Mr. FOLEY. If you had to make a present estimate based on the amounts required to make the Colorado River whole, would you judge that transmission of water or diversion of water from the Pacific Northwest is more expensive than any of the other proposals, assuming that they work out as projected?

Mr. DOMINY. Assuming conveyance limited to 2.5 million acre-feet, yes; I would say the cheapest source is in the Southwest rather than to go as far as the Columbia River.

Mr. FOLEY. Actually, in terms of precise answers, you have been able to estimate today down to a tenth of a cent in the reconnaissance study—not a feasibility study—the oceanside cost of desalting. It is not asking too much, then, to get your judgments in these areas without a reconnaissance study; is it?

Mr. DOMINY. I think in the terms of the generalities you and I are discussing, these are within practical limits.

Mr. FOLEY. As the chairman pointed out, there is no limitation on the Department conducting reconnaissance studies.

Mr. DOMINY. That is correct.

Mr. FOLEY. And if reconnaissance studies give you within a 10 percentile accuracy, that ought to be enough in terms of costs?

Mr. DOMINY. Yes.

Mr. FOLEY. Actually, what we are talking about, Mr. Commissioner, in terms of augmentation is not just the availability of quantities of water of such quality. But the critical question is really cost, is it not, when you are talking about augmenting water to the Colorado River?

Mr. DOMINY. Yes; certainly augmentation has to be within the realm of favorable benefit-cost ratio and where pertinent, within the realm of the ability of the users to take it, use it, and pay for it.

Mr. FOLEY. Are there not a number of technologies now that would provide augmentation if attempted?

Mr. DOMINY. Well, the only two that of course—

Mr. FOLEY. Based on projected time needs involved.

Mr. DOMINY (continuing). The only two that we know of at the moment would be the desalinization and of course our continued weather modification with which we hope to add additional snow in the mountains of the drainage system.

Your colleague from California, Congressman Hosmer, mentioned the possibilities of underground atomic explosion to create additional ground water sources. This is the third one that certainly can be looked into.

Mr. FOLEY. With all these available and promising means of augmentation, is not the real question which is the cheapest?

Mr. DOMINY. I think this is true. Of course, we cannot overlook the fact that the future growth needs of the Pacific Southwest would require more than just augmenting the river to the tune of 2.5 million acre-feet.

Mr. FOLEY. But our present focus here is on augmentation, not on responding to the future needs of the Southwest.

Mr. DOMINY. That is right.

Mr. FOLEY. In that context, it is your opinion, is it not, that if we were looking to costs, we would have to place diversions from the Pacific Northwest as the most expensive of the current suggested means of augmentation?

Mr. DOMINY. When you are thinking in terms of 2.5 million acre-feet; I think this is correct.

Mr. FOLEY. Turning for a moment to weather modification, do I understand that the Department continues to be encouraged by studies of the potential of weather modification as a means of augmenting water supply?

Secretary UDALL. As we have indicated all along, we think we have a very fine research program going. If we continue to get the money needed to scale it up and to get all the answers, it is our anticipation

that by 1975 or soon thereafter, we should be ready for large-scale applications. We should know how to do this, how to control it, and how to get the results desired. We think it is promising.

Mr. FOLEY. Do you estimate that by the mid-1970's you think you will have some basis for actual pilot programs?

Secretary UDALL. Yes, something on the order of 7, 8, 10 years, in that range. We should be at a point then where we could be ready, if the Congress desires, to go into large-scale effort.

Mr. FOLEY. If you are correct in this estimate, it would be well within the time limits which you have fixed for some action with respect to augmentation of the Colorado?

Secretary UDALL. Yes, as I indicated yesterday.

Mr. FOLEY. I believe on page 23 of your statement, you indicate the expected unit cost of producing about 1,900,000 acre-feet additional water in the Colorado by weather modification as about \$1.50 an acre-foot.

Secretary UDALL. This is far and away the cheapest method if we can make it work.

Mr. FOLEY. Spectacularly so, is it not?

Secretary UDALL. Spectacularly so, yes, indeed.

Mr. FOLEY. In fact, that would be far beneath the annual costs of even partial diversionary systems; is that not correct?

Secretary UDALL. Yes.

Mr. ASPINALL. Would the gentleman from Washington yield to me?

Mr. FOLEY. Yes.

Mr. ASPINALL. Do I understand that, at the present time, the Department is going out on a limb to the extent that they think their studies might yield a million and a half acre-feet of water by weather modification? Are you willing to go that far?

Secretary UDALL. Mr. Secretary, I pressed Dr. Kahan and the Bureau of Reclamation people very closely on this and they are conservative. They are deliberately conservative. What they say is that on a given watershed they feel they can increase water yield by 10 to 20 percent. These are the limits they give you, somewhere between 10 and 20 percent.

If application is to be made on most of the watershed, then the increased yield is figured on that basis. If it is made only on part of the watershed, the yield is reduced accordingly. They predict 10- to 20-percent increase over the area of application. That is the best I have been able to get out of them.

Mr. ASPINALL. I think they are right, but when you are thinking of that in terms of a basin with limits as large as the Colorado River Basin, you have to think in terms of taking from one part of that basin in order to deposit in another part of the basin. You may be having a diversion and I want to be sure what your present thinking is.

Secretary UDALL. Mr. Chairman, I think we all ought to understand that weather modification which would take water from one region and give it to another will not work. This is not what we are talking about. We are talking about operations on a particular watershed and really not so much rainmaking as snowmaking—in effect, having a heavy winter every year and actually increasing the runoff without decreasing the moisture that others receive. Otherwise we would have a problem we just can't solve.

Mr. ASPINALL. Yes, but you are still in projected scientific operations when you talk about releasing moisture that is in the atmosphere. There is just so much moisture in the atmosphere. It is limited. I think your scientists agree on that.

I am for expanding our knowledge; do not get me wrong, but I want you to be practical. I do not want the record to show that, at the present time, you folks are going out on a limb by suggesting that there could be 1,500,000 acre-feet of water in there by way of modification. I hope that it can prove to be right, because this then could resolve many of our present problems—at least up to the year 2020.

Secretary UDALL. Mr. Chairman, I would like to confine it, because the scientists that are working on this program are conservative and we ask them to be conservative. Rather than quoting a figure, I think we ought to say, as they say to me, 10 to 20 percent increase. I think we just ought to let it go at that, because I do not want to let it go beyond our scientists because I think they are very fine scientists. The methods they hope to use will only augment rainfall or snowfall and not take moisture or rainfall or snowfall away from other basins in other regions. That just will not wash and we all know it.

Mr. FOLEY. Mr. Secretary, let's take a 100-percent factor and assume the cost would be \$3. I am willing to go 100 percent. Even that is substantially below the annual O. & M. cost for any kind of system to divert water by service. I am not talking about construction costs. I am just talking about the annual O. & M. Operation and maintenance costs for any kind of diverted service are twice as much as your scientists give you which you say are conservative.

Secretary UDALL. That is right.

Mr. FOLEY. Is there any reputable scientific opinion that disputes your advice in the Department?

Secretary UDALL. Not to my knowledge.

Mr. FOLEY. Is not this a matter in which the taxpayers should be rightfully interested in terms of the immense costs that are involved in augmentation schemes?

Secretary UDALL. Congressman, I think the whole country, the whole world, is interested in this. If we come up with scientific answers to augment water, this will apply not only to the Colorado Basin but to the whole world. It can be enormously useful. I think this is a program of worldwide significance. We have to perfect it. We have to know what we are doing. We have to know how to control it. But it is real good news. The thing that people always decide to do if they are prudent is to do the cheapest thing, the most effective thing.

Mr. FOLEY. That is a point that I am glad you made, Mr. Secretary, because when we are talking about economy, we are really talking about efficiency, are we not?

Secretary UDALL. That is right.

Mr. FOLEY. We are talking about the application of rational, scientific means to a practical problem.

Secretary UDALL. Quite frankly, this is my own hope. As I have confessed to the committee, I was originally skeptical about the National Water Commission. If it does its job right just as the Outdoor Recreation Commission did and the Public Land Law Review Commission, it would bring to bear very good minds and very good studies and I think we will know more about real parameters and real prior-

ities and economics and so on when we get through. Then we can make the big decisions right in this room.

Mr. FOLEY. These two methods, desalting and weather modification, are the wave of the future, are they not, in the scientific application of producing additional water.

Secretary UDALL. As far as water is concerned, these are the two most hopeful things, yes.

Mr. FOLEY. Compared to that, the idea of moving water by means of aqueducts and tunnels was not new in the time of Caligula, is that not true?

Secretary UDALL. I would say this is true.

Mr. FOLEY. We are talking about Roman methods now.

Secretary UDALL. Romans, yes.

Mr. FOLEY. I would certainly not want this committee to be cast in the role of being unscientific or unprogressive or backward in its approach to these problems.

I want to go back, Mr. Commissioner, if I may, to your estimated cost of conveying $2\frac{1}{2}$ million acre-feet of water from the Pacific Northwest. Is it your testimony on the record that this can be accomplished for \$150 an acre-foot?

Mr. DOMINY. No, sir; I merely said an aqueduct, to carry the same quantities of water from the Pacific Northwest as from the coast of California, based on our reconnaissance studies, would cost two or three times more than an aqueduct from the coast because of the length of the conveyance involved.

Mr. FOLEY. At a minimum; is that not true?

Mr. DOMINY. That is correct.

Mr. FOLEY. At a maximum, it would be many times that much.

Mr. DOMINY. And I also said that in my judgment, if you go to the Columbia, you would have to have a much larger aqueduct in order to reduce the cost per acre-foot.

Mr. SAYLOR. Mr. Commissioner, you were accused yesterday of science fiction in your report and since the gentleman from California is so much interested in things around Los Angeles, I would suggest that you consider looking at the present aqueduct that takes water from the Colorado and goes down to the District of Los Angeles and see whether or not you cannot put it on a seesaw so that one time, you can take water out of the Colorado River and have it flow north to Los Angeles and then, when you are diverting water out of the Pacific Northwest, tilt it to the other way and have it flow down into the Colorado. If we are going to get into science fiction, we might as well carrying things to its ultimate. You will probably find it is a great deal cheaper to do that than to build a whole new set of aqueducts running parallel to the ones already there now.

Mr. HOSMER. Will the gentleman yield?

Mr. FOLEY. I yield to the gentleman.

Mr. HOSMER. As long as we are having suggestions of that nature, I wonder if the Secretary would like a small appropriation for whips so he can beat his scientists into faster progress on these tilting aqueduct and weather modification and application of these other things we are talking about.

Secretary UDALL. I need money, not whips.

Mr. FOLEY. As a matter of fact, Mr. Secretary, at the risk of belaboring the point, you have made fantastic progress, as the Commissioner has pointed out, in the last decade in both the weather modification and desalting fields, have you not?

Secretary UDALL. It is less than the last decade.

Mr. FOLEY. The last 5 years?

Secretary UDALL. Yes; I was going to say the changes in the last 7 years since I have been Secretary have been quite marked. We began the weather modification in 1961. We had none prior to that time. Congress initiated this thing and pushed it on us in a sense. I am glad they did.

As far as desalting is concerned, it kind of amazes me that we are getting ready to build the Bolsa Island plant. We weren't thinking this big at all in 1961.

Mr. FOLEY. As I recall, there was a man in the Department, whose name I will conveniently not remember, who said he did not believe in his lifetime the cost of desalted water would go for less than \$2 a thousand. That is not too many years ago.

Well, on the basis of what you and the Commissioner have said, is it not also a matter of common sense that this committee and the Congress should give a reasonable opportunity for a general study of these problems by the National Water Commission before attempting to make any firm judgment on means of augmentation for the Colorado?

Secretary UDALL. That has been our basic position.

Mr. FOLEY. And your position would be that this committee and the Congress should remain neutral on the various alternatives which might be eventually be chosen to accomplish this end?

Secretary UDALL. I think we all ought to keep an open mind, but we ought not to just sit and do nothing. I think we should be studying the alternatives, keeping a close eye on weather modification, desalting, and looking at the economics of these other things and at the long-term needs.

I think the more our water planning is geared to the long term, the more we exercise foresight, the better. The one reason that southern California has grown the way it has, in my judgment, is that it had a few people there who had foresight and established the Metropolitan Water District. It was really one of the great decisions of the West. They thought big and planned big and so on. This is the truth.

Mr. FOLEY. Well, Mr. Secretary, is there any provision of existing law which prevents you from doing the kind of studies that you are alluding to on any of these things?

Secretary UDALL. No; I think the answer is "No."

Mr. TUNNEY. Would you yield, Mr. Foley?

Mr. FOLEY. Yes.

Mr. TUNNEY. Just one observation.

That is that if Mr. Foley and Commissioner Dominy are convinced that the Columbia River is going to be the most costly and therefore the least likely source of augmentation, I cannot understand why they object too much to studying all alternatives.

Mr. FOLEY. We do not object to studying them. If the gentleman will recall, the Pacific Northwest members on this body supported actively the National Water Commission legislation, which specifically authorizes the Commission to study interbasin transfer. The Secre-

tary will, I think, concur in that. The legislation even spells out inter-basin transfers as an area to be studied. We were all for it, it is in the record.

I introduced the bill myself.

There is nothing that prevents the Department, as the chairman pointed out, from presently studying interbasin studies on a reconnaissance study, the same thing that has been done in desalting. It is not a question of study, it is a question of whether this Committee should obviously indicate preference for one means of augmentation over another when the studies have not been done and when the information is not in existence.

Thank you, Mr. Secretary.

Mr. Chairman, I reserve the balance of my time.

Mr. JOHNSON. The gentleman from Kansas, Mr. Skubitz.

Mr. SKUBITZ. I have no questions.

Mr. JOHNSON. The gentleman from Arizona, Mr. Steiger.

Mr. STEIGER. Mr. Chairman, if I could defer for just a moment the very few questions I have for you in order to correct the record.

I know of my colleague from Pennsylvania's penchant for accuracy and his virtual total recall. Earlier in the hearings, in his colloquy with Commissioner Dominy with regard to the recent storm in Arizona, some figures were offered by the gentleman from Pennsylvania I would like to inform him and for the purpose of the record that the blizzard between December 13 and December 20 of 1967 deposited 84.6 inches of snow on the city of Flagstaff. This, I am sure the gentleman will recognize instantly is 7 feet plus six-tenths of an inch. There were drifts in that area up to 40 feet.

Now, Mr. Saylor, I know that you were quoting an observation made by somebody other than yourself and I know that you will in the future consider it as not quite as reliable as perhaps you may have considered it in the past.

Mr. Secretary, I would like to consider page 21 of H.R. 3300, section 304(c). It is that language which refers to your option to require exchanges between those areas not receiving mainstream water and those areas that do receive it.

I am sure you are familiar with the language, Mr. Secretary. I would ask at this time, is it your opinion that this language protects the water needs of the northern counties of Arizona and clarifies, as far as the Department and the administration are concerned, the so-called exchange principle?

Secretary UDALL. Yes, I think it does, Congressman. We recommended this language. I would like to say, however, because I want the record to be clear on this, and I am very familiar, as the Congressman is, with this particular problem, that this language is not mandatory. It says the Secretary "may" do this.

I think the Arizona people ought to recognize, and we ought to make the record on that, that the Arizona Interstate Stream Commission, the Governor, the people who are going to make policy with regard to the future of Arizona, that they, working with the Secretary, whoever he is, are going to have to make decisions on how Arizona uses its water.

I have thought all along, and I know the Congressman has, that certainly the needs of the northern Arizona and the upstream com-

munities for water for municipal and industrial growth purposes should have a high priority in the State's thinking. I would think the State would want to have a program that is wise enough and broad gaged enough that soon communities could obtain the growth water they need.

The exchange principle probably will come into play with regard to that.

I think every one ought to understand this does not answer all the questions. It lays the framework for the right solutions if the people in Arizona have enough statesmanship to produce them.

Mr. STEIGER. I know the Secretary recalls from his own period at which time he represented these same counties the concern within the counties that their needs will not be met. It has always been my feeling that this language was meant as a backup protection for these people in the event of a place to appeal for justice, as it were, if in the intrastate negotiations, they felt they were being slighted. Is that your feeling?

Secretary UDALL. I think this gives as much protection as can be given in legislation of this kind, because we are talking about the future; we do not know who is going to need what quantity, when and so on, but this lays the framework and opens the door to solutions. The Arizona officials and the Arizona Congressmen and local interests can sit down and work out solutions and I am confident that they will do so.

Mr. STEIGER. It is a credit to you and I think worthy of note in the record here that the people in these areas do feel comfortable with you as the Secretary. They also recognize that there is no possibility of you remaining as Secretary for an eternity. I wonder if, in your opinion, with all the previous records that have been made on this matter and the record that has been made during these hearings, if you feel that it will be of sufficient strength to guide future Secretaries as to their role in this particular matter?

Secretary UDALL. I have already stayed longer in the job than, I guess, three others, at this point. I think that everyone ought to realize that Secretaries come and go and language has to be written so that it is clear and spells out responsibilities and how they are to be discharged.

In terms of the situation and in terms of what might be done with legislation of this kind to take care of this problem, I believe this is as clear a statement as can be made. It provides protection and guidance. I feel confident that for whomever is Secretary, whenever these problems come up, and they will come up over a period of many years, this gives him the guidance and the direction that he would need.

But he alone is not going to make all decisions. He is going to make contracts and he is going to play a role in the decision making. The State people under our water rights system are also going to play a major role and a lot of the responsibility is going to belong right in the State.

Mr. UDALL. Will the gentleman yield?

Mr. STEIGER. Yes.

Mr. UDALL. I know there is a certain restlessness in some northern Arizona counties. As one who also represented those counties for a time, I want to make it clear it is my judgment as a member of the

Arizona delegation that the record made by you and the brothers representing those counties over the years, the statements that the Secretary has made and that I have made, give these people in northern Arizona all the protection that can possibly be given in this legislation. I want to say, that while I continue in the Congress, it is my intention to do everything I can to see that the needs of these northern Arizona areas for municipal and industrial water will be taken care of. I think they will have and must have a high priority.

Mr. STEIGER. I thank the gentleman and I think he recognizes the restlessness.

I have a question on the Hualapai Tribe.

Do you recognize that any language, whether it be reserving the future of the Hualapai Dam site to the Congress or actually including it in some kind of moratorium is at least placing a portion of the Hualapai Tribe's income in jeopardy?

As you are aware, they now receive almost a third of their total income from a lease to the Arizona Power Authority for those damsite rights that they have.

All I would like to establish again for the record is the fact that you, as Secretary of the Interior, recognize this and will be able to plan, through your Bureau of Indian Affairs in some manner, to coordinate the recovery or compensation or recognize the imbalance that this is going to place on the tribe as far as their economics are concerned?

Secretary UDALL. Congressman, let me make a statement about this tribe.

Relatively speaking, this is a small tribe of Indians which has a large Indian reservation.

Mr. HOSMER. How large?

Secretary UDALL. About 1,500 to 2,000 members. They have a large land area, but it is plateau country, primarily useful for cattle grazing. Unfortunately have not struck minerals or petroleum on the reservation. Maybe that will come sometime. In terms of general economic well-being and prospects, as far as Arizona Indians are concerned, they are one of the tribes I worry most about, because they do not have things going their way or things coming up. This probably means that we should give them special attention and I am concerned about it.

But I am afraid I have to say as I said earlier, in all honesty, that they do not have a damsite that can be bought and sold or leased, and I am afraid that the position therefore of saying that Congress should reserve to itself the right forecloses any payment to them at this time.

Mr. STEIGER. But, Mr. Secretary, you are obviously aware of the problem and I am sure Commissioner Bennett is and the very pragmatic fact that they will lose \$24,000 a year, which is a third of their gross income, will be considered in any of your future plans for this particular tribe?

Secretary UDALL. Yes, indeed.

Mr. STEIGER. I thank the Secretary. I would just like to add, Mr. Secretary, that I personally want to commend you both for your testimony here and your patience and good will and your efforts on behalf of the entire Upper and Lower Colorado River Basin.

I thank the Chairman.

Mr. JOHNSON. The gentleman from Washington, Mr. Meeds.

Mr. MEEDS. Thank you, Mr. Chairman.

Mr. Dominy, if I might ask just some questions here to clarify some things in my own mind, the costs of production of the water at ocean-side, as I recall, are 9.8 cents per thousand gallons?

Mr. DOMINY. Yes, roughly \$30 an acre-foot.

Mr. MEEDS. Is that based on the present state of technology?

Mr. DOMINY. No, sir, that is based on the projection of the technology and the improvements of about 1990 to 1995.

Mr. MEEDS. All right.

This project runs considerably beyond that, does it not?

Mr. DOMINY. Yes, the proposal would be to put the plants in in three stages. The last stage would not come until about 2010.

Mr. MEEDS. And the projections are made on the state of the technology as of 1985.

Mr. DOMINY. 1990-95; yes, sir.

Mr. MEEDS. So that two-thirds of this will come after those projections. Now the state of technology can be that much advanced over that time?

Mr. DOMINY. Yes, that is possible.

Mr. MEEDS. So that it is probable that the cost of the water after that time will be even lower than you have projected, is it not?

Mr. DOMINY. It is certainly possible, because under these kinds of plants, you have to figure a replacement life of only about 30 years. So the replacements would also be made at a higher level of technology and advanced science.

Mr. MEEDS. Right.

And this again is based on the 2 million acre-feet, is it not?

Mr. DOMINY. Yes, two to two-and-a-half million.

Mr. MEEDS. And when we are talking about diversions from the Columbia, we are talking about getting into a substantial greater volume, to even be feasible, are we not?

Mr. DOMINY. That is my judgment, yes.

Mr. MEEDS. If we were talking about substantially greater volumes in desalting, is it not true that the costs would also be lower per thousand acre-feet?

Mr. DOMINY. It would be true on the conveyance, which is the highest cost of movement of water for augmentation in any event.

Mr. MEEDS. Then it is not true that you think you could get the costs down—

Mr. DOMINY. I doubt it would greatly affect the desalting costs, because we are figuring about the optimum size plant for the production of atomic power as well as for desalting.

Mr. MEEDS. OK, let's get to the conveyance portion of this.

Again, in comparing this to what would be needed to even get into the realm of feasibility from the Columbia Basin, you are talking in substantially larger numbers. In the conveyances cost of 15 and 16 cents per thousand gallons at 2 million, is it not true that if you were talking in substantially larger volumes, the conveyance costs would also be down from the desalting process?

Mr. DOMINY. Yes, if I am following you. The unit cost for tunnels, for example, decreases rapidly with size. So if you build them to the most economic size, you can probably move 10 or 15 million acre-feet of water through at a much smaller unit cost than for 2 million.

Mr. MEEDS. You were transporting or talking about transporting 4 million acre-feet of water, the cost per thousand acre-feet would be less than it is at 2 million; would it not?

Mr. DOMINY. That is right; yes, sir.

Mr. SAYLOR. Will the gentleman yield at that point?

Mr. MEEDS. Yes.

Mr. SAYLOR. Mr. Dominy, this is one of the points I tried to bring out in hearings last year, that if you want to make the Mexican water treaty a national obligation, all of the basic costs—right-of-way, tunnel, and everything else—will be charged to the 50 States. All you would have to do would be just to enlarge it a little bit. The increased costs are all the folks out there would have to pay for all the other water they would bring in.

When we had a gentleman from Texas as the Chairman of the Subcommittee, he was going to get seven and a half million acre-feet, plus Mr. Skubitz was to get seven and a half million acre-feet for Kansas; and Oklahoma was going to get in for their little dibble. Of course, most of the people in the Bureau thought that was pretty good, because they could make that real feasible if they did not have to worry about the initial cost and only the increased cost in size, just as Mr. Meeds is pointing out right now.

Mr. HOSMER. Will the gentleman yield?

Mr. MEEDS. Yes.

Mr. HOSMER. In light of the fact that, the difference between 2.5 million acre-feet and 10 million acre-feet is minuscule in comparison with around 195 million acre-feet of Columbia River water that wastes into the sea every year, what are we getting at? I just do not quite understand either his or the other gentleman from Washington's emphasis on this quantity factor.

Mr. MEEDS. I think there would be some disagreement that there are that many acre-feet wasted into the sea every year from the Columbia.

Mr. HOSMER. This is just a study based on clocking the river.

Mr. FOLEY. Will the gentleman yield?

Mr. MEEDS. Yes.

Mr. FOLEY. Is the gentleman aware that there are years when the flow of the Columbia is beneath 15 million feet?

Mr. HOSMER. Oh, yes.

Mr. FOLEY. If the gentleman is aware of that, I think the answer to his question is obvious.

If the gentleman will yield further, we are talking here, I understand, in terms of augmenting the Colorado River as a goal, not necessarily moving the Columbia River for purposes that are best known to the gentleman from California. And the costs that the Federal taxpayer will be asked to bear here do have a relationship to what method of augmentation we use. Is that not correct, Mr. Commissioner?

Mr. DOMINY. Excuse me?

Mr. FOLEY. I am addressing this question to you.

Is it not true that the costs involved are directly related to the method of augmentation we use?

Mr. DOMINY. Certainly. You would certainly want to use the most feasible means of augmentation. That means the most economic that we can find.

Mr. FOLEY. And the estimates on the various methods range from about 3 million a year to many times that for the operation and maintenance of a diversion system to inestimable millions of dollars, probably, to build it; is that not correct?

Mr. DOMINY. It seems so to me.

Mr. FOLEY. And if my friend from California is not concerned about saving the Federal taxpayers several millions of dollars, then I have not heard him correctly on the floor of the House.

Mr. HOSMER. If the gentleman will yield further on that point, we do not happen to be talking at this point about spending any money to build any project, not two nickels' worth of brick and mortar work. All we are talking about is a study to find out the answers to the various questions that are being asked that the witnesses do not have the answers for because the studies have not been made. In this case, I think it is fully obvious which comes first, the chicken or the egg. The studies have to come first before we can blame anybody for wanting to waste money on an uneconomic project.

Mr. MEEDS. I think we would all agree that this matter should be thoroughly and carefully studied. That is the import of question.

Now, on a longer term basis, Mr. Commissioner, I think a realistic look down the road, as the Secretary said, that the long-range needs, even longer than we are here considering of Arizona, are going to increase. It is certainly hopeful. Is it not your opinion that we should be looking to the best method and the most feasible method of augmenting those long-range needs as we are planning this project?

Mr. DOMINY. Yes, I think this all should be considered. It is later than we think in terms of meeting the future water needs of the Pacific Southwest.

Mr. MEEDS. And in any study that is done, it is as essential to study the long-range needs of the receiver or the place that receives the water as it is the long-range needs of where the water comes from?

Mr. DOMINY. Certainly. The Department and the Bureau has consistently taken the view that it would be very shortsighted to be looking for movement of water out of an area that ultimately will have need for it for its own full development potential.

Mr. MEEDS. And considering the potential for desalination, we are talking about, in effect, a whole ocean?

Mr. DOMINY. I think the supply, of course, is unlimited in terms of our needs.

Mr. MEEDS. And no one else's needs in that respect have to be considered?

Mr. DOMINY. I think this is correct with a properly installed plant which handles waste water in a proper manner.

Mr. MEEDS. Thank you.

Mr. JOHNSON. The gentleman from Texas, Mr. Kazen.

Mr. KAZEN. Mr. Secretary, how fast is your research on weather modification going now?

Secretary UDALL. Well, Congressman, we have scaled up from an original appropriation that started the program in fiscal 1962 of \$100,000 to about \$5 million this year. We think the program should go on up to \$25 or \$30 million in the next 7 or 8 years. This is what we have projected. This means getting into larger scale activities. This is a research program that for the most part is farmed out to universities, private research firms, and other Federal agencies.

Mr. KAZEN. I am interested in knowing whether everything possible is being done now as fast as it is scientifically possible to do in this project.

Secretary UDALL. I would have to say, of course, that we would like to have more money. I think we could use more money effectively. But we are in competition with everything else. Congress on the whole and the Appropriations Committees have been pretty good about this program. I think they realize it is significant. We have been able to move it along at a pretty good clip.

Mr. KAZEN. In other words, your only limitation right now is money?

Secretary UDALL. Money and time to carry out these projects. It is a scientific endeavor and we want to run it in a highly scientific way. We have to know what we are doing and how to control what we are doing. That is the reason this takes time. Each year, we get into a new phase of it and we want to keep it on schedule if we can. In fact, if the members of this committee want to encourage this program, I would suggest that they check into it themselves and find out what they think about the results we are getting and let the Appropriations Committees know.

It might even be, I think, Mr. Chairman, that the committee itself has held some hearings in the past on this. You might want to review the program at some time. We think it is a very fine program.

Mr. DOMINY. I would like to comment just a moment more on this. When I first discussed this with the Congress in 1961, I pointed out that we had about a 20-year program that we ought to follow before we would have the answer with certainty; that I thought we could have reasonably good answers possibly in 10 years, but that the research ought to continue for a 20-year program. I urged the Congress not to start it unless the program could proceed on that basis.

I also pointed out that we would have to grow into it slowly because of the lack of knowledge and the lack of trained meteorologists available to work on a project of this character. This is what we have done and as the Secretary has pointed out, we have gradually built from this start of \$100,000 a year up to this \$5 million program. We now have capability of gradually increasing to the \$20 to \$25 million program that would be justified in the immediate future, because we are gaining knowledge in the techniques of mechanization and measurement and other advancements that have been achieved.

Mr. KAZEN. Certainly, money is not the sole consideration, as has been pointed out.

Secretary UDALL. That is right.

Mr. KAZEN. You have to have your technology to a certain point where you have to augment that with whatever it is you need in material.

Secretary UDALL. This will take time.

Mr. KAZEN. Is there any gap between the furthest advanced point scientifically and your money limitation? In other words, are there any gaps to be filled now?

Mr. DOMINY. I do not believe so.

Mr. KAZEN. Or are we at the point where your appropriations and your scientific knowledge are running neck and neck?

Mr. DOMINY. I would say we are right on track now.

Mr. SAYLOR. Would the gentleman yield?

Mr. KAZEN. Yes.

Mr. SAYLOR. I might say there is still quite a gap. If the Secretary of the Interior and the Commissioner of Reclamation had come to this committee instead of going to the Appropriations Committee in the first instance, we might have had a good authorization instead of the track they took. They did not bother to come to this committee. One of the reasons they are in trouble is that this committee does not know what they are doing. They have never come up here and told us that. It is one of the things where the Bureau went behind the backs of the members of this committee and the counterpart on the Senate side and ran right to the Appropriations Committee. They got the \$100,000 from the Appropriations Committee and never asked for any authorization from this committee at all.

Mr. KAZEN. I do not know the background of this project as the gentleman does who has served on the committee for a long time. I have not had the privilege of reviewing any previous hearings on this subject, but it is a subject in which I am vitally interested, coming from the Southwest.

Let's delve into this a little bit more, following up the statement made by the gentleman from Pennsylvania, what kind of trouble are you in?

Mr. DOMINY. I would like to comment on that. There are solicitors' opinion in the record that the weather modification program which we undertook is clearly within the general authority of reclamation law. We have not required specific legislation.

As to the charge of our failure to keep people informed, we have made regular reports. The program has been discussed with this committee many times. I do not believe it is justified to say that we have not informed the Congress as to what we are doing. It has been a matter of record and the solicitor's opinion is a matter of record that we do not need additional legislative authority to pursue this program.

Mr. KAZEN. I certainly would want to impress upon you that at least as one member of the committee, I would like to stay informed on the progress that you make, because if you do get in trouble, I want to help you out of that trouble, because I think this is too vital a program to falter. It means a lot to the future of this country.

Thank you, Mr. Chairman.

Mr. JOHNSON. Mr. Secretary, and your able staff with you, I have a few questions that I would like to ask at this time. They might be a little repetitious, but I think for the interest of California and myself, we should have further answers to them.

The first two questions will relate to the water supply studies.

The first question would be: Are not all the Department of Interior water supply studies for the central Arizona project based on also providing a water supply for existing projects in Arizona, California, and Nevada, with California limited to 4.4 million acre-feet?

Secretary UDALL. That is correct.

Mr. JOHNSON. Now, question No. 2: Is it not true that the Department of Interior studies show the central Arizona project to be economically feasible while at the same time providing a water supply for existing projects in Arizona, California, and Nevada, with California limited to 4.4 million acre-feet per year?

Secretary UDALL. The answer to that question is "Yes," also.

Mr. JOHNSON. Now, as it relates to the revenues development fund. In the first question, do you know what percentage of Hoover-Parker-Davis revenues are contributed by California and Nevada power users?

Mr. DOMINY. Arizona has about 23 percent total. For Hoover, Arizona, and Nevada, each have 17.6 percent.

Mr. JOHNSON. That would leave California, then, contributing about 65 percent—64.8.

Mr. DOMINY. 64.8 percent of Hoover revenues; yes.

Mr. JOHNSON. The next question, the bills H.R. 14834 and 14835 introduced by California Congressmen last week, which are not part of this hearing, I might say, because the hearing was limited to the questions asked by the chairman. That was based upon the legislation that had been introduced prior to the introduction of these bills, which, if enacted, would authorize the central Arizona project, provide that any surplus revenues contributed by the California and Nevada power users after payout of Hoover-Parker-Davis projects should be reserved for repayment of any future lower basin augmentation project, while all of the money contributed by Arizona power users would be available to subsidize the central Arizona project. Thus, Arizona would contribute nothing to the augmentation fund for 50 years. California has also agreed to defer Hualapai Dam and severely modify the scope of any augmentation project.

Do you consider these items as significant concessions by California in order to help its neighbor, Arizona, to obtain the central Arizona project?

Secretary UDALL. Congressman, I sat with this committee for 6 years and I have been down in the bear pit for 7. I want to say to the chairman of the subcommittee, the chairman of the full committee, and the ranking minority member, I think that the 3 days we have spent here constitute one of the finest, most constructive hearings I have ever participated in. I think we are here really studying, concentrating on the whole future of a whole region—not just one State or two or three States. I believe the whole attitude that has been expressed by everyone—the tenor of the questions, the discussion—has contributed to some of the best hours for the committee that I have seen in 13 years.

I do not know that I can answer your question with great specificity, Congressman, but I think California has of late shown some inclination to be in a compromising frame of mind. I think this is a good thing.

Mr. UDALL. Will the gentleman yield to me?

Mr. JOHNSON. Yes.

Mr. UDALL. I would answer his question largely in the affirmative. I think there have been very considerable concessions on the part of California and I give credit to the chairman of the subcommittee for helping us get together. I think the things that now divide us are small, the things that unite us are very big.

Mr. JOHNSON. I appreciate the comments of both the Secretary and yourself on this matter.

I have another question in the same field. Do you know how much the revenues contributed to the Hoover-Parker-Davis projects by Arizona power users would amount to during the central Arizona project payout period if the present percentages are contributed and the projected revenues are estimated by the Bureau of Reclamation?

Mr. DOMINY. Yes; Arizona's share of Hoover revenues, based on this 17.6 percent, would be \$78,056,000 by the year 2029.

The Parker-Davis share going to Arizona would be \$46,668,000. The portion of the Pacific Northwest-Pacific Southwest intertie revenues that would be available to Arizona would be \$41,600,000, for a subtotal of \$166,324,000.

That compares with an irrigation assistance required in excess of the irrigators' repayment of \$242,525,000. So there would still be considerable assistance required from the municipal and industrial water rates and from the prepaid power proposal.

Mr. UDALL. Will the gentleman yield for clarification?

Mr. JOHNSON. Yes.

Mr. UDALL. Mr. Dominy said Arizona's share of Hoover was 17.6 percent. If you add Parker-Davis and give a total figure, the Arizona share of the revenues from Hoover-Parker-Davis, as I understand, is 23 percent.

Mr. DOMINY. That is the weighted average. That is where I got my figure a moment ago; the 23 percent. Arizona takes 50 percent of Davis power.

Mr. JOHNSON. The above amount plus your estimate of surplus revenues from the proposed thermal powerplant and the Arizona-Nevada portion of the Pacific Southwest intertie will amount to enough money to eliminate the need for most of the small assessment against the central Arizona project service area proposed by you in the administration bill presented during the 1967 Senate hearings.

Mr. DOMINY. The way H.R. 14834 reads, as near as we can interpret it, and if that were to be followed, I think you are quite right. It could mean that the ad valorem tax would not be needed nor would there be need for a \$56 water rate. It probably would be possible to get back closer to the \$50 water that was originally considered for M. & I. purposes.

Mr. JOHNSON. How does the proposal in the California bill H.R. 14834 and 14835, as outlined above, compare with the boulder Canyon Project Act, whereby California was denied any use of Hoover power revenues to assist in repayment of the All-American Canal or the Metropolitan Water District's Colorado River aqueduct?

Mr. DOMINY. I think in order to consider that in all equity, one must understand that Hoover Dam supplies the regulation and creates a water supply that was not there without the regulation and does so practically for nothing. There is a very small, nominal charge of 25 cents an acre-foot, I believe, that the Metropolitan Water District pays.

It is true, however, that the full cost of Hoover is being repaid from the power revenues.

This has been a good project for the Nation and the people who are using it are paying for it. There is no issue about it.

Mr. JOHNSON. Is it the Department of the Interior's intention that the central Arizona project water users continue to pay the same rates after payout of the central Arizona project in order to contribute money to the development fund for augmentation?

Mr. DOMINY. Certainly if the development fund is established, this would be the case. Absent a development fund, you might not be able to justify continuing those rates. That is the point I made the other day.

Mr. JOHNSON. I think any legislation introduced by the chairman would agree to that.

Mr. DOMINY. I am certainly in favor of it.

Mr. JOHNSON. Should not the bills presently being considered by this subcommittee be modified to clearly state that the central Arizona project water users shall continue to contribute to the development fund after payout?

Mr. DOMINY. If there is a development fund, I would think that would be the case.

Mr. JOHNSON. I have just two more of this particular nature:

Was not the administration's program in 1967 one in which costs allocated to the central Arizona project were to be repaid without subsidy from the Hoover-Parker-Davis revenues?

Secretary UDALL. This was our proposal, yes.

Mr. JOHNSON. How was this to be accomplished?

Secretary UDALL. This would be essentially by raising municipal and industrial rates, or by an ad valorem tax, whichever the Arizona people decided.

Mr. JOHNSON. According to the Department of the Interior studies on the administration bill, Arizona would derive \$89 million of benefits each year from the central Arizona project. In view of these large benefits, do you consider it reasonable that the central Arizona project beneficiaries should pay the minor assessment of 0.6 mills per dollar of assessed valuation?

Secretary UDALL. This is what we proposed. We thought it was right. Of course, the Congress may express its own judgment on this issue.

Mr. JOHNSON. Do you have any further comment, Mr. Dominy?

Mr. DOMINY. No, except to say that we have these benefits from all of our projects. In some cases, we have the requirement in law for a conservancy district-type assessment. In others, we do not. We have had no flat standard on it. In recent years, the tendency has been in this direction. The Upper Colorado River storage project is an outstanding example of where the conservancy district-type assessment is required.

Mr. JOHNSON. I know recently the same methods were used in Oahe project in creating the conservancy district under their enabling legislation to insist on that. I assume these other projects will have to have it.

Secretary UDALL. The difference, of course, with Oahe, is that it involves an entirely new program in an area, as contrasted with supplying water to the Salt River project, which is one of the oldest irrigation projects in the country. Where you have existing projects, you do have a somewhat different situation.

Mr. JOHNSON. I would like to discuss briefly the augmentation part of this or a feasibility study or reconnaissance study.

We are asking for, in the legislation whereby the States and accompanying States have something, I want to agree with you that when we talk merely about 2.5 million acre-feet from any other basin bringing that amount of water in certainly will cost a great deal of money, the same as it would if you were to take it from the coast and move it across and do the job you expect to do here. But I am certain the Department, in considering this, a little reconnaissance was done to

bring in some facts and figures. We are talking about bringing that water down from the Columbia through an area that very badly needs water itself. You take the great area that lies in eastern Oregon, eastern California, all of Nevada, western Utah and part of Idaho; certainly they are to be considered, and it would be a sizable amount of water, I presume, that would be brought from the Columbia and then that portion placed in the Lake Mead, as the final. I imagine this would reduce your figures that the gentlemen from the Northwest seemed to think are too exorbitant at this time.

What would your comment be?

Say that we went to the Columbia and agreed after the National Water Commission, if it is established, makes a recommendation and we would get into the reconnaissance and feasibility study, that the amount should be subdivided at 15 mills an acre-foot.

Mr. DOMINY. I stand on my previous statement that if the import in the first segment is limited to 2.5 million acre-feet, it appears cheaper to get it from somewhere in the Southwest. If the objective is to augment the river to take care of the next 70 or 80 years growth for the Pacific Southwest, then perhaps because of the economies of size, it might be possible to go to the Pacific Northwest, assuming that surplus water is there, at a unit cost comparable with the cost of a smaller import of desalted water for the first two and a half million acre-feet.

Mr. BURTON of Utah. Will the gentleman yield?

Mr. JOHNSON. Yes.

Mr. BURTON of Utah. Mr. Commissioner, is there any reason why any augmentation of water that derives from the basin need be put in Lake Mead?

Mr. DOMINY. At first we thought all that was needed was to bring it over and put it in at Imperial. But we discovered when we got into the study that in order to get the mixing and accommodate the 24 hours a day, 365 days a year input and balance it with the vagaries of the diversion requirements, it was necessary to introduce it up as far as Mojave. When it gets that far north, then there is reason to consider putting it in Lake Mead and generate peaking power from that water coming back down through the generators. That is why we finally selected Lake Mead as the mixing point in this study.

We think that in the feasibility stage of a study, and we are also working on this as the Secretary pointed out in a joint study with Mexico, that consideration should be given to locating the desalting plant at the Gulf of California and conveying the desalted water to a reservoir on the Bill Williams River where the desired mixing could be achieved. We feel this could reduce the conveyance costs substantially.

Mr. FOLEY. Will the gentleman yield?

Mr. JOHNSON. The gentleman from Washington.

Mr. FOLEY. If we are going to think in terms of not the Southwest but irrigating the Pacific Northwest, should we not maybe change the focus a little bit to consider the possibility of a North American plan and irrigate the Western United States?

We have a \$200,000 item in the appropriations budget to move more water to central Texas.

Is this not an example why the entire question of large-scale movement of water has to be considered in the national context by the Na-

tional Water Commission and can't usefully be discussed in the context of the Pacific slope alone?

Mr. DOMINY. I support that completely and the Secretary has endorsed it completely.

Mr. JOHNSON. Just in my time in the Congress, we have had the Pacific Southwest plan before our committee or under consideration for a long period of time. It dealt with the water transfer from some basin within the area; that is, within reasonable reach. I think the Columbia River Basin was the one they were looking to, along with the one we had in California, perfecting—but the proposed park water plan was well known in the Congress, throughout the West.

Mr. FOLEY. I was not trying to be argumentative. I noted with pleasure that your question itself presumes that a study will be made by the National Water Commission.

Mr. HOSMER. Will the gentleman yield?

Mr. JOHNSON. Yes.

Mr. HOSMER. On this quality issue which was brought up momentarily, as to where you add the distilled water, I think that somewhere in your testimony, Mr. Dominy, you were talking about a time when the upper basin uses achieve some point, that the quality of the water at some point in the lower basin would be around 1,400 parts per million sale, were you not?

Mr. DOMINY. Yes, my statement was that under full depletion in the upper basin, absent some measures not now taken generally to improve quality of water, that as a result of diminished flows and of return flow from irrigation, the parts per million would approach 1,400 parts plus at Imperial, unless you achieved dilution through augmentation.

Mr. HOSMER. Now, in order to bring that down to the figure of, say, a thousand parts per million, how much distilled water are you going to have to put in and where?

Mr. DOMINY. Just about 2 million acre-feet to 2.5 million acre-feet at Lake Mead or shortly downstream to get the mixing. This is what we came up with in our study.

Mr. HOSMER. So this augmentation matter is not strictly a quantity matter, it is a quality matter as well.

Mr. DOMINY. That is right.

Mr. HOSMER. Do you know what you have to put in to get it down to 800 parts per million?

Mr. DOMINY. Mr. McCarthy tells me it would take about twice that much desalted water.

Mr. HOSMER. Thus the exchanges of water on the Pacific coastal area is not going to touch this quality question at all.

Mr. DOMINY. That is correct. You have to bring it into the river to get the mixing.

Mr. HOSMER. Thank you.

Mr. JOHNSON. Getting to the power side of this question, when the Hualapai is eliminated as a source of revenues for further development, and they chose to buy a power commitment out of the private and public development, which, as I understand it, is made possible by the use of coal that is there on the public lands today, either Indian land or public domain, which have been placed under lease, I presume, to the private pool people—

Secretary UDALL. That is correct.

Mr. JOHNSON. Waters that are necessary there to perfect their operation is also Federal water from one State or another.

Now, we considered legislation last week or 2 weeks ago wherein the contracts were being asked for a water commitment to provide projects with coal. Now, are you using a portion of New Mexico's water in this case for the three contracts under consideration, and the coal deposits, the last one still under consideration, is that which is held by the Utah Construction & Mining Corp.

That answers, too, I presume, the coal is from public land and the water is from public land.

Secretary UDALL. Most of the coal in the Four Corners area is on Indian land. As to the water, the reason we have to have congressional approval of the contracts is that Congress wrote that requirement into legislation. The water in question is available only for a 35- or 40-year period, as I understand it. The water we are proposing to use at Page is within Arizona's upper basin entitlement and amounts to almost 40,000 acre-feet.

It can be contracted for directly under existing law. We need no additional authority.

Mr. JOHNSON. How about water to supply the venture in Nevada, your slurry coal delivery?

Secretary UDALL. They will use Nevada water for that venture and Arizona Indian coal. That is a unique project.

Mr. JOHNSON. You have purchased, or will if the bill is perfected, this power requirement of the company needs of the Arizona project?

Secretary UDALL. That is correct.

Mr. JOHNSON. Now, I presume that if there were surplus power in this operation, it would be considered as available under reclamation law to preference customers?

Secretary UDALL. Under the way we propose to handle this matter, we do not expect to get into the question of the function of the preference clause, because the power would be taken by the Salt River project if there is surplus. Being a preference agency, no problem would arise.

Mr. JOHNSON. Well, if there was such a thing as surplus power, as I understand it in your testimony in the Senate and also in communications with people like the American Public Power Association in an exchange of letters, you did say that this would be separate reclamation law and it would be available to preference customers.

Now, at the present time in the legislation, some of the bills that have been introduced do not make any mention of these or anything in the legislation.

I would say that in your letter to the American Public Power Associations you did go on record as saying it would be subject to reclamation law and available to preference customers. Maybe they will never come, but this might happen in other instances.

Secretary UDALL. We have not changed our position at all. The Senate wrote language in S. 1004 to clarify this point. If the House wishes to do so, it may do so. However, under the way that we propose to handle the matter, there would be no issue.

Mr. JOHNSON. Well, there is a difference of opinion of some people.

Now, when it comes to power, when you eliminated the Hualapai Dam, we eliminated the cash register in this area for future augmentation works and further revenues into the fund.

That was argued both ways and the dam has been eliminated.

But in every other water development, power has been the big help. I think the Federal Government should have more control over the power. I would have been much better satisfied to have seen the Federal Government build a thermal plant there, where everything that was made available was public—the coal, the water, the rest of it. We could very easily have sold the electricity. Now, in your reconnaissance study here as far as desalinization is concerned, here again, the power end of it is left to someone else. I would say what you have stated in here as far as costs are concerned of production of electric energy, the Government should hold on to that, too, because every one of the projects that are in place today, if it had not been for the power, they probably would not have been there. The power has been a helper as far as financing of these projects.

We can look to the Bonneville project as far as the West is concerned and the Central Valley's project. So I think while this is somewhat in the future, I do not see anything wrong with the Federal Government developing a nuclear power plant and a desalting plant along with it. When you tie the two together and the Government then has the right to dispose of this huge amount of excess power, because authority to desalinate 2.5 million acre-feet of water, you are talking about an awful lot of power. I would certainly like to see the Federal Government protected and this revenue derived from power going to help provide these facilities we are talking about. The facilities we are talking about are going to be very expensive, I presume, whether it is through desalinization or whether we transport sea water into the basin or bring the water from some place else.

I think that is a very, very important item. I can only look to the success of the other projects that are in place now. If it had not been for the power, every one we bring along today in a general tieback to the funds and there is an inability to pay for these, we go to the fund.

I wonder what you have to say about the Federal Government's position.

I think there is a real cash register here that we are talking about.

Secretary UDALL. Congressman, none of us can foresee what will happen. At this time a proposed Federal steamplant of any size is a highly controversial subject. We have tried to not stir up controversy in this proposal. I do not think we have. And as far as surplus power is concerned, we will do three things with it: We would bank it, which is a familiar arrangement to you; we would use it to firm upper basin hydro at Glen Canyon Dam right nearby; and whatever else remained would be sold to the Salt River project.

We are trying to thread the needle here so as to not stir up controversy and this has been our purpose. It may very well be that the thing that you foresee is something that will come up in the future.

The Congress and the administration will have to face up to it then. That will be something that can be discussed as the needs of the Nation arise.

Mr. JOHNSON. Well, in our projects, is there any place now—take the Missouri River or the Columbia River developments or the Central Valley's developments, the matter has been worked out well with the private utilities, I think, in all three areas. But the Government does have control of this particular generating facility that generates the first dollars into the projects, you might say. What they do with the power is sell the power and work out an agreement with the private facilities and public agencies. I think it has worked out very well. I do not think it has harmed anything, and the utilities in those areas are now using all the power and a good portion of it is marketed.

Mr. SAYLOR. Has the gentleman from California ever heard what happened to public utilities in the Tennessee Valley area?

Mr. JOHNSON. That was an act of Congress. I was not here at the time but I think it has helped the area greatly and I think it is one of the finest examples of putting water to use for the people and conserving and developing resources.

Mr. SAYLOR. Right now it might be of interest to my colleague to know that the water development produces 3 percent of the power produced by the Tennessee Valley Authority.

Mr. JOHNSON. They are now utilizing their other resources and I think within the Four Corners area, it accomplished the same thing. I do not say that private utilities would be put out of business. They would probably take and market this power and do a very good job of it. But I do not think we just have to turn over all of our resources to somebody else to develop.

Now, there is a great controversy right within this committee, but that is just my personal opinion. Anybody else may have his own.

But I do think if we are ever going to augment this river if we do it through a desalinization program, it is going to be very expensive and certainly the power should be a contributor to the development.

Mr. HOSMER. Mr. Chairman, in that connection, there will be an awful job absorbing a block of power of this size. One comes in in 1990 for 2,900,000, in 2000, 1,299,000 and in 2010, another 2,900,000 mill kilowatts in one block. That is a tremendous amount of power and there is nothing that will receive something from marketing that power. This is an additional problem. But it is so far off, I did not want to get into it.

Mr. JOHNSON. It might be too far off, because we are going to gain a lot of knowledge on what is put together out there now. If Bolsa Island does what the figures show it could, if private power and public power and the public agencies, the metropolitan water district, Federal Government and a couple of Federal agencies, contribute a little—

Mr. HOSMER. These developments will have to be factored into both public and private systems.

Mr. JOHNSON. I would say through new techniques in long-distance transmission, there has not been any power developed that has not been used. We do not have any surplus power in the United States. If you want to increase the use, all you have to do is make the rate low and the power will be used. I do not want to say we live in—

Mr. DOMINY. The projected generation from the first dual purpose plant, incidentally, is only 1 year's load growth for the Pacific South-west.

Mr. HOSMER. For where?

Mr. DOMINY. For the Pacific Southwest, based on the projections to 1990.

Mr. HOSMER. You are going to have to transmit this through how many States?

Mr. DOMINY. This is just for the Southwest. This is Southern California, Arizona, and Nevada. We are already interconnected and of course, we will have the interties in, too. We think these can be phased in.

Mr. HOSMER. You have not transmission facilities to take a block of power like this now?

Mr. DOMINY. We will have. We will have to keep increasing it.

Mr. HOSMER. This is going to be a real computer problem.

Mr. DOMINY. Right.

Mr. JOHNSON. That is about as much as I have to say in connection with saline water and weather modification that I do hope will come along, because we will need that, too, all that we can get into the basin.

There is one other matter. At this particular point I would ask that the letter the Secretary wrote to the American Public Power Association be made a part of the record.

Is there objection?

(No response.)

Mr. JOHNSON. It is so ordered.

(The material referred to follows:)

U.S. DEPARTMENT OF THE INTERIOR,
Washington, D.C., July 17, 1967.

Mr. ALEX RADIN,
General Manager, American Public Power Association,
Washington, D.C.

DEAR ALEX: Your letter of June 30 inquired as to whether the Department intends to follow the preference clause in marketing prepaid power and energy from the Page plant surplus to Central Arizona Project needs.

Presumably, your inquiry arises because of reports you may have heard regarding what Deputy Solicitor Weinberg advised the Senate Interior Committee during the markup of S. 1004. The Deputy Solicitor said that under the language of the bill, there was a question as to whether the preference clause would be applicable as a matter of law. He went on to advise the Committee, in effect, that in the absence of a contrary instruction in the bill itself or in the legislative history, the Department would observe the command of the preference clause regardless of its technical applicability. I am glad to confirm that position.

We plan, of course, to acquire only enough generating capacity to utilize fully and dependably the capacity of the Granite Reef Aqueduct during those years when adequate water supplies are available. This will mean, of course, that from time to time during those years when the water supplies are inadequate to utilize fully the canal's capacity that some power and energy will be surplus to the project needs. We plan to negotiate power banking arrangements with the utilities in the area to maximize the amount of this thermal capacity which will be used for project pumping purposes. With these arrangements, the output of the prepaid thermal capacity will be substantially committed to project pumping prior to 1990.

After 1990, if nothing is done to increase the supply of water in the river (personally, I am confident that some form of augmentation of the river's flows will occur), the amount of surplus power and energy available will begin to increase gradually. Because this power and energy will be available intermittently when water is not available for pumping, we have concluded that it could best be utilized in close coordination with the Bureau of Reclamation's existing hydroelectric power plants and its extensive transmission system. This conclusion led us to say in the Department's Summary Report of February 1967, page 14, as follows:

"Even though the central Arizona area would be the large commercial load area closest to the power plant, the commercial power production of the plant would not necessarily serve this area alone. The power output of the thermal plant could be integrated with the power production of Reclamation's inter-

connected hydroelectric power system which extends generally throughout the West. Such coordination could enhance and broaden the usability of the power produced by both the thermal plant and the hydroplants. The coordinated output of these plants could be available to serve loads from Reclamation's inter-connected transmission system."

If the supply of water in the Colorado River is not augmented as future upstream depletions increase, it will, of course, mean that additional ground-water pumping will have to occur in Arizona if the existing level of irrigated agriculture is to be maintained.

With this in mind, the Salt River Agricultural Improvement District, a preference customer and one of the group of utilities which has offered to construct the thermal plant, has requested that such power be made available to it and other preference pumping customers in order to meet the increases in their own pumping requirements which would occur at that time. Certainly the Department would give careful consideration to the requirements of this nature if they do, in fact, materialize.

Enclosed for your information is a copy of Mr. McMullin's March 13, 1967, telegram.

Sincerely yours,

STEWART L. UDALL,
Secretary of the Interior.
PHOENIX, ARIZ., March 13, 1967.

Hon. FLOYD DOMINY,
*Commissioner, Bureau of Reclamation,
Interior Department,
Washington, D.C.:*

In the draft of proposed bill to authorize the construction operation and maintenance of the Central Arizona project transmitted to the President by Secretary Udall on February 15, 1967, we note that it is proposed to provide low-cost pumping power for the CAP through prepayment for the requisite capacity and associated transmission facilities in a WEST-type arrangement. Section 2B of the draft bill further proposes that power and energy so acquired may be disposed of intermittently when not required in connection with the CAP.

We have all recognized that the CAP has the unique feature of being able to accommodate itself to a fluctuating delivery of water from the Colorado River because in years of maximum diversion from the river we can correspondingly reduce pumping in the CAP area. Conversely in years of low diversion it would be necessary for Salt River project and other similarly situated agencies to materially increase pumping. It occurs to us that the power not required by the Bureau during years of low diversion from the Colorado River might well be used by Salt River and other preference pumping customers in order to assure power availability for the increased pumping that would be necessary during those years. We also understand that beginning about 1990 there may be some firm power available from CAP, although we do not know the terms and conditions under which this power might be disposed of. Would look forward to the possibility of acquiring this power because if the river has not been augmented by that time and the water supplies for diversion through the aqueduct have been materially reduced Salt River and similar agencies are going to have to again resort to increased pumping and will then have materially increased requirements for firm pumping power. Will you please give these matters consideration in further work for CAP.

R. J. McMULLIN,
General Manager, Salt River Project.

JUNE 30, 1967.

Secretary STEWART L. UDALL,
*Department of the Interior,
Washington, D.C.*

DEAR MR. SECRETARY: With respect to the 400 mw of capacity in WEST's Page plant which the Bureau of Reclamation plans to purchase by pre-payment in connection with the Central Arizona Project proposal approved by the Senate Interior Committee, will power and energy surplus to the project pumping requirements be marketed under the preference clause?

I would greatly appreciate it if you could supply me with a prompt answer to this question.

Sincerely,

ALEX RADIN.

Mr. JOHNSON. The next thing I would like to place in the record is just what amounts of water are taken at the present time by California from the river and also their contracts and right to the water; then the facilities that have been placed on the river by various agencies in California; then also show the amount of water that was used in 1967.

Now, in 1967, according to figures we get out there, California used from the river 4,969,000 acre-feet of water.

Now, this water has been stretched out through some very careful recapture of wasted water. I think when the use was dropped on the river, it shows that in 1963, there was a considerable amount more of water used than in 1967. In 1967 through perfecting the way of diverting and using the water, they have conserved a lot of water and their practices are much better. Now, we are vitally concerned, those of us from the State, with the amount of water we are taking now from the river and the amount we are entitled to, and trying to protect all the agencies that are using water. We have a very large investment in the facilities that are on the river at the present time and they are being repaid through various ways.

But I would ask that the chart on the amount of water and the rights to its use be placed in the record at this point.

Mr. UDALL. Reserving the right to object, these are figures and charts, and a statement prepared by the California agencies, I assume?

Mr. JOHNSON. Yes. Certainly they are not mine, because I do not have that expertise. But the people who prepared these put them together and I would ask that they go in as part of the record.

Mr. UDALL. I would have no objection. I have no information to quarrel with them because I have not read them. I just want to make sure that we are not bound by them.

I have no reason to believe they are not correct, but I do not know.

Mr. JOHNSON. I merely want to put them in as part of our position as far as the State is concerned. We are also asking actual unit costs on the water.

Mr. UDALL. I withdraw my objection.

Mr. SAYLOR. Reserving the right to object. I will not object. I wonder if you might not also ask the people who prepared this list to break it down a little farther and tell us the amount of water taken out at the time California passed the Self Limitation Act. This shows what was taken out in 1957-67, but does not show the amounts of water that have been taken since California passed the Self Limitation Act.

Mr. HOSMER. Would that information be of any value?

Mr. SAYLOR. It would be a lot of value.

Mr. HOSMER. To whom?

Mr. SAYLOR. Anybody who wants to take a look at this record as a matter of a hearing.

Mr. HOSMER. We are not building the CAP retroactively, as I understand it. This will come on the line in 1979.

Mr. JOHNSON. That is true. I imagine these figures will be readily available by the people who are concerned.

Mr. SAYLOR. I withdraw my reservation.

Mr. JOHNSON. Any further objections?

(No response.)

Mr. JOHNSON. If not, we will place this in the record at this point.

(The material referred to follows:)

California water rights—as controlled by contracts with Secretary of the Interior and Supreme Court decree

(All of these, except Indian rights, are owned by existing projects, constructed at a cost exceeding \$600,000,000)

	<i>Acre-feet</i>
Contract rights (see detail below)-----	5,362,000
Additional rights decreed to Federal establishments by the Supreme Court:	
Indians -----	70,000
Wildlife refuges (½ of total)-----	30,000
Miscellaneous present perfected rights protected by decree but not yet under contract-----	5,000
Total -----	<u>5,467,000</u>

Contract rights: Total 5,362,000 acre-feet.

(Note: These are grouped in the following priorities by the Secretary's regulations and contracts.)

1st priority: Palo Verde Irrigation District for water required for 104,500 acres. (Appropriations date from 1877. Served by diversions via Palo Verde weir.)	
2d priority: Yuma project, U.S. Reclamation Bureau—water for 25,000 acres. (Appropriations date from 1905. Served from All-American Canal.)	
3d priority: Imperial Irrigation District, Coachella Valley County Water District, Palo Verde Irrigation District, 3,850,000 acre-feet, less quantities covered by priorities 1 and 2. Appropriations of Imperial and Coachella date from 1895. Both are served by All-American Canal. Of the 3,850,000 acre-feet, California claims that approximately 3,420,000 acre-feet comprise "present perfected rights," protected by the decree in <i>Arizona v. California</i> , Dates of contracts: Palo Verde, 1933; Imperial, 1932; Coachella, 1934-----	3,850,000
4th priority: Metropolitan Water District. Appropriations date from 1924. Contract dated 1931-----	550,000
Subtotal -----	4,400,000
5th priority: Metropolitan Water District-----	662,000
6th priority: Imperial, Coachella, Palo Verde-----	300,000
Subtotal, contract rights-----	<u>5,362,000</u>

Decreed rights, not covered by contract: Indians (translated from diversion rights into consumptive use):

Yuma Indian Reservation (1884)-----	27,300
Fort Mohave Indian Reservation (1890, 1911)-----	7,300
Chemehuevi (1907)-----	6,600
Colorado River Indian Reservation in California (1865, 1873, 1874, 1915)-----	29,000
Subtotal, rounded-----	<u>70,000</u>

Other Federal establishments:

Havas Lake National Wildlife Refuge, pro rata, ½ of 37,339 acre-feet of consumptive use (1941, 1949)-----	18,600
Imperial National Wildlife Refuge, pro rata, ½ of 23,000 of consumptive use (1941)-----	1,500
Subtotal, rounded-----	30,000
Miscellaneous small present perfected rights, not yet under contract, priorities dating from 1856 to 1923, approximately-----	5,000
Total, approximately-----	<u>5,467,000</u>

INVESTMENTS BY CALIFORNIA AGENCIES IN COLORADO RIVER PROJECTS¹

[In millions of dollars]

Agency	Bonds	Taxes, water revenues, and other investments	Contracts with United States and other government agencies	Total
Metropolitan water district.....	297.4	187.5	-----	484.9
Imperial Irrigation District.....	54.0	-----	25.0	79.0
Coachella Valley County Water District.....	-----	-----	26.9	26.9
San Diego County Water Authority.....	32.0	-----	20.3	52.3
Palo Verde Irrigation District.....	30.0	-----	1.7	31.7
Total.....	413.4	187.5	73.9	674.8

¹ As of Dec. 31, 1963.

Source: P. 590, hearings on H.R. 4671, September 1965.

Diversions less measured returns of California agencies from Colorado River for water year 1967

District:	Acre-feet
Palo Verde Irrigation District.....	366,000
Metropolitan Water District.....	1,182,000
Yuma Project Reservation Division.....	48,000
Imperial Irrigation District.....	2,860,000
Coachella Valley County Water District.....	453,000
Total	4,909,000

Diversions less measured returns of California agencies from Colorado River for water year 1963¹

District:	Acre-feet
Palo Verde Irrigation District.....	362,000
Metropolitan Water District.....	1,065,000
Yuma Project Reservation Division.....	45,000
Imperial Irrigation District.....	3,053,000
Coachella Valley County Water District.....	537,000
Total	5,062,000

¹ Highest year of record in recent years.

Mr. JOHNSON. Now, I have a letter from our colleague, John Rhodes, from the great State of Arizona. He has asked me to place in the record a statement of Mr. Filmore Carlos, president, Salt River Pima-Maricopa Indian Community Council. This just came in my office before I came over here. I see nothing wrong with the statement of the gentleman. Is there objection?

(No response.)

Mr. JOHNSON If not, it will be put in the record at this point.
(The material referred to follows:)

SALT RIVER PIMA-MARICOPA INDIAN COMMUNITY COUNCIL.

Scottsdale, Ariz., January 29, 1968.

Hon. JOHN J. RHODES,
2333 Rayburn Office Building, Washington, D.C.

DEAR CONGRESSMAN RHODES: We are following with interest, the progress of the Central Arizona project bill as it moves through various stages of consideration.

Our prime interest of course, its the lands that will be taken into the reservoir and easements. It is in this vein of thought that the Salt River Tribal Council respectfully submits a statement on their position for the record attached hereto.

Sincerely yours,

FILMORE CARLOS, *President.*

[Enclosure]

STATEMENT OF FILMORE CARLOS, PRESIDENT SALT RIVER PIMA-MARICOPA INDIAN COMMUNITY

The Salt River Pima-Maricopa Indian Community, along with its neighbor, the Fort McDowell-Mohave-Apache Indian Community, has been vitally concerned for many years with the proposed dam and reservoir as set forth in S. 1004 and H.R. 14834.

We realize the importance of the Central Arizona Project to the State of Arizona and, as we have previously expressed to Congress, we are prepared as good citizens and native Arizonans to cooperate in an endeavor to bring the CAP into reality. However, we do request that every consideration be given to our views since we, of all Arizonans, are being asked to make major sacrifices in order to bring major benefits not to ourselves but mainly to others.

In order to bring before you once again our position on this matter, we respectfully ask that consideration be given to the following requests and recommendations:

1. That the Salt River Pima-Maricopa Indian Community and the Fort McDowell-Mohave-Apache Indian Community be kept fully informed by the Bureau of Reclamation, or any other governmental agency having to do with the planning of Orme Dam, of all information they have on that part of the CAP known as Orme Dam, including but not limited to engineering features, flood control features and the need for inundation of lands on the respective reservations.

2. That the dam site be at the location known as Granite Reef and not at the confluence of the Salt River and the Verde River.

3. That the Salt River Pima-Maricopa Indian Community be permitted to retain overall planning control of public and private land developments on tribal lands and have a voice in the control of the character of development on National Forest lands along the south shore of the Salt River. The reason for this is that developments on National Forest lands would be a part of the view for reservation land and, therefore, if unattractive could adversely affect that value of reservation land for resort and residential purposes.

4. That the fluctuation of the lake to be formed behind Orme Dam be maintained at the absolute minimum so as not to interfere with proper development of the shoreline.

5. That the Salt River Pima-Maricopa Indian Community have a voice in the public recreational use of the impounded reservoir waters so as to control the "public nuisance" factor insofar as possible. Such items as limiting boat and motor sizes, water speed limits, etc., would fall in this category.

6. Require that the proposed right-of-way for the Granite Reef Aqueduct be granted in return for its location following as nearly as applicable natural contours of the terrain; that it be an underground or covered conduit; and that when necessary to span an area, the conduit and supporting structures conform to an architecturally pleasing style so as to enhance the aesthetics of the Red Mountain area.

7. That the Salt River Pima-Maricopa Indian Community have the right to rigidly control the "public use" of the western reservoir shoreline and that there not be permitted the routing of a public road along the western shore in the area from the dam site up stream to the vicinity of the proper relocation of the Bee-line Highway.

8. That the Salt River Pima-Maricopa Indian Community have the right to elect whether or not on reservation land to install and operate all recreational facilities or install and operate only the concession type facilities and agree to public installation, operation and maintenance of such facilities as picnic areas, campsites, roads and scenic areas, generally considered as being high cost and high usage facilities but low revenue producers.

9. That the Salt River Pima-Maricopa Indian Community maintain all water rights under the Kent Decree and other sources, and be able to apply the water for any purpose or use on the reservation.

10. That the Salt River Pima-Maricopa Indian Community secure rights to Central Arizona Project water for municipal and industrial purposes in order to serve urban development on reservation lands.

11. That the Salt River Pima-Maricopa Indian Community be entitled to just compensation for any lands or interest in lands of the reservation taken or used in connection with the Central Arizona Project and that in the event an agreement cannot be reached by negotiation that proper condemnation proceedings

be brought so the Community and/or its members shall have the same rights as any other person to have the issue tried in the United States District Court as to what is fair and just compensation for the lands so taken.

We respectfully request that the foregoing be made a part of the hearing record.

Mr. JOHNSON. I also would like to put into the record a letter from the attorney general of California to me stating his position in behalf of the legislation on the subject matter that has been before this subcommittee.

Is there objection?

(No response.)

Mr. JOHNSON. Hearing none, it will be so ordered.

(The material referred to follows:)

STATE OF CALIFORNIA,
DEPARTMENT OF JUSTICE,
Los Angeles, January 25, 1968.

Hon. HAROLD T. JOHNSON,
*House Office Building,
Washington, D.C.*

DEAR BIZZ: I appreciate very much receiving your letter of January 19, 1968, regarding California's position on the pending Colorado River legislation.

I am delighted to reiterate what you perhaps already know—that our state is united on the language of a draft bill that is the "Official Recommendation of the State of California." As in the past, the Department of Water Resources, the Colorado River Board, and the Attorney General of California have labored together on it; and we have had the assistance of the Advisory Committee to California's delegation to the Western States Water Council. I understand that the Governor has accepted and supports this position. So long as California remains united, we shall not fail.

As California's lawyer, my chief concern with the pending legislation has always related primarily to its legal aspects. In particular, I have insisted upon adequate priority for California's existing projects as against any new Central Arizona project. Any bill to authorize a Central Arizona project must embody protection for our 4.4 million acre-feet per annum. Sound language to accomplish this result which has been developed by this office, now appears in the draft bill that is the official recommendation of the State of California. This is essentially the same language that has appeared in your prior bills and those of the other California Congressmen and Senators. It is the language that Arizona has agreed to in 1966 and that was then included in the bills introduced by her three Congressmen.

Please feel free to contact Northcutt Ely, Special Assistant Attorney General, and my Water Law staff for any further analyses that may be needed on legal matters relating to this important legislation. We want to be of the greatest possible assistance to our congressional delegation.

Sincerely,

THOMAS C. LYNCH, *Attorney General.*

Mr. SAYLOR. Could I ask the Secretary and the Commissioner several questions with regard to a few words that appear in S. 1004 and H.R. 3300 and ask whether or not they are important when we consider these bills.

Mr. Secretary, on page 1 of S. 1004, line 8, the words "exchange of water" appear.

Are these necessary or should it be shown that this only calls for exchange within the basin?

The reason I ask the question is because some people might wonder whether or not this is authorization for exchanging of water outside of the Colorado River Basin.

Mr. WEINBERG. Mr. Saylor, that language has reference to possible water exchanges within the State of Arizona and between Arizona and New Mexico.

Mr. SAYLOR. In other words, at the time we draft our report, if we keep this language, the Department will be satisfied with that sort of explanation?

Mr. WEINBERG. Yes.

Mr. UDALL. To make the record clear, that is Arizona's understanding, too.

Mr. SAYLOR. In H.R. 3300, on pages 27 and 28, sections 305 (e) and (f) refer to imported water, first to be made available from the upper basin and second, imported water not delivered into the Colorado River system but diverted from works constructed to import water from that system shall be made available to water users in accordance with Federal reclamation law.

Are those two sections necessary if we consider H.R. 3300?

Mr. WEINBERG. The references apply to water that would be imported but not required to assure 7.5 million acre-feet of Colorado River water for the Lower Basin States. Such water would be for ordinary disposition, and it has been our thought that there is no reason why it should not be provided under the Federal reclamation law because it would be developed through a Federal reclamation project.

Mr. SAYLOR. But in view of the fact that the Senate bill did not contemplate augmentation at this time, the question in my mind is whether or not it should be included as we consider H.R. 3300.

Mr. WEINBERG. If you are going to follow the format of H.R. 3300 and deal with these matters, then we would recommend, as we have in the past, that the reclamation law be applicable in these instances.

Mr. SAYLOR. If it is the wisdom of the committee that we delete the section with regard to augmentation, then these sections should be deleted and we could deal with this matter of augmentation and the use of that water at a time such legislation is considered.

Mr. WEINBERG. Yes, that is the pattern of S. 1004.

Mr. SAYLOR. Thank you, Mr. Chairman.

I think this will help us considerably when we consider the markup of the bill.

Mr. HOSMER. Mr. Chairman, I would like to ask just briefly relative to the Colorado River Indian tribes.

I imagine there are about 2,000 of them, comparable to Hualapai. According to your figures, they have 99,357 net acres down there that can be worked for agriculture. That would take an annual consumptive use of 397,500 acre-feet of water.

I understand further that you are suing the farmers over in Imperial Valley to enforce the 160-acre limitation. Yet the tribes are leasing acreage on their reservation from 1 to 25 years, sometimes up to 65 years, in transactions as large as 5,000 acres and whoever leases them, will get 5 acre-feet of water per year for only \$9.

There are about 40,000 acres under lease now. I do not know what the annual rental is, but I would imagine that it would be at the most \$40 an acre and probably that is high.

Since the Indians are not farmers, they are just getting money anyway, why does not the Bureau pick up this 390,000 acre-feet of water just by paying the Indians for the land and using the water for CAP, instead of paying \$75 or \$100 an acre-foot for it? Would that not be a good economic way to handle this and still make the Indians happy?

Secretary UDALL. Congressman, I would like to put this in focus as I happen to be personally very familiar with the situation. First of all, there are something like 4,000 Indians in the tribe. They happen to have some of the best bottom land on the river and naturally the best water rights. They get their water out of Lake Havasu. They faced the choice 2 or 3 years ago when their water rights were clarified finally by the Supreme Court of how they wanted to go about developing it. They could have come to Congress and gotten little dabs and dabs of money, as we are trying to do with the Navajo project, and had the Federal Government build them a project. Instead, they chose the more rapid rate by entering into long-term leases with well-to-do California farmers and others whereby these people would subjugate the land, build the canal systems, and so on. Many of these Indians are also farmers. And I should add, too, that they are very good farmers. We hope more and more of them will get into the farming business.

But they wanted to get their land under production in a hurry. Therefore, they chose to go into these large leases with people who are raising specialty crops there.

The Indians made the decisions. I think they probably made the right decisions because they wanted to move rapidly.

Mr. HOSMER. Well, but they want money. Whether they get it by farming, by leasing acreage, or it drops out of the sky, or it is in the form of a payment for their acreage which releases the water to a higher and better use, probably. I just would like to offer this as a way to pick up considerable numbers of acre-feet of water at a cheap price and still have the Indians better off than they would be otherwise.

Secretary UDALL. Congressmen, they are not just interested in money. They get a lot of jobs out of this. They are putting more land into production themselves. They want to farm this land. I do not think they would be any more interested than the Palo Verde farmers, the Yuma farmers, or others in selling their land.

Mr. HOSMER. The Indians out in Oklahoma like to get the oil royalties.

I do not know if this is an inflexible attitude on their part.

Secretary UDALL. No, they like the land, they want to stay on it, they want to develop it. I would like to have them have that right, if that is what they want to do.

Mr. HOSMER. I suggest perhaps you could educate them.

Thank you.

Mr. JOHNSON. There is one other matter in your reply there on power from the steamplant. I presume it would also be used to back up the firm contractors for users. Could it not?

Secretary UDALL. It could be, yes.

Mr. BURTON of Utah. Mr. Chairman, will you yield to me?

Mr. JOHNSON. Yes.

Mr. BURTON of Utah. I would like to make the observation that does not necessarily need any comment unless somebody wants to comment on it. But we have done a lot of talking in the last few days about making the Colorado River "whole." It seems to me what we are really talking about on that is to make sure the lower basin gets 7.5 million acre-feet and still leaves the upper basin with a little over 6. "Period." "End quote."

Mr. HOSMER. I would make the observation that it would eliminate this knotty problem of who shares the deficit of the Mexican obligation. Therefore, it would benefit the upper basin.

Secretary UDALL. May I make one comment, because I think the one thing we should keep our eye on is that the upper basin is where most of the scientific research is going on related to weather modification.

This would develop additional water where the upper basin could get tremendous benefits. So let's keep that in mind.

Mr. JOHNSON. Any other question from any member of the committee?

Does the staff have any questions?

We want to thank you, Mr. Secretary, and your staff for participating in the hearing. You have given us some very forthright answers and comments. I know you are very well qualified, all of you. We should have enough record made, now, I think.

The hearing will be closed and the next meeting of this subcommittee will be on February 8, where we will go into executive session, followed by the meeting that will start on February 26 and run through that week, following which there will be a markup on the legislation.

All of the materials that were asked for, if you will get that up—
Secretary UDALL. As quickly as possible.

(Whereupon, at 12:35 p.m., the subcommittee was adjourned.)



