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Proceedings of a Joint Water Resources Seminar
of the
University of Idaho and Washington State University
(2nd Semester 1975-76)

An Appraisal of

CONFLICTING INSTITUTIONAL ATTITUDES

on the
Westwide Study Report
("Critical Water Problems Facing the Eleven Western States")

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FOREWORD

The Idaho Water Resources Research Institute and the Washington Water Research Center have provided the coordination and supervision for this graduate seminar on the campuses of the University of Idaho and Washington State University. It is this Institute's policy to make available the results of significant water-related research seminars conducted at Idaho's universities and colleges. The Institute neither endorses nor rejects the findings of the authors and participants. It does recommend careful consideration of the viewpoints put forth in the series of seminars that generated this proceedings.

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INTRODUCTION

The discussion topic for this joint graduate seminar in water resources with Washington State University was:

"Critical Water Problems Facing the Eleven Western States"

The subject chosen is the title of a recently released report by the U.S. Department of the Interior. This was the final report of an effort often referred to as the Westwide Study, which was authorized under PL 90-537 of 1968, known as the Colorado River Project Act. The act authorized the U.S. Bureau of Reclamation to make a comprehensive study of water resource problems in the Western United States. The report of the U.S. Bureau of Reclamation (April 1975) has identified some of the important problems facing the West, of which many issues are concerned with policies toward the environment and toward development of western resources.

The water resources of the western United States have always provided a basis for volatile discussion among the residents of that region. In fact, it is difficult to find individuals or organizations with neutral positions. Conditions and positions are rapidly disturbed, moreover, whenever one group's opinions affect another's actual or presumed pre-eminence over the resource. It matters not whether the groups in conflict are local, intra-state, inter-state, or inter-regional. But reactions seem to be particularly swift when an "outsider" such as the federal government "presumes" to define a situation for the states involved. Such a reaction was obviously evidenced in several of the speakers' presentations. It seems clear that the argument is much less on "what" was found to be the critical issues (although there were obvious disagreements) than it was on "how" the analysis was made. It was so evident in fact, that the title of the Proceedings became almost unarguable -- Conflicting Institutional Attitudes.

The format of the seminar was developed to provide a broad perspective of the Westwide Study report. The first speaker was a representative from the U.S. Bureau of Reclamation, the agency with overall responsibility for the study. Two speakers presented state views (Idaho and Washington). A third western speaker presented the views of the Western States Water Council. And finally, a speaker from the staff of the Senate Committee on Interior and Insular Affairs (the Committee that will have a major say in any implementation of the report) presented yet another view. In addition, two professors (one each from the University of Idaho and Washington State University) presented discussion of the document. The speakers and their affiliations were as follows:

Speaker	Representing
W.W. Reedy, Chief of Planning	U.S. Bureau of Reclamation
C. Stephen Allred, Chief Planning Division	Idaho Department of Water Resources
Kris G. Kauffman, Chief Policy Development Section Office of Water Programs	Washington Department of Ecology

Speaker	Representing
Ray Rigby, Member	Western States Water Council
Daniel Dreyfus Deputy Staff Director	Interior and Insular Affairs Committee, U.S. Senate
C.C. Warnick, Professor	University of Idaho
Jack R. Davidson, Director	Washington Water Research Center

The individual speakers came to the campuses on different days, spanning a period of about two months, thus there was no opportunity for them to cross examine each other. However, following each speaker's prepared remarks, the session was opened up for questions by the graduate students and others in attendance. The Q/A sessions were tape recorded, and with minor editing are included as part of the Proceedings.

We are indebted to our speakers not only for the time and expenses they incurred in coming to the campuses, but more so for the frank and open discussions they all encouraged. It is this very exposure to current water resources issues that makes the Graduate Seminars on Water Resources of particular value to our students -- and I might add, to all of us who were privileged to participate. We hope the readers of these Proceedings will find equal value.

The Idaho Water Resources Research Institute has been pleased to provide the coordination and supervision for this Graduate Seminar and for the production of these Proceedings. It is the Institute's policy to make available the results of significant water-related efforts such as were represented by this seminar, and although the Institute neither endorses nor rejects the findings and conclusions of the authors and participants, it does recommend a careful consideration of the viewpoints put forth.

Presentation by

W.W. REEDY
U.S. Bureau of Reclamation

I am happy to be with you this afternoon to discuss the federal report on "Critical Water Problems Facing the Eleven Western States". Commissioner Stamm of the Bureau of Reclamation is sorry that he was unable to accept the invitation to address this seminar. Mr. Kenneth Kauffman was supposed to be the substitute for Mr. Stamm but he became ill, so I am the backup man for him. Mr. Kauffman had a key position on the Bureau of Reclamation staff that was assigned to the U.S. Western Water Plan Study staff that prepared the report. When the Westwide Management Group disbanded, the Bureau of Reclamation staff was reassigned to my Division of Planning Coordination and when the Staff Chief retired, Mr. Kauffman took over his responsibility and has shepherded the report to completion. Much of the information I will give you today came from Mr. Kauffman.

I understand that this group has some acquaintance with the Westwide report. You have had an opportunity to read and study it so no general background appears necessary concerning the legislation which authorized the study. I also understand this is an interdisciplinary seminar so there will be an interest in many different aspects of the study including engineering, economics, environmental and social aspects.

The Bureau of Reclamation has printed and distributed 3,000 of the Main Report and 4,000 of the Executive Summary. Copies have been sent to all participants in the study including state and federal offices and agencies. Copies have also been sent to many public libraries as well as to many universities in the eleven western states. Private organizations, consultants, and individuals may obtain copies on request. One thousand copies of the Executive Summary have not yet been distributed.

The Secretary of Interior has requested formal comments both on the Main Report and the Executive Summary, from each of the eleven western states that were involved in this study. We've received comments from six of the states so far, two more that we know of are on the way, and we hope to receive the additional comments soon.

These comments will be published in a Volume III to the report. This third volume will be distributed to all recipients of the first and second volumes. We hope to have this volume with the states' formal comments on the report out about July this year.

Dr. Gladwell indicated that discussion of procedures of the Westwide Study was about as important and significant and interesting to you as a discussion of the results. So, I'm going to spend a little bit of time talking about the organization for the study and some of the problems of coordination that we encountered during the course of the study.

We had an administrative network which started out with the Secretary of the Interior and worked down through the Commission of Reclamation and then to the Management Group which was resident in Denver and actually coordinated the study. Much of this is listed in the Executive Summary and the Main Report, so I won't bother to put it on the blackboard or repeat it all. We involved the states in a significant manner. Not as much as they would have liked, but we feel that we did get major inputs from them. They were invited to be participants on the Management Group which was the basic organization that coordinated the study. The Management Group had representatives from three agencies of the Department of Agriculture, from the Army Corps of Engineers, Environmental Protection Agency, and eight agencies of the Department of Interior. All of these agencies had resident members of the Management Group staff at the Engineering and Research Center of the Bureau of Reclamation in Denver. There were also several non-resident members of the Management Group. The Water Resources Council monitored the whole study but did not participate in it actively. The Pacific Northwest River Basins Commission had an active part in it but did not have a resident member. There were minor contributions from other organizations such as the Federal Power Commission, HEW, HUD, Park Service, Bonneville Power, and the Department of Transportation. The resident agencies had the major part in the activities of the total Westwide Study.

In order to broaden the input, the interest, and the effective participation in the study, the Management Group selected an advisory committee, which is also listed in the reports. These included representatives of the eleven western states; the Pacific Northwest and Missouri River Basin Commissions, the various state agencies such as the Colorado River Commission of Nevada and the Colorado River Board of California; the Western States Water Council; public organizations such as the League of Women Voters, the Sierra Club, Trout Unlimited, Wildlife Management Institute, North American Wildlife Association; farm organizations such as the National Grange and the American Farm Bureau Federation; and organizations at such opposite poles as the AFL-CIO and the U.S. Chamber of Commerce. So we had a very broad perspective on this advisory committee that advised the Management Group.

There was also an Interior Policy Group composed of the Washington representatives of all the Interior agencies in the Management Group. This group provided high level policy guidance and direction to the study from the Washington level.

As I mentioned, the states did not participate to the full extent that might have been desirable, either from the standpoint of the Management Group or from the standpoint of the states. They were invited to assign full-time representatives to the Management Group but chose instead to participate on the advisory committee.

All of these interested agencies, such as the states and the advisory committee people, were asked to provide all the input that they could to the study and to try to influence the decisions that were made by the Management Group as much as possible. However, since it is a federal report, and is signed by the Secretary of the Interior, the final conclusions and recommendations and the presentation were the responsibility of the Federal Management Group.

Because these findings were federally oriented, the states, as I said, have been invited to present their final formal comments, which will be published as Volume III. To some extent, even though they didn't get full say in the decisions, the states are perhaps having the last word, because we're not going to revise the Executive Summay and the Main Report anymore. The study will be cut off with the states' comments that come out in Volume III.

This degree of participation of the states has been a bone of contention with them, particularly between the federal government and the states that are represented in the Pacific Northwest River Basins Commission.

I can understand the states' reluctance to participate fully in the Management Group when the report had to be a federal product and the decisions had to be made from the federal perspective. But I think they might have been a little bit more understanding and recognize that the decisions had to be made from the federal viewpoint since it was going to be the Secretary's report. As you hear some of the speakers that come from the states, you may get a little bit different viewpoint on this and it will be very interesting to see how their views on this either agree or disagree with mine. Then you'll have to make some judgments about the validity of both our positions.

I think it's well to spend a little bit of time specifically on the relationship of the Westwide Study to the Pacific Northwest River Basins Commission activities and particularly their Comprehensive Coordinated Joint Plan (CCJP). This, of course, is of special interest to you as residents of the Pacific Northwest States.

Originally, the Westwide Study and the studies of the CCJP were well coordinated. This was when the Westwide Study was intended to go through June 30, 1977, as provided for by the original authorization of the study. At that time it was anticipated that the CCJP would provide the basic plan to be included in the Westwide Report for the Pacific Northwest River Basins. But when the Westwide Study was shortened by three years it was impossible to include reconnaissance plans for the eleven western states in the study, as was originally proposed. So even though the plans that were developed under the CCJP would have been adequate for project type problems, it wasn't possible to include them in the study.

The CCJP plan would also have had the disadvantage that it wouldn't have answered policy problems, such as those related to water rights for Indian reservations and for federal public lands. So it would have provided a partial answer and partial use, but not the entire requirement. But because of the shortened study we were not able to use it to the extent that was even originally anticipated. The reason was that decisions had to be made before the CCJP would be completed. This situation has caused some concern to the states and to Don Lane, who is the chairman of the PNWRBC. But I think that things have been worked out fairly satisfactorily.

The water resources and related land problems have to be viewed from different viewpoints. The states are going to look at them differently from the federal government and differently from the local governments. The Westwide Study, as I mentioned, views things from the federal perspective. The CCJP

of the Commission is going to be regionally oriented in its viewpoint. The state water plans that most of the western states are developing will reflect almost exclusively the state viewpoints, and local plans, developed by local irrigation districts, drainage districts and cities developing water supplies, will be much more limited in scope. As with the Westwide Study, the larger the area, the more compromises are going to be necessary in reaching decision of what to show as results of the study. A great many compromises were hammered out as a part of this westwide Study, not only as related to differences of opinion among the federal agencies, but also differences of opinion between the management group and the states.

There are two or three specific Westwide issues that may illustrate some of these differences between the federal and the state viewpoints. One of these is the water requirement for energy in the western states, which is a major problem now. Water is not only needed for hydroelectric power, or pumped storage, but also for cooling thermal power plants and for waste heat disposal. The federal government is interested primarily in determining the availability of water to meet the needs for mining and processing coal and oil shale, for cooling water for waste heat disposal, and for hydropower.

The states have more of a concern about the siting studies, about the environmental and the social impacts of mineral and power development, and about competing uses for limited water supplies. The federal government, of course, recognizes these as valid concerns and wants to assist the states in considering and solving these problems. But there are necessarily different viewpoints in looking at the water resources problems from the federal and the state standpoints.

Another issue in which there is a difference in viewpoint is the requirement for water and the related water and land use studies for Indian reservations. The federal government is committed to improving the economic opportunities on Indian reservations. An important key to this development is the development of natural resources, both mineral and agricultural. Water is required for development of both of these resources and in many areas water is in extremely short supply. The Indian claims under the Winters decision require considerable study and legal interpretation. The federal government recognizes that these studies are necessary in order to achieve the necessary economic development for the Indians and intends to pursue them.

On the other hand, the states are naturally and rightfully concerned about the impact of these studies and the legal decisions that might result from them on their adjudicated and licensed water rights, which are established under state water laws. So the states are not as interested as the federal government is in pushing for a decision on this Indian water right question.

The third area that indicates a difference in viewpoint between the states and the federal government is in connection with water requirements for public land. There is a significant dearth of information and data on the water which is required for responsible management of the public lands in the west. Primarily Forest Service and Bureau of Land Management lands constitute the bulk of these public lands. The federal government is now examining a position that, when federal reservations were established, rights to the

water necessary to accomplish the purpose of the reservation were also established. This potential position and the vast amount of water that might be used by the federal government under it are of obvious concern to the states, so they may well take a different position in discussing such a topic in a report like Westwide than the federal government did.

These three specific examples illustrate some of the differences in federal viewpoint and state viewpoint on a study such as Westwide.

Let's look a little bit at some of the specific results of the study. In the main report there is a recommendation for 72 new federal studies, either new studies or supplemental funding of authorized studies. These are found in the main report, in a chapter toward the end, on pages 424-439. Out of these 72, eleven of them are identified as studies related to Westwide issues, the entire eleven western states. Seven of them are regional studies, such as for the Columbia River Basin, for the Colorado River Basin, and 54 of them are distributed fairly evenly among the eleven western states as studies that are recognized as having significant state impact.

The state issues that are recognized and reported on in the study were developed by interagency state study teams which had representation from concerned state and federal agencies. A report was prepared on each of those, such as the one that we have here for the state of Idaho. This was the basis for the summary of the issues for the state of Idaho that is shown in the main report and summarized in the executive summary. There was a report for each one of the states for these specific state water-related issues.

These 72 recommended federal studies do not include studies that are currently authorized and underway by groups such as the River Basin Commissions, nor does it include level C studies that might be recommended for authorization as a part of specific ongoing studies.

The Federal Water Resources Council has established three levels of studies for water resource development by federal agencies. Level A studies are general framework studies for large river basins or overall assessment studies. The national water assessment in which the Water Resources Council is now engaged in cooperation with other federal water agencies and the states is a level A study. So level A is the first level, which is framework and assessment.

Level B are basin studies, of a specific river basin or a specific river subbasin. The water resource agencies -- action agencies such as the Bureau of Reclamation, the Corps of Engineers and the Soil Conservation Service -- normally include their reconnaissance or appraisal studies in this level B. So the level B includes development of specific plans to reconnaissance level of detail.

The level C studies are what the Water Resources Council has designated as implementation studies. These are the ones that are done by the Bureau as feasibility studies. It is a rather detailed study resulting in an analysis which will permit the agency to send a report through the President and through the Office of Management and Budget to the Congress requesting authorization for construction. In other words, it goes to the implementation level. It

is at this level that the environmental impact statements required by the National Environmental Policy Act are required to accompany the planning report.

So when I refer to level B and level C studies, as I will be later on, remember that the level B is a basin type study with plans developed in reconnaissance level of detail. Level C is the implementation or the authorization or the feasibility studies at a greater level of detail.

The Westwide Report does not include level C studies that are already a part of ongoing activities. The shortened time schedule precluded that kind of detail in the recommendations for future studies. The states expressed some concern about those being omitted because they are concerned with having the implementation studies, which will help develop their specific water supply and water resources.

Out of these 72 studies, 29 of them are classed as special studies, not having to do with a specific level of study. An example of these would be the study of Indian water rights. Twenty-three of them were level B, the basin type study and 20 of them level C implementation studies. So it's fairly well distributed among these three different types of studies.

These studies that were recommended in the Westwide main report are in various stages of implementation. Some of them are already underway, in fact, some of them were started as soon as they were identified as part of the Westwide program. The agency which had responsibility for them picked them up and started working on them right away. Others have been implemented or started after the Westwide Study was completed.

Some of the typical ones that are underway now are in assessment of hydro and pumped storage sites to determine what may be available to meet the energy problems that this country is facing now. A specific example of the activity on this study is the Bureau of Reclamation's Western Energy Expansion Study, which is an inventory type study for additional power development. The Bureau is studying not just hydropower development but anything that would have to do with increasing the generation or reduction in use of electric energy in the 17 western states. The main purpose of this inventory, which will be complete in September of 1976, is to identify studies that can go to feasibility investigation, to the level C implementation studies.

The Corps of Engineers is actively engaged in studies of pumped storage in the Pacific Northwest. You may be familiar with some of those studies that are ongoing by the Corps of Engineers. Another study which is underway is a study of the priority of river segments for wild and scenic rivers. This is a continuing study as a part of the Wild and Scenic Rivers Act.

Another study is precipitation management for streamflow augmentation. The Bureau of Reclamation has been active in weather modification for a good many years, not from the standpoint of basic research but from the standpoint of applied research to increase precipitation. We have activities going on in the mountainous areas where the increase of winter precipitation as snow will increase runoff and storage later on in the year, and in the high plains

area where the precipitation will fall as rain to help the farming activities.

Of particular interest in the west is our continuing activity in the Sierra Nevada in California and the completion of the pilot study in the Colorado River Basin. Right now we're in a holding pattern awaiting funding for a larger demonstration program in the Colorado River Basin. We're hoping that Congress will appropriate funds for this in the near future.

Another ongoing study identified in the report is the water supply and environmental studies for oil shale areas. The Bureau has recently completed reports on the availability of water supply for oil shale areas in northwestern Colorado and northeastern Utah. An interagency environmental panel has been studying the environmental problems in connection with the development of oil shale.

Another recommended study that is now ongoing as a feasibility study by the Bureau of Reclamation is the wastewater management study of Ventura County in California. The purpose is to better utilize municipal sewage waste water within a total water management program for the county.

There are two water management studies which are recommended in the report that are now underway. One of these is a level B study on the Yellowstone River in Montana, which is being coordinated and led by the Missouri River Basin Commission. Another is the study in the Yakima River Basin, which is an ongoing study by the Bureau of Reclamation. We are coordinating that with the Yakima Tribal Council and with the Corps of Engineers flood damage reduction and urban water management studies in the Yakima River Basin.

These are typical examples of studies that were recommended that are now underway. There are others that are just barely getting started. One of the most significant of these is instream flow requirements for fish, wildlife, recreation and water quality. The Fish and Wildlife Service, I understand, is just starting a major study on flows required for instream fishery uses and good fishery management. This is a major study that is of great interest to all of the water resource development agencies because anytime you develop water resources you have to maintain adequate fisheries. There hasn't been enough information on what these flow requirements really are. So this will be of significant value to all water resource development.

Another study just getting started is a total water and related land management study in the lower Colorado River Basin. The Bureau of Reclamation is starting on a total water management study of the entire Colorado River Basin and will include this lower Colorado as a part of that. It is anticipated that the Bureau of Land Management will be starting on its land management study very soon.

I understood from Ken Kauffman that the Soil Conservation Service is getting started on a study of the detailed sedimentation and erosion problem in the Palouse Area, which is of major importance and concern to you people who live in this area.

Many of the studies that are recommended will probably have to be deferred for some time and require further justification. With the concern of the federal administration to hold down the federal budget, some of those studies undoubtedly will not be funded for awhile. It may be necessary to provide further justification for actually proceeding with these studies at whatever level they are recommended.

There are some problems that can't be solved solely from additional studies. There may be external factors that relate to them and in many cases there are policy issues that have to be decided. Examples of these are the three studies that I talked about earlier; water for energy, for Indian reservations, and for public lands.

Take water for energy as an example. Policy aspects that are necessary, or that relate to these studies besides just getting data and performing actual studies, are the national energy policy regarding imports and price supports for petroleum, and how much emphasis the administration is going to place on energy conservation. So these need to be looked at, as well as actual studies made. The policies of OPEC, the Organization of Petroleum Exporting Countries, and what they do about withholding or raising prices of petroleum supplies for this country will have an impact on the water requirements for energy.

A significant policy aspect is the state policy with regard to allocation of water supplies to energy vs. agriculture, and to whether the states want to maintain a large agricultural base or whether they are willing to let some of the water supplies which might otherwise be devoted to agriculture, go to energy use. We ran into this problem just recently in the state of Colorado. We were doing some advance planning studies on the Dallas Creek Project in the western part of the state. The Tri-County Irrigation District had developed a contract with a coal company for development of coal in that area, but Governor Lamm said "No, we don't want to develop coal there. We're not against energy development, but we don't want that particular area to be devoted to coal development." So we had to reformulate our plan and use some of that water for agriculture rather than devoting it to energy use.

So the states are the ones that have the final say as to how their water will be used. We in the Bureau of Reclamation recognize this and want to develop plans in accordance with the state desires. This will have a significant impact on any water for energy study and how the water is going to be used.

The same is true of water for Indian reservations and public lands. Although we do need a lot of data and have to prepare a lot of studies, this will not be finally resolved until many legal and policy decisions are made.

There have been some questions raised as to the usefulness of the Westwide Report. There hasn't been much new data developed in it. Most all of it was available at one place or another. But one of the main values of the report is bringing together in one place all this data that was previously uncollated with respect to water supply and related land use. We've got it all together now and we can look at it as a whole, with all the different viewpoints expressed. So this has been, in my mind, one of the major values of the Westwide Report. It presents and discusses some sensitive issues that have tended

to be brushed back under the rug. But it brings them out in the open and says, here, these are problems that need to be resolved, need to be looked at. The very fact that they have been highlighted and specifically identified is of importance and value.

The report does not specifically justify any study. It doesn't go into that detail and wasn't intended to. But it does represent the views and opinions of a large group of federal water specialists who are not directly influenced by any one constituency. When we start developing plans for a specific project to meet specific water needs of an area there are always constituencies that will try to influence the decisions that are made. For example, on an irrigation project, an irrigation district will try to bring pressures for a specific type of development. But, on the other hand, you have other affected publics that may be just as concerned about nondevelopment or a different type of development, such as environmental concerns or social impacts. On a specific planning report at level C, or implementation study level, you're going to have these pressures brought. In a broad study such as the Westwide, the people who prepared the study were able to avoid a large part of this constituency pressure.

One of the major things that came out of the Westwide Study is the fact that it was the largest effort at interagency coordination in water resource development that we have seen. It demonstrates that agency personnel can move away from the mission orientation of their agency and look at the significant problems from a broader perspective.

It was also the first major effort at application of the principles and standards for water resource development that were developed by the Water Resources Council and promulgated by the President finally in September of 1973. After the first draft of these principles and standards, each major agency of the Westwide Study ran several test cases to apply them. So this was a side result that came out of the Westwide Study.

As a part of this study the Bureau of Reclamation developed a simulation model of the Colorado River with Westwide support. This study applied stochastic hydrology concepts to a major study. There's been a lot of research and study done so far as stochastic hydrology, but his, I believe, was the first major application to a large river basin. The Bureau is continuing that as a part of our Colorado River water quality improvement program.

Q. Would you please explain what you mean by stochastic hydrology?

A. Hydrologic occurrences such as precipitation or runoff as they occur naturally are random occurrences. They don't follow any strict pattern. This is why we have floods and droughts. Some people say they follow certain cycles as far as droughts are concerned, 22-year cycles or something like that, but not with enough definiteness that we can count on that. So the hydrologic occurrences have statistical characteristics from which you can determine probability of occurrence.

Stochastic hydrology is the science of applying these statistical characteristics and developing new or synthetic traces of hydrology which are different from the recorded hydrology -- the actual recorded hydrology of river flows -- but still over a fairly long period of time have the same statistical characteristics as the actual occurrences.

In the past we've had to base our hydrologic studies just on historical hydrology. Now by using the stochastic principles and procedures, we can generate synthetic traces and see what would happen with the development of a water resource project and determine what the probabilities of different occurrences may be. So it opens up our opportunities of looking at future potential hydrology. It may not occur, the actual past may not occur either, but we have the opportunity of determining the probabilities of different types of occurrences and the impact of those occurrences in water resource development.

So we've applied these principles to a large river basin such as the Colorado River on a very small scale. In the future, we hope to use these studies on a much larger scale to make decisions regarding the development of the basin. And we're hoping to apply these in other parts of the west also.

So this is one of the things that came out of the Westwide Study. The Westwide Study also initiated major emphasis on studies of geothermal resources as a source of water for augmenting the Colorado River. In the Imperial Valley of California we've looked at development of geothermal brines for water augmentation, and now we're expanding that to look at it as a combination of power development and development of desalted water.

One more thing I should mention, many of the states developed state water plans as an outgrowth and in cooperation with the Westwide Study. This has been a significant step forward in water resource development in the west.

I hope I've given you some useful insights into the Westwide Study and into the preparation of the report. It may have been a somewhat biased presentation because I feel that the report is a very worthwhile study and has resulted in some very useful outputs. Not the least of these is the report itself. I think it's of great value. I trust that I've also had some objectivity here so that when you get the presentations by subsequent speakers they won't be completely incompatible with the comments that I have made.

I'd be happy to answer any questions you have, either about my comments this afternoon or questions that may have arisen from your review of the report of the executive summary.

Q. I'd like to know why, politically, the study was shortened. Why was it cut short from what the original intent of the act was?

A. I'm not sure. I don't know that anybody is sure. My best guess from the information that I get (and I think it's specifically mentioned, either

in the report or in the summary or inthe plan of study documents) is that Congress passed the Federal Water Pollution Control Act Amendments, and Section 209 directs the Water Resources Council to prepare level B studies on all river basins in the country. I think it was felt that would be some duplication of the Westwide study. Or vice versa, that the Westwide Study was a duplication of that. So they shortened it. I think there were probably other pressures and other reasons that I'm not familiar with from the political standpoint, but this may have been the one that was most significant and influenced the Office of Management and Budget and the Congress to shorten the study. I think it's unfortunate. I think it would have been worthwhile to complete the study for the additional three years and develop a reconnaissance plan for the eleven western states. I think perhaps it was a poor move to shorten the study because a bird in the hand is worth two in the bush, and this was a study that was underway. I don't know what the progress of the 209 studies may be. For these eleven western states it may have been better to go ahead with this and then let the Council use it as a part of their level B studies.

Q. I would like to know where you are on your weather modification program. What stage have you reached? And doesn't it raise questions about the moisture present in the atmosphere? If you have a rainmaking program in Idaho and it could be shown to have a negative effect on rain, say in Wyoming -- wouldn't you have a potential interstate conflict? Might it not be called moisture piracy? What sort of standards are you going to adopt in this weather modification?

A. Certainly the legal problems and the environmental problems in weather modification are major and significant and they can't be overlooked. We have studied them to a great degree. As I understand from our weather modification people, they have looked at this particular problem of pirating water from a downwind watershed, and their results show this is not the case. There is such a large amount of water in the air mass that the little bit that is precipitated as a part of the weather modification activities does not have any significant adverse effect on the precipitation downwind. They have made specific studies to that effect. I'm not familiar enough with it that I can quote them, but I know that this has been the result that they have obtained from those studies.

Q. It might be very small ventures now, but later on if you develop techniques so you can go ahead with a large scale program, won't you have to face this "piracy" issue? What are the safeguards against that?

A. There would have to be safeguards put into it. It would have to be monitored very closely. This is one of the most difficult things with weather modification, trying to determine just exactly how much of the additional precipitation or additional runoff is actually due to weather modification. This gets particularly difficult if the decision is made that the person who causes the weather modification is the one that has the right to use the water. Then you have to make a determination as to how much it is. If it is, as Utah said, that any weather modification becomes natural water and is distributed according to state water rights, then it's not so important. But to prevent the thing that you're concerned about, there

would have to be very detailed monitoring. The laws and procedures that were set up would have to be such that if it reached the point where the available techniques could take enough water out of the air mass to cause major adverse downwind effects, there would have to be some controls. With the techniques that we have now, the result of the study shows that this is not the case, but I agree with you that there would have to be safeguards to prevent any water piracy of that sort.

Q. You say that you have three levels of studies. Generally speaking, let's say today you start the level A study. How much time will it take to get to a level C? By that time isn't it possible all the factors might have changed, or all the concepts of the objectives might have changed? So your final plan may not suit the original requirements. Do you take any precautions to save the time, do you have some techniques or administrative procedures to see that the original objectives are achieved well in time?

A. Like the wheels of the gods that grind slow and exceeding fine, the wheels of government, I think, just grind slowly, not too finely sometimes. so you are right. From starting a level A study, a framework study, to the completion study, to the completion of a level C study may take decades. It has in many cases. I've worked on some reconnaissance studies, in fact, even some feasibility studies in southern Idaho back in 1940 that they are still studying. But you don't study things and make all your studies just as of the time that you started on them. You keep updating as conditions change, either economic conditions or physical conditions, as other development has taken place, private development for example, as new environmental concerns arise, as new social impacts become evident, you have to keep your studies current. So if you're doing a good job of planning, when you finally get through this level C study, whether it's taken 25 years or whether you were fortunate and were able to do it in five years, your study will reflect the needs as of the time you finish your study.

Q. Ten years ago, you might have thought from a pro-irrigation point of view and you started to do a level A study. Now you are working on level C and you see that we must take environment into consideration also. Would you go back and start collecting data on environment also? How much wildlife have you got, the fisheries? Will you go back again?

A. Well, yes, if this is a significant problem, you would have to and this would delay the study even further. Hopefully, if the planners had been alert and had done a good job of coordinating with agencies, both federal and state, and the public who had other concerns, they would have recognized this early in the study. If they did not, but it became apparent later on in the study, they would have to do it. This is what happened on many studies. Both the Bureau and the Corps had studies which were completed and authorized prior to the National Environmental Policy Act, some of which had funding. But then, because of NEPA, we were required, appropriately, to prepare environmental impact statements to show what the environmental impacts would be. In many cases our construction was delayed. We may have had contractors on the job. In all of those cases, I don't think the Bureau has had a permanent injunction against continuing con-

struction. We were able to show that the environmental impacts were such that they were acceptable and so we proceeded with the project as it was authorized by Congress. But yes, if these later things come up, you can't disregard them because there are going to be people who are concerned about them, and those concerns will be expressed to the Congress, which is the one that makes the final determination about the authorization of a project. So you're going to run into this problem sooner or later, and as soon as it appears, the planner might just as well start taking it into account.

Q. You indicated a problem having to do with Indian reservations and public lands as one that couldn't wait. Could you tell us a little more about what is being done to get this information together in this area?

A. I'm not familiar with the details of that. I don't think it's progressing as fast as it should.

Q. Who among the agencies seems to be leading out with studies in that area?

A. The Bureau of Indian Affairs is the one that should take the lead on that. They did considerable work. In fact, I think as a part of the Westwide Study there were some attempts to identify water requirements based on water needs, but in some cases the validity of these needs was somewhat open to question. I shouldn't say the validity of the need, but the estimate of water requirements for that particular need appeared to be somewhat high. So the study, although it's discussed here in the report, has been somewhat discounted. But the BIA is the one that I think should proceed with that, with the help of other affected agencies.

Q. You mentioned that work on some of the vital areas got started almost as soon as the need was exposed, but I hadn't heard of much work in this problem.

A. No, that's right, it hasn't had the emphasis placed on it that I think it should.

Q. The reason that I ask is that Jack Gladwell and I are both interested in this issue and would like to get hold of it. So we were wondering if any significant things had been done. Maybe we'll just have to propose them ourselves.

A. I thought that was one of the Westwide issues but maybe it was just identified as part of the state issues. For example, under Arizona they show a study of Indian water requirements as a level B study, recommended initiation date of 1976, and a study length of ten years. Total cost would be about 13 million dollars. They have similar studies for other states, in fact I think probably all the states. In Idaho, again they show a level B study for ten years, total cost of $400,000. For Washington Indian requirements, ten years, level B, at 2½ million. So it's recommended in here, but I'm not aware of any significant amount of activity in it. There may be some going on, but I'm not aware of it.

Q. An ironic thought hit me just them. I read in the Executive Summary the statement that the Indians were the most neglected minority in the United States. This seems to program at least another 20 years of neglect just to study what they need.

A. Even that isn't being actively implemented.

Q. You made reference to some major policy decisions which might be needed before some of these actions can proceed. One of those policy decisions seems to be in the area of federal-state conflicts over water rights, some of it stemming clear back in the constitution. Do you see anything going on federally now in the Congress or otherwise that would clarify some of these basic conflicts in the responsibility of federal and state agencies over the use of water?

A. I'm not familiar with them, no. I understood there was a proposal, and I don't know whether it finally was proposed as a bill or not, but there was a proposal to direct the Secretary of the Interior to determine what the water requirements are on federal public land. The first step is to determine what the water requirements are. Then determine what the water rights would be for that. As I said, I understand there is consideration being given in the federal government now to a position that when a federal reservation is established, such as a forest or park or Indian reservation, it automatically established the right to enough water to meet the purposes of the reservation. Just what is going on in any of the resource agencies or in the Department of Justice, or in the Congress about that, I'm not sure.

C. One of the problems in the business of quantifying the water requirements is that none of the agencies really wants to do that. Nor do I believe that even the Indians want to jump into it because it requires that they quantify or specify what the purposes of the reservations are. If you had looked at the Indian reservation a hundred years ago (basically used for hunting and fishing) and quantified the water needs at that time, you would have had a lot less than you will now with irrigated agriculture. If you take the Indian reservation and say the reason for the reservation is simply "for the economic benefit of the Indians", then anything they could use water for would be alright. The same thing follows with the Forest Service. If you look at what would seem to be the obvious reasons for a forest (to grow trees or recreation or something like that) that would be one thing. But it's very possible that the Forest Service may choose to say that the forests are for whatever the U.S. wants them to be in the future. If they quantify the water requirements right now they may be preventing later decisions. To me it seems like somebody's got to say "stop now", or "stop ten years from now". A decision has to be made as to when the cutoff time is. You can't always keep waiting for new developments. Unfortunately, if it were only the agencies' points of view that would almost be an easy way out, but when court decisions are what make the future decisions, that complicates the whole thing. When you get a nontechnical person like a judge deciding technical issues, it seems to me that confounds the issue.

Q. On page 80 of the Executive Summary, there's a table of estimated costs for recommended investigations. I was wondering whether the relative value of the estimated costs is a reflection of the priorities that the group has given these projects.

A. No, normally it's somewhat dangerous to tie in dollar cost of a study with its priorities. You may have a very critical study that costs ten thousand dollars whereas some other less critical study may cost 10 million. So, I'm sure the dollar amount is not an estimate of the priority or the criticality of the study, it's an estimate of the amount that they felt was necessary to be expended on that particular study. I'm not aware of any prioritization at all for any of these Westwide recommendations.

Q. Do you think there will be any attempt in the future to set some priorities on these?

A. There may have to be if there are limited funds available. Somebody may have to try to establish some priorities. I don't know who would do that. Whether the Congress would take it upon themselves to do that or perhaps the administration in developing the President's future budgets.

Q. Do you have a feeling about what the general attitude in the nation is as to the importance of water issues in the west as opposed to the Mississippi Valley drainage area or eastern problems? I know the Bureau of Reclamation's mission is in the west, but as a member of the Water Resources Council there's a balancing effect here. Do you feel that western problems are going to get considerable attention in the next ten years or has the emphasis shifted somewhere else now? The thing that brought this study into being was a focus of attention, but that may have shifted. What is your feeling, will this come back as a strong issue, the total water picture of the west, or has it deflated?

A. I don't think it has deflated. I'm not very familiar with what the emphasis on water problems in the east is, but I think there's still a great deal of emphasis on water problems in the west. One of the things that precipitated the Westwide Study was the problem on the Colorado River. In fact, it was authorized as a part of theColorado River Basin Project Act, which authorized the Central Arizona Project and five projects in Colorado. This was in 1968.

Q. It was really an outgrowth then of the congressional efforts and others?

A. Yes, it was previous work. But certainly the Colorado River was a critical issue then and they recognized that there were water problems in the rest of the country. The immediacy of the Colorado issue is probably not felt quite as greatly now as it was then because with the water supplies that we've had and Lake Mead and Glen Canyon likely to spill in the next couple of years and with the Upper Colorado River basin states still trying to develop their water supplies and build projects, there will not be an immediate shortage of water in the Colorado River. There are some problems so far as quality is concerned that we are dealing with. But we still have to look ahead because of the fact that it takes a long time from when you start studies to when you get projects built. You still have to be look-

ing ahead, so that when the Colorado River shortage comes along in the 1990s or somewhere along in there, we have ways of meeting that shortage; precipitation management, new projects, importation from the Columbia River Basin (should I say that up here?). So we have to be looking ahead. The problem of Indian water rights is not going to go away. Water requirements on public lands are not going to go away, nor is the energy problem. Oil and natural gas supplies are not plentiful, whereas we have a large coal resource in the west, most of it in the eleven western states that we studied here. There is some in North Dakota, but mostly in Montana, Wyoming, Utah and Colorado. With this being the likely source of energy for a large part of the country, both the west and other places, and needing water to develop it, I think there will continue to be considerable interest in western water problems.

Q. Would you say that the interest in irrigation development in the west remains low, federally speaking?

A. Yes, that's right, I think. One of the things that came out of the National Water Commission Report in 1973 was that they felt there was no need for further federal support for irrigation in the west. However, right after that report came out, the large grain surpluses that we had disappeared because of world food problems, droughts in Russia and sales to Russia, so that we do have a different picture now. We also have the problem of oil imports, and the question is often posed as to whether the United States -- one of its major resources being fertile land and the ability to raise food and fiber -- should be using that as an instrument of world trade. Irrigation can be a source of food although the possible development of irrigation without some major water transfers is not very great. The East High area of the Columbia Basin Project, which hopefully will be getting started soon, based on the second Bacom Siphon and Tunnel, is one of the large areas where water supplies and suitable land are available, half a million acres for the East High, although the initial development will be about 136 thousand acres. But some of these small projects which Reclamation has investigated don't have any major impact on world food supplies, or even national food supplies. They are much more local. So it's certainly true that there is right now a decreased interest in irrigation from the federal administration.

One of our current programs is the Western Energy Expansion Study. The primary emphasis is on water-related aspects of increased energy generation, including conventional hydroelectric generation, pumped storage, and water needs for mining and conversion of energy minerals. There uses are all basically part of our mission. The conservation side of it that we are looking at is conservation of energy use on Reclamation projects. Irrigation pumping, for example, or in planning projects going to gravity diversion rather than pumping supplies. If more efficient use of water on irrigation projects results in less water pumped, this will save energy. As far as we're concerned in this particular study, there is not a great deal of emphasis on the conservation side, most of it is on the energy generation side. But from what you're saying, I would agree that one of the major concerns from the national viewpoint is trying to reduce our energy use. I think this is going to be important. I think we need to look at

some kind of population control and I think we need to look at ways in which we can, to put it bluntly, reduce our standard of living. I don't think we're going to be able to go on in the affluent way that we have, where six percent of the world's population uses 30-35% of the resources. I don't think it's moral and I don't think that the rest of the world will let us go on for too long. I think we should voluntarily try to look at some ways in which we can live a little bit more frugally and still very comfortably. It's hard, I don't think I'm doing a very good job of it myself, but I think that from a theoretical standpoint we all need to look at such ways, and energy conservation is certainly one of those.

Q. You've alluded to this water transfer, and I think the class should be well aware that by law you are prohibited from considering that subject. The Colorado River Project Act specifically prohibited you from considering any concepts of water transfer. That moratorium, as I recall, is over in 1978, ten years after the act was passed. Apparently you couldn't even address it. But that is a concept that you've alluded to a couple of times; for instance, if we wanted more extensive irrigation, or in looking at the problem you mentioned with this use of water for energy development. There's talk of transferring some of the coal by water to centers of production. Taking just the energy water use, what's your prognostication into the future?

A. I think probably slurry pipelines will be used in some placed. One that there's talk about now is a slurry pipeline from the Gillette Coal Field in northeastern Wyoming down to a large thermaelectric generating plant in Arkansas. The water for that would probably come from the groundwater or from the Missouri River or its tributaries. I don't think that slurry pipelines are going to be transporting all the coal, I don't think they could because there's not that much water and the railroads will still be doing a lot of it. So far as other transbasin transfers, let's look at the Columbia River Basin for example. The studies that were done by Reclamation and other people prior to the moratorium looked at the possibility of utilizing some of the waters of the Columbia River by transporting them down to the Pacific Southwest, to Arizona, Nevada and California. If these diversions were to take place above Bonneville Dam, a lot of hydroelectric energy would be lost to the Columbia Basin. These diversions would be high energy users, there would be a lot of pumping required, there would be some of that regained through generation as the water dropped, but they would be net energy users. There would also be significant environmental impacts. But from an energy standpoint, I don't know whether this would be desirable.

Q. We used to hear the comment in our area . . . "why don't you ship the people up here?" But I don't hear that much anymore. They way they don't want your people either. So the no growth concept is becoming very popular. I don't know how practical it is, but that's one of the things that I think may influence the idea of transfer of water. Maybe someday people would rather transfer water than transfer people.

Q. Do you sense that there is a strong sentiment out in the wings of federal agencies of waiting for this moratorium to expire and then come in

with a rash of studies on transfer? Or is the interest in transfers dead?

A. I think the interest in transfer is certainly dormant. I don't think there's going to be a big rush of studies come October 1, 1978. As far as the Colorado River is concerned, which is one of the main needs for augmentation, I think we will certainly be looking more heavily at weather modification as being less environmentally damaging, although there are some major environmental problems. We've had some real problems down in southwest Colorado where we did our pilot study. But when you look at a major transfer, such as you'd have from the Columbia River Basin or from the Canadian rivers down to the southwest, you're going to have some terrific environmental problems with that. Weather modification is considerably cheaper than any kind of an interbasin transfer, so I think we'll be looking to other sources such as that before we start looking at any major interbasin transfer. There are still people that keep pushing for them and perhaps in the long run we will be getting to them. Most of the sentiment up in Canada certainly is against use of Canadian rivers. One of the fellows in Denver who used to work for Reclamation and is now retired but still quite interested in these interbasin transfers (he was consultant to the Federation of Rocky Mountain States for several years) has talked to some Canadians about that and has been up in Canada several times. He called me three or four weeks ago and said that he had gotten a call from a Canadian reporter in Lethbridge inquiring about interbasin transfers and he wondered whether there was any activity going on down here. So there's still some interest up there and perhaps come the next century there will be more interest in it, depending on what we've done to cut down on population or slow down the population growth and reduce our dependency on water for our standard of living, or at least cut down the rate of increase in use. But eventually we're going to have to adjust either our population or our standard of living to the water supplies we have available, or we're going to have to bring more water in or we're going to have to move up where the water is.

Q. Do you have some rough guess about the cost of weather modification, for so many dollars you can bring in so much water, or so much snow? Do you have some rough estimates?

A. I'm not sure just what figure they're talking about now, but I think it's in the range of a dollar and a half to three dollars an acre-foot, something in that range.

Q. You say you can make rain or snow. From the opposite view, if you have snow and you want it to stop, or you have rain and you want to stop it because of danger of floods, are you going in this direction also?

A. No, we aren't in Reclamation. We call it weather modification or precipitation management but we're on the rain making side. The National Weather Service is doing some studies, or has done some studies on the other side to try to stop it; to try to stop rain, stop hail, things of that sort.' But this isn't our concern, we're interested in more water at the right time, so we don't try to make it stop. In line with that, though, I might mention

that one of the concerns that was expressed down in the San Juans in southern Colorado where we were doing our study was to the effect that we'd increased the flood potentials. But our policy is basically that anytime the prediction is that the precipitation or the snow pack or the runoff will be greater than normal, we don't seed the clouds. We're not interested in the above normal years. What we're trying to do is bring the below normal years more up to normal, so that if we do a good job of monitoring, we don't feel that we are increasing the flood potential.

Presentation by

CALVIN C. WARNICK
Professor of Civil Engineering
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I've followed this Westwide Study since its birth in the Colorado River Project Act. There will be quite a lot of criticism, I think, as some of our guest speakers come along. Yet, I compliment the Bureau of Reclamation in that they tried something that hasn't been attempted before, to cover a very broad area and try to focus in on these problems from a broad regional basis. I think the inventory of problems is not bad, and probably it will serve us some purpose. The one that I have chosen is the topic -- water from conservation and reuse. I thought maybe the guest speakers wouldn't speak much on this topic and that a couple of you students might choose parts of this. I hope I won't infringe too much on your presentations and may even whet your interest for further searching on the topic.

We start out with the idea that the Westwide report points out, the tremendous use of water, mainly in agriculture. It quotes a figure of about 90 million acre feet of water that is diverted for agriculture. Of this amount, approximately 20 million acre feet are what they termed "consumed as a result of losses to irrigation". I take issue with the verbage used there. They've said that this loss to irrigation is consumed, and hydrologically you never consume water. You know that the hydrologic cycle is a cycle in that water is never totally destroyed. But let's pursue that a little further.

In their presentation, the report emphasizes the concept of increased productivity from water, they say the concept of productivity has been long used with labor and land; that we should optimize the productivity of labor and the productivity of land. But they contend that water has never been challenged with trying to optimize productivity where water is a limiting factor to a farmer, an industry, a recreational or urban development. The report indicates plans should be developed to maximize the output of goods and services per unit of water. Now what does that mean?

I see my good friend Dr. Michalson over there and that is what he does a lot with. I don't know how many of you are economists and ask what that means exactly. Let's conserve and use water as efficient as we can, doesn't it? Let's try to make the most out of the water that we can. I've just jotted an equation on the board that may look a little formidable to you, but I would like you to look at this:

$$I = P_c Y - P_w Q - V_c Y - F_c$$

where: I = income in dollars per acre
P_c = unit price received for crop
Y = crop yield in units per acre
P_w = unit value in dollars per acre foot
Q = water applied per acre, acre foot/acre

V_C = variable cost of producing crops in dollars per unit of crop yield. This includes labor, fertilizer and such variable costs

F_C = fixed cost of production in dollars per acre. This would be such costs as property investment cost.

What I want to point out to you is that P_W is the little problem child. That is so low in most cases of agricultural water use in the west that it's hard to maximize this productivity we want. V_C is usually the high thing because in irrigated agriculture we use a lot of things other than water to make this yield Y in the equation. We use quite a lot of labor, we use quite a lot of energy for tractors, but the most significant thing that has increased over the last decade or so is fertilizer. This is a very high cost, much higher per acre than the water cost. So when we maximize this term I and that is what we're wanting to do, to maximize I with respect to Q, this is such a nebulously small part of it that the farmer doesn't have much chance or incentive to do that.

So in this recommendation they've said, well we need to increase the productivity, but you're not going to increase the productivity per unit of water until P_W is much higher. Economics just work against you to do that. We could take a lot more time on that, it's a very critical issue. The problem is that the cost of water to the farmer is so low in most of our society of the west, and it's protected mainly by water rights. Historically we've got this low cost water and we think of it and people speak of it as a free good. It isn't really, but it certainly approaches a free good. So maximizing the productivity per unit of water applied is going to be a tough problem in the west.

On the other hand, it isn't that easy to say. Even my little equation here only treats one kind of use of water, that's irrigation in this particular case. But you've got other places where water is being used simultaneously or sequentially down the stream and it's the same water. You've got to consider what it's doing to the other user. As I said, the Westwide study spoke of it as a loss, and it isn't always a loss, because in Idaho a lot of our eastern Idaho farmers say the high use of water that they make is a great advantage, even to the power producers down on the Snake, because the high diversions put a lot of that water in storage in the aquifer and slow up the peak flows of the flood season and make it available in the low flow season. This indicates that improving efficiency isn't automatically going to be good. It isn't always true that we want to improve efficiency because there are those occasions when perhaps it is best to have a high degree of water use. Then we can store it in an aquifer or recharge with it and take advantage of time delay. Likewise, sometimes we can improve quality, but at other times it will decrease quality.

Comment: While you're there, I'd just like to comment on that. That's what we've seen with some of the dams on the Snake. It's kind of surprising to see water quality increase instead of become poorer as far as nutrients and sediments and things of that nature are concerned. Of course, there's a corresponding reduction in habitat for the type of fish that we want to fish for, but it was something that surprised us when we started looking at what quality some of these dammed areas for about four or five years. You have a loss of turbidity, you have a loss of the nutrients in the water. Just

yesterday Dr. Falter, our partner in this adventure, was sitting in the seat where Dr. Davidson was and we were discussing this and he said Ice Harbor's getting to look like a very nice looking lake as a result of the upstream reservoirs. This is an improvement over the last hundred years. Of course, before that time perhaps the water might have been clearer and cleaner, but it's been degraded as a result of the upstream irrigation usage, feedlots, municipalities dumping sewage and what have you. It's certainly changed.

As I go on with this concept of improving the efficient use of water, the same can be said in industrial and municipal waters. They mention in here the idea that we ought to be more conservative by reusing our water in some industries. Instead of just one time use, use it two or three times before we even discharge it back into the stream, which we normally do.

But even in the case of municipalities, we ought to do more reuse. Many of you may have heard that the University of Idaho is considering the possibility of taking their sewage effluent water and using it to water their golf course and their playfields. That's the kind of thing that Westwide says we should look more at. But oftentimes that sounds like a good thing to do and we, in some of our work, are saying it's a good thing, but in the particular case we're worried, too. Washington State University has a downstream water right on Paradise Creek and what if we use it and then Washington State sues the University of Idaho for the use of their water. So you get into legal problems that complicate the problem much more.

A graduate student and I worked on a research study last year on what I think is an ideal way to cool some of our power plants. That is to use the large canals as cooling canals. We looked at a couple of places down in south Idaho, namely the Twin Falls and Northside Canal Companies. They're huge and they have a tremendous flow of water. They could cool a couple of thousand megawatt plants. There's a type of thing that the report is saying we ought to do more of. But here again, how readily is the irrigation company going to accept you dumping hot water in their canals? There are some complications there, but these are things that I think we can look to try to do more with. But institutionally and politically some of these things may not be as readily available as our report would lead us to believe.

They bring up the topic of total management of the Columbia River and I offer this as a challenge to some of the students that might choose this. What is meant by the idea of total management of the Columbia River: The Westwide report is saying, if we could integrate our uses and be more cooperative of power giving a little, irrigation giving a little, municipal uses changing and all working more integrally together, that's the aim. We're working a lot of sophisticated models of the rivers, both discharge type models and also quality models. These are being developed to do this very thing, to try and develop a more integrated and total management of the Columbia River system. I commend them for that, I think there are efforts going forth, but it's not going to come about without a lot of good hard work and oftentimes the water rights problems may control. You people in Washington state are following your problems, you'll notice there's some real controversy going on in your state saying, should we have water rights that are just for 25 years? They say no, we need longer assurance that we're going to have our water rights,

or should we use it to develop bit corporate farms versus small farms. These are arguments of how we're going to do some of our integrated development.

I would like to extend my presentation to questioning of Problem No. 15 in Westwide problems which is concerned with the coordinating of land use planning and water use planning. They're making a great pitch that we need to do more with it. They say the future is not in studying the water as much as it is studying the land use impacts. Because land use will be the more limiting factor oftentimes in our planning than our water use may be. I quite agree with them in many respects. One of the things they make a very strong pitch for is a national land use planning council similar to the Water Resources Council. If you have followed national legislation very much and if you've followed Idaho County's suit against the state of Idaho with regard to land use planning, you can see that it's not very popular, especially with the private owner of land. He doesn't want anyone to plan his use of the land and we'll see tremendous frictions and controversies going on in the next decade in that realm of land use planning and coordination between land use planning and water use planning.

Let me point out one particular example. In our state we have an agency that I say claims they are the land use planning agency in our Budgeting and Bureau of Planning in the Governor's office. But over in our Department of Water Resources we have an agency that's planning for water resources, and they're developing a water use plan for the state. As I look at those two agencies, they're both vying for political power in how do they control the destinies of the state to a degree, maybe not selfishly, but I think they are making a sincere effort of it. But you still see a lot of professional jealousies and agency jealousies cropping up. This will be a real critical problem in what Westwide is asking for here, a coordination between land use planning and water use planning. We have the same frictions and jealousies in the Bureau of Land Management, Bureau of Reclamation, Corps of Engineers, Forest Service, National Park Service, all the public land management agencies are going to be oftentimes rubbing the traditional ways of treating water resources planning the wrong way and developing a lot of difficulty in implementing what Westwide would like to see. It's certainly something that I think they rightly defined as a problem.

Presentation by

KRIS KAUFFMAN
Washington Department of Ecology

I would like to indicate my appreciation for the opportunity to speak to this group on this subject. Water resources is not only my vocation, but my avocation, too. I really enjoy working in this area and the Westwide Study is an important subject. I work for the state so I'll be taking, perhaps, a somewhat parochial state view. If I worked for the Bureau of Reclamation I would undoubtedly take a different view. One of the handouts provided was the governor's viewpoints from all the northwest states on the redirected Westwide Study.

I would like to say that the Bureau of Reclamation staff did a lot of work on a very difficult task. My comments, though they may be at times derogatory, are not intended to diminish the effort that went into this particular exercise, however frustrating it might have been for a great many of the people involved.

I believe that members of this group have a very mixed gackground in water resources, so I thought I'd give some institutional setting, not only to the Westwide Study but to the institutions surrounding water resources of the west.

One concept that has to be recognized is that, historically, water has been allocated in the west on a first come first served basis. We developed out of pioneer stock and there was a very limited purview. People wanted to survive and water was one of the vehicles they used to help in their production of sustenance. So the institution surrounding water allocation developed, once we got away from the law of the frontier and into an administrative process to recognize a first in time, first in right activity.

The states played the role in allocation of water through our history. There are a very limited number of places in the federal constitution where the federal government is allowed to deal in water resources. Over time, the constitution has been interpreted to allow the federal government a larger and larger role, but early in the allocation of water resources, the states were the principal agencies that provided the administrative process for assuring a relative security of interests in a quasi-property right to water. The start of the increased federal role in water resources occurred around the turn of the century with the Reclamation Act and the Rivers and Harbors Act. I wanted to make that as a point of background.

The western states came out of what's called the appropriative doctrine background as opposed to the riparianism of the eastern states. This holds true for all the eleven western states that were the subject of the Westwide Study.

What is very different in the western part of the United States is the availability of supply. There is a very different situation from the Colorado River Basin in terms of supply and demand in certain other parts of the eleven western states. To show the complexity of the water allocation in the Colorado River Basin, Figure I graphically displays the level of supply and demand in the Colorado system over time. It has been said that perhaps if the Central Arizona project wasn't funded there wouldn't be the level of pressure on the Colorado, but it was and there is. I think you're all aware that there has been apportionment of Colorado River waters through court action and that the upper basin has certain allocations as does the lower basin, including California. Colorado interests have known for some time that they are in a water short area and have been looking for ways to solve their supply problem. If you define diversion and depletion requirements as in Figure I, you get into a situation that, at some point in time (in this particular analysis it's 1990) there's got to be augmentation. Without it you cannot meet increased demand.

There are some places, like in Arizona, where there is a growing realization that they may have to make a tradeoff between agricultural use of water and industrial use of water. They're doing it, because they just don't have the supply to fill all demands. The intent of Figure I is to show that we have some real supply and demand problems in the Colorado Basin.

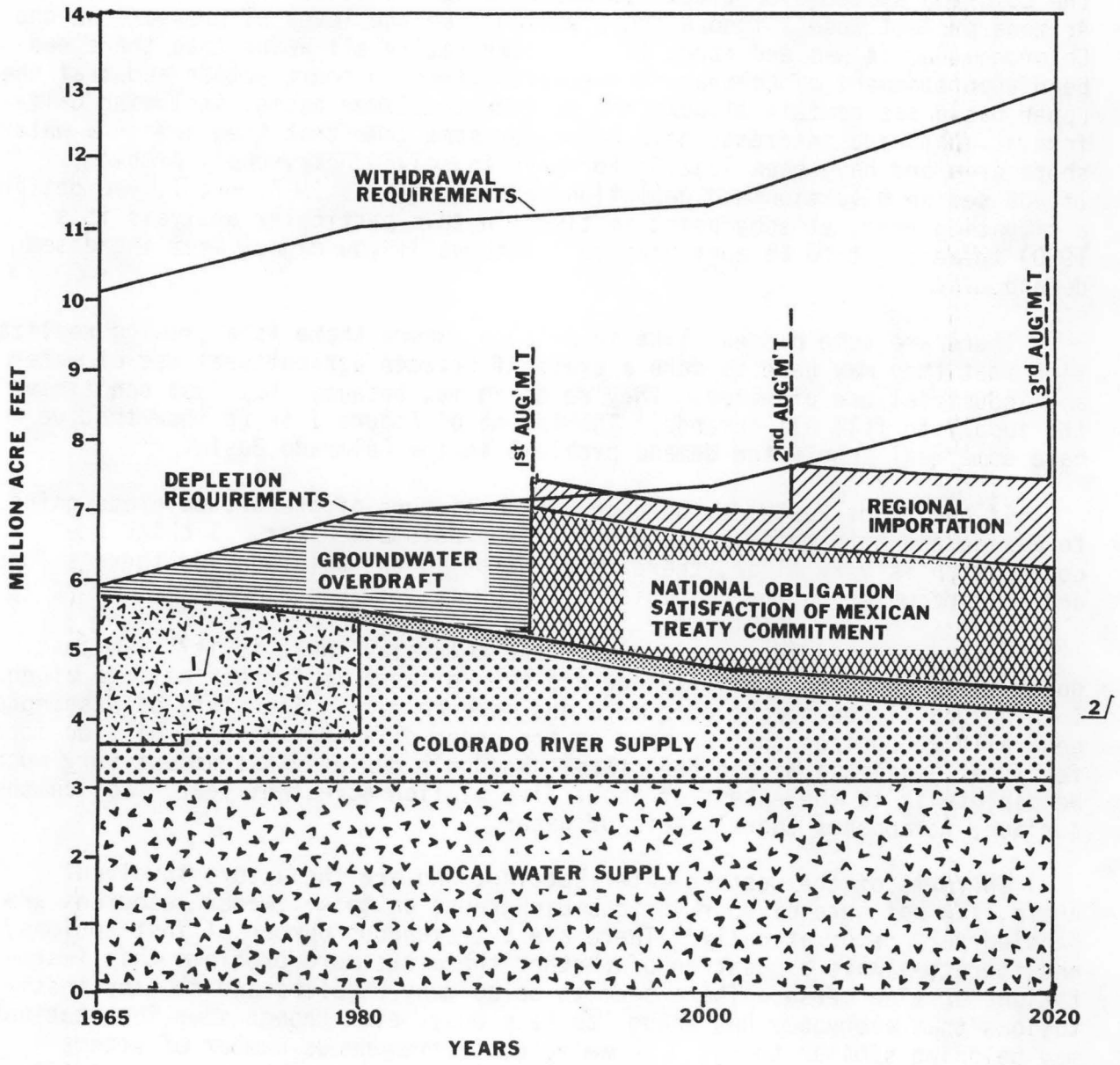
If one reads Westwide, on page 3 is a picture of the dry Colorado going to Mexico and on page 4 is the mouth of the Columbia River. I think the connotation is very clear, there is no water in the Colorado and there's lots and lots of water in the Columbia.

Next we get to the commitment of the Columbia. What is it? I'm just going to touch on this briefly now and then discuss it further as I go along. I think you'll see how it gets more and more complex. The state of Washington generally recognizes that we have on the order of a quarter of a billion acre feet/year available within the state. We don't deplete that amount very much. We deplete it to the extent of about five million acre feet/year. So, on the surface, it appears there's lots of water.

In terms of the western water setting, who are the actors involved? Again, I'm not sure of your various background on this. Water resources are handled very democratically. There are a tremendous number of institutions, and there's always a question of whether there are more problems than institutions or vice versa. There seem to be so many problems and so many institutions that everybody has enough to keep busy, even though some institutions may be doing similar things. So we've got a tremendous number of actors in the form of state agencies, federal agencies, various types of districts, the various and sundry water purveyors, and several parts of the political process that have some concern of authority in water resource management.

In the arena of water resources, when you start talking about doing something, you really limit the entities involved. For Washington state, basically, at the state level, there are the Department of Ecology, Fishery and Game, and the Department of Social and Health Services. In the area of research at the state level we have the University of Washington and Washington

PROJECTED WATER REQUIREMENTS AND SUPPLY



1/ AVAILABILITY OF COLORADO RIVER WATER AFFECTED BY LACK OF DIVERSION FACILITIES. REQUIREMENTS ARE MET BY GROUNDWATER OVERDRAFT

2/ WITHIN REGION AUGMENTATION

State University. Getting into the principle federal agencies you have the Department of the Army, Department of Interior, and the Department of Agriculture. That takes care of most of the major actors in water resources.

In Westwide we're talking about a planning study, so I thought I'd go briefly into the evolution of water resource planning. I mentioned that when the west was settled there really wasn't any planning. Folks got a gravity ditch to the best land, put water in it and started growing crops.

Then in the early 1900's we found single purpose planning activities. Most of these revolved around agriculture and power, speaking in terms of Washington state. So you would have a power project or an irrigation project and that project would be planned to meet a single purpose.

In the late thirties we started doing something about Grand Coulee Dam. It was a multiple purpose project. It had both power and irrigation as purposes. There was and is a tremendous amount of support from the income from power for the agricultural activity. So you had a multiple purpose project.

This, of course, encompassed some tradeoffs. We no longer had the run of fish above Grand Coulee, and then Chief Joseph Dam once it was built. There was more and more concern developed over some of these adverse impacts as we used first single purpose, then multiple purpose planning. What has developed at this point in time is what can be called multiple objective or multiple purpose planning. That is where you look at all the various opportunities related to water resources, whether you're focusing on a given river basin or a given project. So you would include fish and wildlife and recreation. At the state level we have defined aesthetics as a beneficial use, along with the traditional uses of power, navigation and agriculture.

The Water Resource Council, which is the president's policy making team in the area of water resources has set forth principles and standards for water and related land resources planning. How many are aware the principles and standards exist? (About one half of the students responded.) I won't go into this except to say that the principles and standards suggest that you look at, as multiple objectives, national economic development and environmental quality. Alternative plans emphasizing each of these objectives are required to be developed. They actually require evaluation using four accounts; national economic development, environmental quality, regional development and social well-being.

I think you can visualize if you went into a basin you'd have different plans if you were developing a plan emphasizing the objective of environmental quality than if you were developing a plan in that same river basin emphasizing the objective of national economic development.

Let's now look at the Westwide authorization. I have provided you with a copy of the first couple pages of the Colorado River Basin Project Act. I certainly won't go over it all, except to say that the law itself is an emasculation, I don't think that's putting it too strongly. The law itself gives a direction to develop a plan for meeting the water needs of the eleven

western states and then it provides constraints which, in some people's minds, prohibit reaching the objectives that the law set out. Those are legal constraints. Of course, it was put in there with the activity of Senator Jackson and it's sort of a big tradeoff. The Colorado Basin got water resource projects and they did get a study authorization except the study couldn't do what they wanted it to do. Of course, we're talking in the context now of the middle to late sixties when this was being considered, so you have to think back to that context. There was a lot of discussion about interbasin water transfers. Basically, Senator Jackson got the moratorium tacked onto this Act before he would allow the bill to pass. That moratorium allowed for no study of transfers from the Columbia River to any other basin for a period of ten years. That moratorium is up in September of 1978.

The other constraint placed upon the study was that they were to have biennial reports and that the study was to be finished by 1977.

This was all well and good. The Colorado River Project Act was passed three years after the Water Resources Act of 1965 which provided for the establishment of the Water Resource Council for policy making at the president's level. It allowed the establishment of river basin commissions at the regional river basin level, and it provided funding under Title III for states to take a higher level of activity in water resource planning. So the implementation of the Water Resource Planning Act was just getting going. The Pacific Northwest River Basins Commission was the first river basin commission established under the Water Resources Act of 1965 and that was in 1967. So in 1968 you have the Colorado River Project Act coming along that says there's supposed to be a study led by the Bureau of Reclamation. The Water Resource Act said that there are supposed to be some studies headed by a river basin commission which will end up as comprehensive coordinated joint plans for different parts of the United States.

So you had the federal government paralleling funding for two different study efforts; first the framework studies, what's called level A studies. How many know the difference between levels A, B and C planning? (A few hands raised.) The broad framework studies, then the more detailed comprehensive coordinated joint plan.

I'd like to get into the Westwide process now, given that background, and the results and responses from the state of Washington. Again, I would stress that I'm taking a parochial state viewpoint.

The initial activity of both Westwide and the Comprehensive Coordinated Joint Plan (CCJP) and, to a lesser degree at this time, the Columbia River and Tributaries Plan of the Corps of Engineers, and to a still lesser degree, the National Assessment Activity, was oriented towards a time frame of 1976 to 1977 to get a final report out. The original scheduling concepts that were discussed in the very late sixties and 1970 had a coordinated planning activity ongoing, with the principal actors (the Department of Ecology and a couple of other state agencies, Agriculture, Army and Interior) all cooperating in developing a single plan for the Pacific Northwest. An important point is that the functional planning activities that the Bureau would be responsible for in the Comprehensive Coordinated Joint Planning effort was funded under Westwide.

So we felt things were in pretty good shape. We had a fully funded CCJP, and a relatively well funded Westwide plan. The concept was they would go down the road, and we'd have a high level of resources with the results that we'd come out with a good planning effort. Well, we found out relatively quickly that everything wasn't all roses. The Bureau did indicate fairly early that they had their own ideas as to what they should be doing and they did indicate that each state would indicate the completion of its individual state water plan and the relationship of that state water plan to the Westwide Study and to the River Basins Commission's CCJP. We thought these things had all been sorted out, but then we found out that this was a request from Denver. Needless to say, the states didn't get anything out of Westwide. In fact, Washington felt that Westwide wouldn't serve the northwest purpose at all. So we sort of rebelled at that concept. We had a hard time seeing people removed from what was actually going on within the state doing planning for our area.

Then we got into the funding problems. I think the representative from the Bureau of Reclamation has gone over that, and therefore I don't need to touch on it too much. But about the same time, when the Westwide program was being redirected, we were getting some results from Westwide. These are not published documents, and I don't think too many folks are aware of these documents other than the state and the Bureau. This is the Washington state report of the Western U.S. Water Plan. It states that it is from Olympia, Washington, by the Washington State Study Team. This really amazed us because it was written elsewhere. We took strong exception to that sort of thing, because it wasn't done by the state study team. The Bureau had sat in on CCJP trial plan efforts in 1972, just like the Corps of Engineers, the Soil Conservation Service, the Indian nations, and the different state agencies had, and yet, to our great surprise, we had a Washington State report that was done by the Washington State Study Team that laid out a priority list for Washington.

One of the things that I was planning to do was to go through a basin example and an overall priority example, how things evolved in Washington state.

Let me go into one point on this document. There was a preliminary analysis of the water available within all the individual states, and one of the things that came out for Washington was that we had about 245 million acre feet per year that was available for further appropriation. We didn't and don't believe this figure and we stated so quite strongly. One of the points that was never included in Westwide is a completion of this table (Table I). This table includes instream flow requirements in the title and that's the blank part, that was never filled out. If you don't look at instream flow requirements I think you can say what the Bureau said, except you ignore the existence of all dams on the Columbia River and all the dams on the Snake.

Another thing that this whole process required was participation. These documents say how everybody cooperated and participated, except only the Bureau of Reclamation had money to do that in Westwide. Now any agency that has responsibility for water resources has a whole bunch of things to do. They get a budget that's earmarked to do these things. And when you don't

Table I. Groundwater and instream flow requirements, 1975
(Thousands of acre feet)

C-NP Subregion (Type I)	Groundwater		Instream Flow Requirements				
	Groundwater in Storage (Upper 50 ft. of Saturated thickness)	Pumpage 1975 Estimated	Rec. F&W	Hydro Electric	Navigation	Quality	Other
Clark Fork, Kootenai, Spokane	9,000	154					
Upper Columbia	35,000	240					
Yakima	13,000	130					
Lower Snake	13,000	37					
Mid-Columbia	13,000	100					
Lower Columbia	8,000	140					
Coastal	13,000	20					
Puget Sound	40,000	200					
WASHINGTON TOTALS		1,021					

have the budget to participate in something like Westwide then it's an added activity on top of everything else. When you're juggling the limited manpower that you have, you juggle it accordingly.

You have been provided with a copy of the statement by the Pacific Northwest states to the Western U.S. Water Plan Study advisory committee, May 14, 1973 in Las Vegas. This was about the time these documents were in draft form and Westwide was being "redirected".

We requested, among other things, that the comments of each state as they related to priorities and problems in the state must be fully incorporated in the final report. We felt that it would influence the Office of Management and Budget in their activities. I think it's instructive for you to go through this statement which was also made a part of our final comments on Westwide.

We got a response from Interior indicating that, of course, they would do everything possible to get our input into this planning effort.

Then we went further down the line and the scope of the effort was changed. Originally, of course, it was to provide answers to meeting the future water requirements of the eleven western states. Then it was changed. In May of 1974, a draft of this document "Critical Water Problems Facing the Eleven Western States" came out. One of the things we said about this document was that to even allude that the Western U.S. Water Plan meets the requirements outlined in the 1972 amendments to the Federal Water Pollution Control Act distorts the scope of the Westwide Study products. In almost any planning effort by any number of agencies, an agency will say their plan is going to provide solutions to all the problems that are around. We found Westwide doing this in the area of water quality. The Bureau of Reclamation had little background in water quality, we took exception because the water quality activities that were just then starting were very complex in nature. We have some of the planning efforts out of those studies now and Westwide didn't even scratch the surface.

Then we got down to the final documents. Remember, the states' comments were going to be included. We wanted the states' comments included in the Executive Summary document, but they aren't in it. What finally was agreed upon was that there would be a separate document, making a total of three documents. There would be the executive summary, the backup document which says something different, and then there would be a third document which would have the states' comments.

So that's the way it is. One of the comments we got back from the Bureau, and it's quite appropriate, says that it's their study. They're the ones who are going to make the decisions. And, of course, it was their study, and they did make the decisions. And all the states could do would be to indicate the states' attitude that their decisions may not be final. And that's what we've done.

So we get to the point where we have these two documents in our agency, the Department of Ecology is responsible for responding for the governor

on this type of activity. So we've got these two documents and we wanted to get as wide an input from our clientele and as coordinated a response in Washington state as possible. Therefore, we sent copies of this document to all the members of the Ecological Commission, and to all the state agencies that might be at all interested in this activity. We got back some sketchy comments, because unless you work in this area, you don't have much of a concept of whether or not it really does make a difference if, for instance, in one part of the report it states that we've got problems in town and municipal supplies in 85 towns and municipalities in the state and in another part of the document it says 685.

From where we sat, looking at this activity as, in part, an exercise to develop a work program to provide funding for the Bureau of Reclamation and others over time, it did make a real difference. At the point in time when this was developed, my perception was there was some thinking in the Bureau that they might be able to get into the domestic water supply business. The National Water Commission report was saying that the irrigation project water user was going to have to pay the full cost and thus things were looking somewhat bleak for the Bureau of Reclamation. But there was other legislation pending at that time that was going to start a lot of federal money flowing into the domestic and municipal water supply area. Thus, from my perspective, there was a noted move in that direction by the Bureau. So that sort of thing did mean something.

But the state agency that is responsible for municipal supply didn't think that way. They thought that the level at which Westwide was written was so meaningless that there was no point in commenting on it. That agency was actually into working with each utility on their problems. This document was talking about 85 or 685 water supply problems in the state and that didn't mean anything to the folks that are working with each municipality and trying to resolve some of these problems.

Our comments on a lot of the individual details weren't too extensive. We indicated, of course, that we're pleased to provide comments on this report and that we'd previously provided other comments. We also noted that there was no response made to some of our previous comments, including the correction of place names. This is a good indication that your comments haven't been given much attention. The governor also indicated that we felt strongly that the plan grossly overestimated its impact.

There is an area of concern. This report, which shows the dry Colorado and the wet Columbia, was the first report to reach Congress since the previous national assessment and will go to the Office of Management and Budger for their consideration. We do have some concern that the work program that's set out here might be adhered to.

We indicated that we're putting all our eggs in the basket of the CCJP for the Pacific Northwest. As far as the state is concerned, the CCJP will be the meaningful document for the Pacific Northwest. A very important point is that Westwide tends to be the type of study that will sit on the shelf. It's a point in time benchmark. It says April 1975. This is what one agency perceives the problems and needs and the potentials to be in a very broad

fashion. In one place in here they say that this won't be used for directing expenditure of further funds and in another place it says that it should be. But the major point is that it doesn't set up any sort of planning process. Through the time period that this study was ongoing the perceptions of the national goals, the regional goals and local goals changed at least three times.

You had, starting off, clear overriding thrust for water for agriculture. Then the demand for environmental purity, ecology, environmental quality. Then the energy concerns. Throughout this Westwide effort we saw the priorities jumping around in accordance with the perceived and interpreted national and regional goals of the moment. But Westwide did not provide any planning process which can look at the problems and needs over time. If Westwide doesn't do it, will the CCJP? We believe so. There will be a more detailed and comprehensive report coming out of the CCJP. There will also be a planning process provided. The planning process will provide for annual prioritization on an ongoing five-year basis of the program, projects and research needs in the area of water resources. The state will be highly involved in that prioritization process. So I think there's a real difference in what we're dealing with between the Comprehensive Coordinated Joint Plan and the Westwide Study.

I'd like to read comments from an outsider which were received too late to be included in our official comments. This individual is Ann Widditsch, a member of our state Ecological Commission. On one part of the report she says "some weather modification enthusiasts wrote this 'gee whiz' section which alarms me." Note that this is someone who doesn't deal in water resource planning every day, this is a member of the general public who has reviewed Westwide and reacted to it. "My most serious criticism of this part (weather modification is) no consideration of possible side effects. What about charges the disastrous Rapid City flood was triggered by upstream cloud seeding. Haven't we learned anything about going slow in these massive tinkerings with the works of the universe?" I don't say I agree or disagree with the comment, I'm just saying that this is a reaction of someone from the outside who hasn't been involved in all this, who just receives this type of report. She went on to make another point that I think is good, and that was that the report indicated that anadromous fisheries were just a regional concern. She feels that anadromous northwest fisheries are not only a regional concern, but are a Westwide, national and international concern.

Back to our Washington State comments. I think one of the major concenrs of those of us who have gone through this whole process was -- how do you understand what it says? The report has regional priorities, some of which are of concern to the state, and it has state priorities, in addition to work programs related to those priorities. How do you read it? We suggested that if the format was a little different it might make a little more sense. One of the things the state of Washington has been pushing is to separate out resource problems and issues from institutional problems and issues instead of mixing the two up. We suggested this might help the report.

We felt that portions of the report were somewhat unbalanced. We felt a lot of it did not have adequate support. I might note, in fairness to the

Bureau, that they recognize some of these points in the documents, if you look in the right places. They recognize that they didn't have the resources to do an adequate job.

I think one of the most concerning things to me is that, although the Bureau was participating in the CCJP, throughout Westwide they, for example, include as needed a total water management study for the Okanogan Basin. We have been going through a level B study on the Okahogan, identifying objectives, subobjectives, element categories and alternative plan elements, which get into every program that every federal agency or state agency has an interest in for that basin. And nowhere in the level B, with the Bureau participating, do they mention a total water management study for the Okanogan Basin.

We are in the process of raising this matter with the Bureau so that we make the state position very clear. Our concern, of course, is that Westwide, with the recommended study for the Okanogan (the total water management study), would get funded whether or not the definitive study of the Okanogan deemed the study necessary. This is the type of situation that gets us concerned.

To give enough time for questions, I'll wrap up my discussion. I have asked Dr. Davidson to provide us with a summary after I get through the last section.

Where are we now and where are we going? No planning process is provided through Westwide. Like many previous plans, what is provided is a shopping list of federal agency programs, principally Bureau programs with, in the state opinion, inadequate screening to eliminate those programs and projects that may be of little value.

I do believe that the federal law, the Colorado River Project Act, was adhered to, as these documents do provide a response to that Act. The state is appreciative of the work that the Bureau has put into these reports. There is substantial information in these documents. I don't want to indicate that the Bureau shirked their duty. They did what they could with the amount of resources they had, emphasizing their interests.

In Table II I have what I call the real water use picture. Again, that from the parochial state point of view. This is a copy of a partially completed table we got from the Bureau about two or three years ago. The Bureau table didn't have anything on instream flow requirements. I've taken the liberty to put down some numbers that are readily available for different points in our Columbia River system. I haven't gone into the subdrainages. I've just looked at hydropower, that's the only instream demand that I paid any attention to. This whole table is related to 1975 conditions. I also have information which, again, is fairly readily available on the maximum hydropower under consideration. What I've done here is made a direct diversion from full gate hydraulic capacity for power production to acre feet per year. That isn't how it really works, because the water really isn't always available when the demand is there and demand isn't always there when water's available. What

Table II. Groundwater and instream flow requirements, 1975
(Thousands of acre feet)

C-NP Subregion (Type I)	Groundwater		Instream Flow Requirements				
	Groundwater in Storage (Upper 50 ft. of saturated thickness)	Pumpage 1975 Estimated	Rec. F&W	Hydro Electric*	Navigation	Water Quality	Water
			(not additive) Maximum Under Consideration				
Clark Fork, Kootenai, Spokane	9,000	154					
Upper Columbia	35,000	240	195,500**	325,800 (Grand Coulee)			
Yakima	13,000	130					
Lower Snake	13,000	37	76,700	95,600 (Ice Harbor/John Day)			
Mid-Columbia	13,000	100					
Lower Columbia	8,000	140	160,000	344,000*** (McNary)			
Coastal	13,000	20					
Puget Sound	40,000	200					
WASHINGTON TOTALS		1,021	195,500	344,000			

*Direct conversion of full gate flows in CFS to thousands of acre feet per year. Figure given in 1000 acre-feet per year should be multiplied by 1.38 to get flow in CFS

**Under construction in 1975. Water right filings now cover approximately 231,680,000 acre feet/year

*** Although authorization has been requested to do detailed study on 24 units at McNary, the state has committed to support only 20 units (271,500,000 acre feet/year) at this time

we're talking about here is a capacity if the water were there.

The thrust of Westwide is that there are 245 million acre feet a year available in Washington, but let's look at hydropower. In 1975 the Bureau said that Washington state had a depletional use of 5 million acre feet. If we consider instream flow values for hydropower in 1975 of 195 million acre feet, then we use 200 million acre feet, not 5 million acre feet per year. The 200 million acre feet is much closer to the 245 million acre feet/year than is 5 million acre feet/year.

If we looked at the maximum under consideration, we'd come up with 344 million acre feet/year. That's more water, on the average, than we have. Of course, the reason is that they're building power capacity, that is, peaking capacity, into existing power plants.

There is currently a request for an authorization by the Corps of Engineers to study McNary up to 24 units, which would have the capacity for using 475,000 cubic feet per second, or 344 million acre feet per year. The footnote on Table II indicates that the state doesn't support that level at this time. We do support up to 20 units, which is six more units than are there now. But even if we go to the 20 units, which is very probable, we're talking about a 271 million acre feet/year capacity, which itself is greater than the amount of water that we have. It's a reuse situation, it's an instream flow.

From my perspective, this is the real water use picture. Water is used for hydro, it is used for navigation, it is used for fish and wildlife and there are some real requirements for these instream uses. To look at the entire Westwide situation and not indicate that water is currently used for instream purposes in specified quantities, I think, provides a false picture.

Why don't we go ahead with the questions and discussion, I'll try to provide answers.

Q. Is the third volume, including the states' comments, being worked on? Who would be funding and coordinating such a report?

A. All that report will be, as I understand it, is Washington's statement and similar statements by the other states. As far as I understand they'll be assembled and included as a state response report with no editorializing. That would be it. I don't know when such a report will be out. Our comments on Westwide were submitted in early January.

Q. You pointed out all the bad points in the study, but I think you might have pointed out some good points also. Can you do that?

A. I have indicated strongly that I was taking a parochial state view. We see this study as being redundant and perhaps unnecessary. I did indicate that there is a lot of information in the report. I think the Bureau did a relatively good job in formatting some of the information. I think some of the gross water balance information assembled was fairly good. I think some of our reaction is on an institutional basis. One problem that we perceive as a state is that these types of studies contain

lots of information in them, but then, all the way in the back, there is a list of recommended studies. These are studies recommended for funding and our contention is these studies, because of the planning process, may or may not reflect state and local attitudes. Now, to point out something good. Some of the study does reflect state attitudes. But, I think the point we're making is there's no assurance in the process that was gone through that in fact these do represent states' attitudes.

Q. You indicated first that you got the thick report and it said that you guys had done it, but you hadn't. But then another report came out very shortly after that. Was that a polished version of the first one? And who did the second one?

A. Both of these documents were done within the time frame that the Westwide was fullblown. The Bureau basically did both of them. All the second one is is a final report of the first one. Again, I think there's a lot of good information in these state reports and the Bureau did change the indicated authoriship as we requested. In this particular report the third priority water resource concern in the state of Washington is the municipal-domestic-industrial water needs of the Moscow-Pullman area. I don't think the state perceives that problem as being the third water resource priority problem in the whole state. I may so perceive in two years, or in five years, but Westwide does not provide a planning process that sorts out what the priorities are for projects, programs and data needs over time. Also, the priorities change from document to document. The regional priorities change, the state priorities change. However, we didn't necessarily perceive them changing in accordance with our comments, but they did change.

Q. If you were made chief of all the United States water policy, what sort of improvements in the setting of priorities in different water uses would you make?

A. The chief is Warren Fairchild, he is now the director of the Water Resources Council. He has a background both in the Bureau and at the state level, principally in Nebraska. The Water Resources Council is a policy making body which has sitting on it representatives of all federal water resource agencies, it's all federal, it's not state. Warren Fairchild came out to the Northwest and said the way to formulate water resource plans and set priorities was through the Comprehensive Coordinated Joint Plan that the Pacific Northwest River Basins Commission is doing so well. I would agree with him. The national activities, of course, will be based on a compendium of all the different equivalent Comprehensive Coordinated Joint Plans. All areas of the nation are not covered by river basin commissions, so there are other entities in other parts of the nation that are looking at water resources.

Q. I'm curious as to how CRT (Columbia River and Tributaries Study) fits into this.

A. That's a good question. CRT is mentioned in the study. This is a good point because it gets back to a previous point, what do we find good about

Westwide. One good thing is that the Bureau said in Westwide that the Columbia River and Tributary study ought to fund the people they're requesting to participate in their planning effort. Now get this -- the Bureau had the money to do Westwide, they didn't provide other agency people with money to participate with them, but they are recommending that the Corps, in their Columbia River and Tributary study, provide money to other folks to participate in the Columbia River and Tributary study. I agree with that. We agree very strongly with that because the Corps this year has about 1.1 million dollars for a restudy of the Columbia River and Tributaries. Now, how does it fit in with Westwide. It fits in here as one of the designated elements to be an ongoing study. Of course, the old Columbia River studies have been ongoing with periodic reports coming out over the past 40 years. It recognizes CRT and recommends that it continue.

Q. One of your criticisms, and I think you're very justified, is that of the agency domination or saying, we want to do it our way. I get a little bit of that when I read CRT information.

A. You'll get a little bit of that when you read our state information, too.

Q. I think the thrust from you people in the states is, "hey, we want to get a role in this, too."

A. Very fundamentally, that's a good point. Ten years ago the state of Washington spent under a thousand dollars in water resource planning. Since that time we've had Title III grants, which have been increased; we've had what's called the Water Resource Act of 1971, which addressed that very point. The Water Resources Act, among quite a number of other things, says that the Department of Ecology is to, in behalf of the state, vigorously represent state interests before water use and management agencies of the federal government, including the Army Corps of Engineers, the U.S. Soil Conservation Service, the Bureau of Reclamation, the Bonneville Power Administration, and the Federal Power Commission, etc. So you're right. What we have been in the process of doing since we got a program funded and ongoing is defining turf for ourselves. When you cut territory out for yourself there either has to be a lot of extra turf around or you're going to be taking somebody else's turf. Then you get into conflicts. The question is whether you've got the horsepower to resolve those conflicts, and the major source of power the state has is the governor. His comments are generally respected because a federal agency has difficulty getting any project actually going if the governor objects to it. That's a political fact of life, whether it's the Middle Fork Snoqualmie Project or some other project, perhaps even one close around here.

I think that's a fair criticism, it's a fair criticism for any program including our own. We have our own basin management programs. They only speak to the allocation of water because that's our bag, we handle water rights. What we do is look at a whole basin and we indicate how water rights should be issued in the future. To do that we have to look at instream flow requirements, fish and wildlife, water quality and out of bank diversion concerns. But they have limited objectives, they just speak to allocation of water for further purposes. I think we could be

validly criticized by, say, the Corps. We're not speaking to navigation and we don't speak to power very much. The Bureau perhaps could criticize us because our basin management documents aren't development oriented, they speak of the flow available at specific points in time. They do make allowances for further development as appropriate, including storage, but they're not documents that set forth to promote a particular project. I think that's a very valid criticism of all the programs. We have some concerns on the Corps' pumped storage program as to just what direction it is taking.

Q. Do all the states have the same opinion of this report, that they leave out things and don't include state comments and all these things?

A. One of the handouts is from the governors of the northwest states. I think that fairly represents the concerns of the northwest states. I cannot say what the representative from Idaho might say here, but I think there will be somewhat similar concerns.

Q. So what do you propose to do to get the government to listen to your concerns?

A. The River Basin Commission was set up at the request of the northwest governors. It works on a unanimity rule, it's a concensus organization. Federal agencies are represented, there are more federal agencies than states, there are five northwest states represented. If only one federal agency or one state objects to a proposal within the context of the River Basins Commission, it goes back for more negotiation. So the states do have some clout there. We're trying to put most of these things into the context of the River Basins Commission where we, with the other states, can have some clout. Things like centralized funding instead of coordinated budgets. This is a real problem. The Bureau had the dollars to do Westwide and it did it. If the Corps has dollars to do a study, it does it, and it'll ask you and ask you and ask you to participate, but you only have so much manpower. So what we're attempting to do through the River Basins Commission is get centralized funding through the River Basins Commission, have them control studies and have them dish out study money to all different agencies that play a role in developing the information and making or recommending decision choices so we don't have one agency getting all the money for the study with the other agencies requested to come in and donate their time and participate when they have their own missions to fulfill.

We basically assume, with our power in Congress as it is, that in the end we won't have to worry about the recommendations of federal agencies the state interpreted not to be in the public interest.

Q. What effect do you think it would have if Senator Jackson were elected in November? Do you think there'd be more clout in Washington?

A. That would help, however, any president should largely take the national viewpoint. But he could veto adverse proposals. I don't want to give an impression that I'm totally zinging the Bureau. The Bureau works very closely with the state of Washington on a number of projects, including

the Columbia Basin project. We get really good assistance from them. They are working in the context of the CCJP. We get technical reports from them, but the state happens to be leading the CCJP effort under the River Basins Commission. So there would be the possibility if you had a Bureau person talk to you on the CCJP you might get complaints about the state. But I don't see how any agency could complain about the amount of time they're given for review and the consideration of comments within the CCJP. It's frustrating, in an administrative role, that it takes so long because we have interminable reviews and rewrites and it takes an awful lot of time. But we are documenting things along the line and I think everyone's going to be somewhat satisfied that they were listened to in the CCJP process.

Q. Le'ts look ahead a little bit. We see frictions in the planning process between the state, now it's beginning to carve out, in your words, turf for itself. As we look down the road, are we going to see more and more state planning replacing federal agency planning?

A. I think there are enough problems and opportunities in water resources for everyone. There is a proper role for all the different entities and agencies. In no way do I see the state taking over the role of the Bureau or any other federal agency. I think what we're working at is achieving a balance with the states respecting federal agencies' technical expertise and the federal agencies respecting the states' proper policy making role with regard to water resources within the state. I see the states further defining their role. I think in the case of the Bureau and the Corps there may be an ongoing switch from construction to maintenance and regulatory activities and that's proper. But, as much as I might think it would be nice if the state got into construction, for example, I don't think, realistically, that it's going to happen, or that it should happen. The Bureau and the Corps have extremely competent staffs built up and they have a lot of experience, a lot of expertise and they do a pretty good job at a lot of things.

Dr. Jack Davidson:
In summary, we really appreciate Mr. Kauffman taking the time to come over and present this. I think it was a very good presentation and I'm delighted he took this parochial point of view. You may have noticed that when you tried to pin him down a little he wasn't going to be caught in that being the whole range of his intellectual achievement, but he took it and that's what we wanted him to take in this because we wanted to provide you with a look at the agency level viewpoint, a look at the state level viewpoint. We'd hoped to put in the Northwest River Basins Commission's viewpoint, but I think Kris addressed those, too, if you were listening carefully. What he told us about the CCJP was what Don Lane was telling me when he was discussing what he was going to talk to you about over here. Then he couldn't make it. You're going to get to listen to the state of Idaho and you're going to get to listen to what I think is a very important congressional reaction to this. At least part of the Congress, the part of the Congress which is focused on water issues will react to this with Dr. Dreyfus's comments in two weeks. You're haveing a very good opportunity

to look at something that ordinarily you don't. If you had picked up that document and went through it at first, it would have had a great deal of impression on you. Kris spoke a little about criticisms and good points as he was challenged to do on the study. The study has lots of information in it, lots of good information. But the Bureau, compared to the past, outreached itself in doing a study of this broad a scope. You should have seen Bureau studies of ten years ago. The Bureau is trying to seek a new image and this, too, is a problem.

From the Bureau and the agency level we expect a national view, don't we? On the other hand, the agencies as they grow and become institutionalized, have a life of their own. Right now the Bureau has certain death threats hanging over it in the sense that it's been a construction agency in the past and now it's expected to shift to a maintenance role. There's a basic organism, if you people are zoologists and biologists, this is almost like a physical organism struggling against this. Maybe it itself doesn't realize some of the ramifications, but it struggles to preserve itself a role. And, indeed, there is a shopping list of federal agency programs here, prioritized in various ways and I'm not sure they could disagree on how that actually came about. But in addition to the national view we get the self-serving role in here that gets mixed up even in the minds of the people that are doing it.

So we're trying to provide you with a perspective from several vantage points and we hope that in the nature of writing your reports you'll be able to bring in a mature perspective because of this.

Now, I had several points that I was going to summarize, but I noticed that the questions themselves summarized several of them. We do tend to hold you a little later here. I would make one more observation, though. I seem to criticize the Bureau. Now as we move back to the state level, Kris addressed the problem. That is that state perceptions change and they change too rapidly sometimes. Now we don't know what the states' perceptions will be if indeed the election goes one way as opposed to another twelve months from now.

There is something here within the local perception that we want to preserve in planning such as this. I talked a little last week about the Northern Great Plains and the energy problem. I spoke of the state as being the small man facing a big lion with the pistol loaded with blanks and the rickety chair and the lion getting ready to spring.

Well, it's not quite ready to spring on water yet like it is on energy. But that pistol is loaded with blanks that are now largely environmental measures. The chair is a few state laws that seem to have some ability to hold things back, but they really don't. When it comes down to voting power, often the selective federal establishment has the real muscle on its side. However, the way that the states have been brought into the picture in the River Basins planning and other things is quite a large advance. The ability of Kris to make ripples as he apparently is and causing concerns in the agencies of getting things through and so forth, it's something that really didn't exist in the past. I think some of the big federal agencies could have brought down state government pretty easily ten or fifteen years ago.

Those are kind of off the cuff comments. To get back to what I really started with, we hope we're giving you the advantage to look at Westwide through several eyes so that the perceptions you have will be very different

than you would have had if you'd just picked up this document, took a section of it and wrote something out for us.

To reiterate what Dr. Davidson said, I did very purposely take a parochial state view. I do appreciate the regional attitudes that various federal agencies have and the national perspectives that our congressional delegation must take when they support authorizations of programs that sometimes the state agencies don't particularly agree with.

Thank you for letting me address your group.

Presentation by

C. STEPHEN ALLRED
Administrator, Planning Division
Idaho Department of Water Resources

I think I should qualify the comments I'm going to make. There is a lot of good information in the Westwide Reports. There is a lot of technical information that can't really be disputed. I say that before I start because my remarks are going to be very critical of the Westwide effort.

There are three documents in the Westwide effort. I'll talk about them a little bit later. There's a state report, each state had one of those and I think maybe Kris Kauffman mentioned it. There's also the Executive Summary and the main report.

The Westwide effort, or the western states water planning program, was part of the Colorado River Act. Actual studies began in about 1969, but I didn't get in until the early 1970s. Idaho and most of the northwest states were not very excited about the Westwide Study. Our position was somewhat defensive as a result of the moratorium that was placed on diversion studies.

The studies, as I remember, were originally to be financed to the tune of $6-8 million. In 1969 the Bureau of Reclamation started a process whereby they tried to involve the states and many other interests in the actual preparation of the base data. I'm sure you've heard all this before and what I really wanted to get down to was the advisory committees that were established by the Bureau of Reclamation on the Westwide effort. The major advisory committee was a huge committee that represented, or was supposed to represent, state and federal interests from almost any organization you might want to talk about.

Up until that point in time, the states, and Idaho in particular, had been cooperating in the Westwide study. Idaho and the other northwest states had been working with the Pacific Northwest River Basins Commission through state study teams. These teams were trying to turn out some of the documentation and information that was going to be necessary, as well as our own planning efforts. I think it is significant that the study team effort was ongoing and it was cooperative at that point in time.

Originally, the Westwide effort was to be accomplished through cooperative effort and it later degenerated down to the point of individuals preparing issue papers. There was a list of issues that were to have position papers prepared on them. When the study was "redirected" anyone that wanted to prepare an issue paper on any subject could prepare one. Those were supposed to be sifted through and utilized by the state study team to prepare a state document.

In Las Vegas in 1973 the thing just came apart. I'll talk about that in a minute. It might be well to also look at the period of time before the Las Vegas meeting in April or May of 1973 and what we thought might come out of

the study. I mentioned that we really were in a defensive situation because of the moratorium that the northwest had been successful in achieving in the Colorado River Act. We had to do some studies to show what water might have been available within the northwest and what the general water situation was within the western states.

I think the effect of the whole study to date has been to alienate the states and the Department of the Interior. I think you can trace back many of the problems that now are occurring between the states and the Department of Interior, and particularly the Bureau of Reclamation, to this particular study.

Beginning in 1973 there was a decision on the part of the federal government to terminate the Westwide study and to complete it within a very short time span. Originally we were led to believe that it was a unilateral decision by OMB, later we found out through political circles that it was not a unilateral decision, that it was a decision that had at least been participated in by the Bureau of Reclamation. I think that suspicion set the tone of the meeting in Las Vegas in the spring of 1973.

There were fairly high ranking Department of Interior, Bureau of Reclamation people at that particular meeting, including Mr. Warren Fairchild, who at that time was heading and was responsible for the Westwide Study at the Washington level. At that meeting they made statements that it had been a unilateral decision, that they had no choice in it, that they objected to what was being done and here was the new list of priorities. As I said, prior to that meeting we suspected that was not the case, we had pretty well documented proof that was not the case. The northwest states in particular reacted fairly strongly at that meeting and voiced their objections to the modification of the study and the proposed method of carrying the study out.

I mentioned the issue papers that were being prepared at the state level. These were ongoing and were being developed at the time of the Las Vegas meeting. The northwest states ceased participating in the Westwide Study after the Las Vegas meeting. A lot of things happened, and many objections were voiced after that meeting both by the states individually and through the River Basins Commission, of which the five northwest states were members regarding the manner in which the study was being conducted.

Late in 1973 and early 1974 the governors of the five western states wrote to the Secretary of Interior requesting that the states' comments on the report be included in the executive summary. This was because we felt that if our comments were placed in the last part of the last volume where they are normally placed in federal reports, people reading the report would not be aware of the opposition of the states. At that point in time it was almost outright opposition for anything that would come out of the study.

Also, because of the lack of any input at the state level and the opposition of the states through the study teams, the Bureau of Reclamation started preparing the documents it thought necessary. These were based upon the issue papers prepared by either individuals or agencies. Some of the issue papers were later repudiated by the agencies for which the employee worked, so that

gives you the idea of the type of material that was coming out of them.

A document on the Westwide Study for Idaho was prepared by the Bureau of Reclamation within Idaho, over the state's objections. This had very limited circulation. If you were to read it you would get the impression that it was prepared by the Idaho State Study Team when in fact it was not. That pretty well set the stage for the actions that followed.

At the present time, before I get into some of the problems, the state of Idaho has commented with twenty pages of comments on the original draft and one short letter of comments on the final draft and that in effect says that the state of Idaho does not consider the report of significant importance to warrant comments. That's still our attitude at the present time.

Q. Can you tell us who the other four northwest states are?

A. The northwest states are Oregon, Idaho, Washington, Montana and Wyoming. Those are the five basin states within the Columbia River drainage. There are other states also, but they don't have significant interest in the Columbia River drainage and do not participate in the River Basins Commission.

About this point in time we began an effort with the other ten western states in which the Bureau of Reclamation operates to gain their support for the attitude we had taken. We generally obtained that support from them and they responded in somewhat the same way. The southwest states were not quite as unanimous in the approach that they took as the northwest states, but to a great extent I think they had the same frustrations and feelings of being ignored by the Bureau in this particular study.

Our effort at this point in time and during the last year or so has been to downplay the report, to try to guarantee politically and otherwise that it will not be a determining factor in any actions that are taken by the federal government with respect to Idaho.'

Now, I said before that there is a lot of good basic information in the report and there is. Our argument is primarily with some of the policy issues and the philosophies that are represented by the report. We think that the document itself is a self-serving document for the Bureau of Reclamation. We disagree that there is a need for 74 studies to the tune of $169 million that need to be done by federal agencies. One of the things that specifically affects Idaho in the report, though it is not clearly stated, is a new concept that has not heretofore appeared in the federal philosophy. That is an argument involving the federal entitlement ot water on public lands. We've seen the attitude expressed for national forest lands, where there was a reservation. We of course have seen the Winters Doctrine and the entitlement to Indian water rights. But in the Westwide study there's another argument that appears to be put forth that on the public domain lands, the lands that generally are under the authority of and are administered by the Bureau of Land Management, the government is entitled to water for whatever purposes are necessary on those federal lands. This becomes particularly important when you look at the large energy related uses that might be made of federal lands (especially in the

southwest and the Colorado River drainage. In Idaho it's not quite as important, except perhaps at some point in time in seeking water from Idaho drainages for those federal lands in the Colorado drainage.

There's another thought that's interjected by the report, that there is a justified entitlement for federal use of water to sustain timber yields. It doesn't take much to read into that proposal the large scale irrigation of forest lands. This idea previously has caused a lot of controversy, particularly in the state of Oregon when some proposals to do so were made by a federal employee. It relates back to an argument that the federal government is entitled to whatever water necessary for the pusposes of a reservation, in this case national forests and the irrigation of those forests.

So those things concern us. They're being put forth in the philosophy of the report. The recommendations in the most part in the report are not specific and they don't go into a lot of detail on that aspect, but certainly the philosophy, we think, is identified there.

With respect to Idaho, we think the Westwide Study greatly underestimated the future population growth in the state and power needs. They also underestimated, we think, the lands available for irrigation. Where this is important is in projecting the water necessary for future developments within the state of Idaho. That's what the whole thing was about, anyway.

We think the issues identified for Idaho reflect the types of things that the federal government would like to get involved in and not really what the critical problems of the state are.

The federal report attempts to emphasize federal involvement in water development and water studies in the northwest, and the southwest too, for that matter. As I mentioned, I think the report has done more damage than any action I know of as far as intergovernmental relations between the Department of Interior and the states. It's going to take many years to undo the suspicion and rebuild some of the cooperative frameworks that had existed before.

As I mentioned, our official position is to take any action we can to discredit the report from the standpoint of it being used as a document upon which decisions whould be made for future allocations or even from the standpoint of allocation of monies for federal involvement within the state of Idaho. I think that pretty well is a joint position by most of the northwest states.

I don't know what you've covered in the way of the report itself, so what I'd like to do now is to just discuss with you and answer questions you've got about our involvement and about our attitude. I stated it quite harshly and I think I can probably put out more information by responding to your questions that I can sitting up here lecturing to you.

Q. I'm somewhat curious as to whether or not you know the reaction of the southwest states to the positions of Idaho and Washington and the other northwest states. Is there a definite conflict between the two, are the southwest states really in favor of the Westwide study?

A. I believe that at least up until the last few months the southwest states had the same types of problems as we do with it. You've got to realize that there's a conflict between the northwest and the southwest states. The ideas of augmentation of the Colorado River from the northwest have not been given up by many people in the southwest, although we think it is impractical and that there is no water in the northwest to be diverted. But generally, as far as the philosophy behind the report and the problems with the Department of Interior, I think all of the eleven western states were pretty unanimous in their feelings. That will be interesting to see the attitude that will be expressed by the southwest states in the comments that have been officially forwarded to the Department of the Interior. I think generally they'll be somewhat along the same lines. We do know that the southwest states in general are submitting detailed comments on the final draft. The northwest states for the most part are not doing that. We're taking the attitude that it doesn't warrant time to comment on. So there is a difference in philosophy on how to approach it, but I think generally we all have the same concerns.

Q. Do you see a big battle coming up on minimum flow regulations, or is this what they're gearing up for in the report, to make sure they get their share before the states set their minimum flow requirements.

A. That was one of our concerns. We don't see the emphasis being placed on minimum flows that seems to be reflected in this report. When you look at the study recommendations and other items, that would appear to be a direction of a major federal effort. We feel that is not a federal concern, that the allocation in the western states is a state concern, that the federal government should only be in a supportive role at the request of the states. That's one of the big arguments we've had with them. You see an awful lot of emphasis in here on minimum flows, minimum flow research and minimum flow levels at various points. So I think that is a very valid concern.

Q. If you feel that it's primarily a state concern, would this preclude the River Basin Commission's authority as far as minimum flow?

A. The River Basins Commission itself doesn't have any authority as far as implementation or the allocation of water. The Commission, which we fully support and participate in, is a cooperative coordinating type of mechanism. The allocation of water, we feel, is still a prerogative of each individual state. We are working and have been working for some time with the other states to identify the various flow levels and the impacts of those flow levels upon the other interests. We see the way to reach an agreement between the states as being a compact between the states themselves. That's an item that's not even mentioned in the report.

Q. Is this compact outside the River Basins Commission?

A. Yes, the River Basins Commission is composed of five state representatives and several federal representatives with a federal chairman and a state vice-chairman. We would be opposed to the federal entity being represented by any more than one vote in negotiations for a compact. The seven

Columbia Basin states, the seven states that have Columbia River drainage within their states, have been authorized by Congress to negotiate a compact on the Columbia River. It began as early as 1919, but in the 1960s all the states ratified a compact with the exception of Washington and Oregon. Now all the states have repealed that ratification and we are now looking at negotiating a new compact that would better reflect modern interests than that old one. There exists a mechanism to do it. It would be outside of the Commission itself. The Commission probably would be the one to conduct and to coordinate technical studies that would perhaps lead to a compact and which are already being accomplished, for that matter.

Q. Why is it that although the five northwest states had a lot of negative criticism of the Westwide report, they chose to limit their response and their critique of the final report.

A. Well, originally we didn't limit our comments. As you can see, there are twenty pages of typed comments single spaced. Most of the other northwest states did the same thing. Very few of those were changed in the final report and in our evaluation of approaches or strategy we thought that the best strategy perhaps was to try to discredit the report as much as we could in the eyes of those that might depend on it. We knew darn well we wouldn't get any new views in it or patch it up. I hope we're able to discredit it. I hope it's not a situation where we're sticking our heads in the sand, and that's always a problem when you choose not to respond in a positive manner to a report. We think we tried to respond positively on the draft. It was of very little value after we'd spent a tremendous amount of time reviewing the report. Where the official comments will appear is in a third volume. The original report was released in April of last year and went across the Congressmen's desks in April of last year, through OMB April of last year, and now in May or June or July of this year there'll be a third volume that will contain the states' comments. Well, I can tell you what's going to happen with it. Undoubtedly, it will get very little attention. We chose to fight our battle in places other than in the comments document. Time will tell whether that strategy is of value or not.

Q. Supposing this study had been accepted. What exact harm would it have brought to the state of Idaho? Further, supposing they still want to go ahead, what legal ground does Idaho have with which to fight?

A. I don't know that I have all the answers to that question, but let me try this way. At one point in time we thought that it could be a valuable document to try to organize and to seek solutions to the many problems that we had, both in the northwest and the southwest. We contemplated at that point in time that the Westwide Study would not be completed until we had completed the state water plans within the five northwest states and until our comprehensive joint plan through the River Basins Commission had been completed. When the study was terminated (they called it redirected) it was not then possible to use the input that we had been developing in the states and the River Basins Commission as to what the major problems were and the best way of solving them. So what, in effect, the report turned out to be was the desires and aspirations of the Bureau of

Reclamation rather than any kind of a coordinated input. We questioned the need for the study right to start with because we thought there were other efforts already going on. If we would have been successful in getting a joint report that we could have agreed to, it would have been a valuable document for Congress, for OMB and federal policy makers as to how to spend funds within the eleven western states. We don't think it turned out that way. The effects upon Idaho, if it were to be implemented, which we're doing our best to prevent, would be a much greater federal involvement in decisions with regard to the allocation and management of water within the state of Idaho and within the northwest generally. I don't know that there's any way to legally challenge the thing. Perhaps the only challenge we have is through out Congressional delegations. At the present time the northwest is in a pretty good position. Hopefully we could maintain the influence, or our congressional delegation could maintain the influence it has and I think it would be very difficult at this point in time to get actions through Congress that would not meet the desires of the northwest, particularly with respect to activities within the Pacific Northwest.

Q. You mentioned the Congressional delegation. Is there anything else the individual states can do to discourage the use of this study for planning or for project funding?

A. Certainly, the development of our own state water plans and the Columbia Coordinated Joint Plan for the Pacific Northwest I think would, to a great extent, receive more notice and have more impact than the Westwide report will. To date the Westwide report has not received a lot of interest, at least on Capitol Hill. OMB, as fr as we know, has not paid much attention to it, so we think we're in a pretty good position as far as having the report not viewed as a major document. If we can complete our Coordinated Joint Plan in the River Basins Commission and our own state water plans, that have a legal basis, that are required by statutes and are required to be implemented through statute and through the budget procedures. That will pretty well modify anything or any impressions that might come out of the Westwide effort.

Q. Say the Forest Service were to unilaterally develop water within their grounds and manage it without permit through the state of Idaho, would you fight that on a political basis or in the court? In other words, this would be a challenge to the state's traditional stance on permits for water within the state of Idaho.

A. If it were one we chose to fight on and we want to pick our cases very carefully in this arena, we would do both, and we are doing both at the present time. We have presently three cases, one of which has been to the Supreme Court, two more which are going to go to the Supreme Court. One was in the Supreme Court which we won and is now back to the Supreme Court again on another question. So legally, we're going to fight it as hard as we can. Politically, we have been fairly successful in stopping the introduction of federal water rights legislation proposed by the Department of Justice. the state of Idaho was very instrumental in that. Keith Higginson, the Director of the Department of Water Resources,

headed a national committee to review that proposed legislation through the Interstate Conference on Water Problems. Idaho and the Pacific Northwest generally have been quite influencial in national organizations dealing with water. Ray Rigby, who is from Idaho, is the chairman of the Interstate Conference on Water Problems, which is the advisory committee for the National Water Resource Council. At the present time we have quite a bit of influence on how things happen back there. Of course, with the congressional delegation that we presently have in the Pacific Northwest it's very difficult to get something through. We can stop a lot of things.

Q. I realize you say you don't believe in that much money being spent for studies. But in the past we have been successful in getting some funding into the state from the federal treasury through the Water Resources Council and maybe in the future we will get others. Sometimes I see a hazard in not enough federal money going into this planning process. I think you are decrying that the state didn't issue enough this time. It's a case of whether you've got enough resources in the state oftentimes to do the kind of studies to solve the problems. I would defend some of the problems that are identified as being good. Are you going to have enough money in the future to consider those?

A. I should clarify myself on that. We're not particularly objecting to the rate of funding. We're like anybody else in Idaho, we don't have enough resources to do the things that have to be done and because of that we have to depend upon the federal treasury much more than we'd like to. Our objection to the funding level recommended in the report has to do with the specific studies that are recommended. Most of the funding of these studies is for federal agencies. We don't feel that the federal agencies in many of these areas are the responsible agencies, and we feel that their activity should be in a support role and not in a primary study or identification role. That is what we think is contemplated by the report. We would very much like to see, for instance, centralized funding at that kind of level through the River Basins Commission where it's not funded directly to agencies for specific pet projects, but could be used in a coordinated manner. I think we'd be in favor of that. But we are opposed to a mass federal effort by the Department of Interior for some of these studies. We don't feel that our viewpoints are well represented in the Department of Interior, quite frankly. We'll take our chances with our neighbor states and with the River Basins Commission, but we have a hard time playing the game with the people in Washington, DC.

Q. Along that same line, I'll defend the report in the sense that nobody ever looked at it from an eleven western states viewpoint. It's even questionable in the future without as active an agency as you have in the northwest, the Pacific Northwest River Basins Commission is pretty aggressive. But the Pacific Southwest Interagency Committee is still pretty splinter and is dominated, I suspect, more by the federals than they are in the PNWRBC. So the question, I think, is when are we going to get some cooperation between the eleven western states? I'm not saying we should transfer water by any means, but we need to look at it from a larger regional viewpoint than we have in the past. For example,

the idea of where the power is developed is crucial now, I think. The Utah people say they're ready to put the big steam power plants in. But if they use all our water, maybe it would be better to put the power up here.

A. We did not work with the Pacific Southwest Interagency Committee very much because, exactly as you say, it's dominated to some extent by federal agencies. An Interagency Committee has that problem and that's why we chose in the northwest to change from an interagency committee to a River Basins Commission. The entity that we've worked with as the eleven western states is the Western States Water Council. There is no representation by federal agencies, except as an observer status in that organization. The Western States Water Council has a staff and does do technical studies. The main effort from a technical standpoint, in the last few years, has dealt with energy. They have put out several documents trying to look in a coordinated manner at the eleven western states from an energy standpoint. Those are the kind of organizations that we would wish to deal with because there we can mutually agree as to what the solutions might be. Where we found common ground between the northwest and southwest states in the Westwide was our opposition to the federal involvement. Many times the northwest and southwest interests don't coincide, but in this particular case they did. The Western States Water Council also took a position in opposition to the activities that were ongoing on the Westwide study.

Q. You inferred that the diversion issue is not over. Is that a feeling or is there some talk starting again.

A. We know of studies that are presently underway in southwest states trying to evaluate where and under what conditions the diversions might be made. One of the dangers in one of those studies is diversion from the Snake River into the Green River. We don't know of any federal efforts and of course they're prohibited until next year from studying the matter. We're pretty sure there are some efforts ongoing within the federal government but they're not formal as far as looking at that diversion. I think the threat has changed substantially in that it's now not for water for the city of Los Angeles or Arizona of these sorts of things. The threat, if it exists now, is the threat of energy and energy development. I think that if there's a massive effort to divert water, it will be a federal effort for energy purposes and not an effort by the Pacific Southwest. You just can't afford the diversion schemes, at least as they were expressed in the early 1960s for those purposes, but you can for energy.

Q. I understand the water that we're supplying to Mexico as a result of desalination is about $150 an acre foot. You can afford to do a lot of things if you start talking like that.

A. Yes, but I think there are other alternatives that are cheaper than diverting from the northwest, perhaps with the exception of that Green River diversion. That Green River diversion would be feasible for a lot of different things. We don't think a diversion could be made without seriously affecting the state of Idaho and existing water uses within

the state of Idaho. At Milner Dam, which is in the southeastern part of the state, we completely control through existing storage and uses (in a low flow year) all of the water that's yielded by that basin. We have somewhat of a handle on that particular diversion, though, because we have a compact with the state of Wyoming on the Snake River and that compact, which has been ratified by Congress, provides that an out of basin diversion cannot be made without our concurrence. I guarantee they won't get our concurrence. I doubt that much could be done without the state of Wyoming agreeing to it as far as a diversion into the Green River. Wyoming itself has probably a sufficient allocation out of the Colorado River for most of its needs, so we don't worry too much about diversion attempts by Wyoming itself. The fact is, it appears that in the allocation that was made by the upper basin states, Wyoming probably got more than might be justified by her needs.

Q. Would you comment on the reaction of our legislature to the State Water Plan?

A. This is where I get in trouble. I really don't know what to think about what is happening. The reaction is coming a lot faster than we anticipated. We anticipated reaction because, as the chairman of the Water Resource Board said, "there's something in there to make everybody mad." Hopefully that was an indication of a balanced plan. It's obvious from the comments that have been made in the process of legislation that a good many of the legislators haven't even opened the front cover. I don't know what they're reacting to. The other thing that's happened is that the constitutional amendment that was enacted in 1964 gave some estra weight to the state water plan in some people's minds. In this, Idaho is a very unique state. I think it all of a sudden dawned on the legislature that something could be approved by a board that could have a big impact on what happens to the state. In fact, we think it could set the future economy of the state. They're not sure they like that. So we have this reaction. I think it's also important to realize that even without the approval procedure that they may be requiring in that legislation, they still have to enact most of the implementing procedures that are recommended in the water plan. So even without approving the water plan, they still have a pretty good hold on what happens.

Q. It seems to me this puts us in a very vulnerable position with respect to the other states.

A. Well, it does and it doesn't. I think it depends upon what really happens down there. I myself am convinced that the legislature isn't aware of what it's really doing. I don't think they have any concept of the difficulty they would have in adopting a state water plan. We have eight people on our board and they're going to have a difficult time getting something that can meet all their interests. If you were to multiply that by 12 or 15 times, I don't think they have any concept of the difficult issues that will have to be faced if they decide that they're going to review and approve or adopt a state water plan by law. The other difficulty is that if you adopt it into law then the only way you can change it is by a change in the law, which means it will be a very

unwieldy thing to handle and any plan has to be dynamic or there's no sense in having it. I'm concerned that if it is in law it is going to be very difficult to react in any kind of a timely fashion to new pressures or new demands or new problems. As far as the effect of the other states, it would depend on how quickly the legislature could act if it decides to require their approval. We think it's imperative that a state water plan be approved in the very near future, both from the standpoint of the alternatives that are available to them now and the loss of those alternatives as time goes on. It is also important with respect to giving an indication to the other states of what they might expect with regard to Idaho's position on any allocation of water among the states.

Q. But if you don't have legislative support of the plan, you have nothing to convince the other states with, do you?

A. That's true, and as I say, a lot of the recommendations in the water plan require implementation by the legislature. I don't think that legislative support for those recommendations and the desire of the legislature to approve the plan are necessarily one and the same. I think you can have legislative support without their approval of the overall plan. It's going to be a very politically sensitive and controversial issue within the next year, I'm pretty sure of that.

Q. You mentioned the fact that the study needs identified here are different from what you see as a state agency. What specifically are the primary water problems and needs as you see them?

A. This is our Draft State Water Plan and that's part of it. It has an identification of priority studies that we think should be done. We identify completion of an inventory of off-stream reservoir sites as the priority planning studies and that's been done to some extent, but has not been completed for the whole state. We think it's necessary to investigate means of underground storage of water, primarily in dry or unsaturated aquifer systems, with the idea that storage in those systems would increase the base flow, primarily of the Snake River, and especially through Hells Canyon where we have a fairly significant loss of power under our recommended water plan. We think we need to be able to better define farm operations (and this has to do with economics) to better define just how far we can pump water, what we call a reasonable pumping lift. This is something, incidentally, that concerns the state of Washington also. How do you establish these economic or reasonable pumping lifts? There are quite a few studies here, some of them might not be of interest.

Another one is to investigate potential energy production sites and their environmental effects, looking at both hydropower, pump back power, thermal power and associated transmission and transportation networks. We think another study need is to try to define and tie down what potential we have for energy conservation. We all talk about energy conservation, but some of the preliminary indications we're getting are that it won't result in a significant amount of power. There just aren't that many opportunities available to really cut power use.

Water management is a big area we think needs a lot of additional work. There's a lot of work going on right now ina lot of different aspects of water management; integrated flood control operations, better water use, more efficient water use, surface water-groundwater interactive systems. We think that the first feasibility study ought to be rehabilitation of some of the present systems where the systems themselves require large amounts of water to operate. I think this is something very similar to Washington, also. Oakley Fan is our first priority as far as new feasibility studies for new irrigation. Mountain Home plateau is the next one, Raft River is the third and the Bruneay Plateau within the Snake River Basin is the last one we see for feasibility between now and 2020.

Actual research studies that we think ought to receive high priority are the various items that we've identified dealing with the recharge of dry aquifer systems and storage of water in that way. Another one, and this has to do with the whole northwest, is identifying the expected frequency of drought periods that we now use as a basis for planning. We tend to suspect that we're much too conservative in our planning. The period we're planning for, which in the northwest is a 12 year period between 1930 and 1942, is a very infrequent occurrence and from an economic standpoint probably we should not be planning on supplying water for that period of time. But that's something that needs to be investigated in some research.

In our water plan we have projected a 40% increase in yields on existing farm lands. This is embodied in some stuff that I know other states are using and is embodied in a set of projections for new irrigation and new agricultural developments called the OBERS Projections. That needs to be evaluated within Idaho to see whether or not it's possible to make those kinds of increases. Another one is the effect of various levels of moisture deficiency on crop yields. We don't really know how moisture deficiencies affect crop yields. That's a big factor because at the present time we plan on providing a supply that is no worse than 50% of the required amount of water the first year and no more than 100% deficient in any ten year period. We're not sure of that basis from the standpoint of looking at plant physiology and what will it really do to crop yields.

Idaho, and I guess Washington too, has an unknown geothermal capacity. We think there should be research within Idaho to try to further define how we can use that capability either to replace some existing uses that require electrical energy or to produce energy itself. We have one project within the state that hopefully will result in a pilot plant down at Raft River within the next few years. One that we do agree on with the Westwide study is the methodology for determining instream flow needs for fish and wildlife and some way of identifying alternative effects, of the effect upon fish and wildlife of alternative flows. The thing we disagree on is where they ought to be done and who should do them. We think these should be done primarily by state interests and not by federal interests. Again, that reflects our state viewpoint. We think there are state prerogatives.

We think some work should be done to find ways of encouraging incentives to better water use. We're convinced that we cannot obtain more efficient water uses through force or through regulation, we've got to find some ways to build into our laws and into our programs some incentives to make it happen. We also think there is a potential for augmenting streamflow by various means, one of which is antitranspirants. This is an area where perhaps some research should be done. You didn't know what you were asking for, did you?

Q. You said you had some apprehension about the federal government role in power production in the northwest. Would you mind explaining that?

A. My concerns are not necessarily with regional coordination of production and transmission facilities, but in the assumption of what I think are state and local prerogatives in the locations and types of facilities within the region and the decision as to how and what particular level ought to be met within the state.

Presentation by

DAN DREYFUS
Senate Interior Committee

What I should do first of all is give you some insight into my personal association with Westwide, because it is diverse. I worked for the Bureau of Reclamation before 1968 in the Washington office. I was a coordinator for the Colorado River Basin, which meant, esentially, that I was the Washington representative of the two Colorado River districts of the Bureau. I handled whatever business they had with Congress, project reports, one thing and another.

I handled, therefore, the Central Arizona project legislation which gave to Westwide up to the time when it had passed the Senate and was about to pass the House. It was about that time that Senator Jackson offered me a job and I moved up to the Committee staff where I took over a subcommittee on water and power resources. From there I watched the final hours of that legislation, the Senate/House conference, from the viewpoint of a professional staff member in the Senate.

I have some insights into how Westwide got going, what it was supposed to do, or at least what the genesis of it was, and that might be useful. I will assume that everybody has at least read the Executive Summary, so I am not going to waste your time telling you anything about the report. I'm going to tell you what I think of it.

I did have an opportunity this morning to read most of the transcripts of your earlier meetings, so I'm not entirely at a loss to know whether I'm contradicting people, and I'll try not to duplicate what they've already said. Essentially what I want to do is talk about the background of the study, my own impressions of the report, and then what I think of some of the major issues that are raised in that report.

I must say that if I had not come here today, I would never have read the report. I had almost promised myself that I wouldn't read it when it came out, but I have read it. I read the big thick version and I read the Executive Summary on the airplane coming out here. In order to understand how something such as Westwide could happen, you have to know something about its background. The background has something to do with the whole business of these project-oriented federal programs, the Bureau of Reclamation's program and the Corps of Engineers' program.

Over the past 40, 50, and more years, those programs have been building projects in the western states. The Reclamation program particularly is a very regional program which benefits only 17 western states, and the individual projects generally only benefit a relatively small locality. Now, how do you get a federal program with very heavy subsidies? These things, despite the rhetoric, wind up with something less than 10 to 20 percent repayment to the federal treasury if you count the interest subsidies or the interest

bearing aspects of the use of investment monies. How do you perpetuate a thing like that in a Congress which is represented on the Senate side by all fifty states, of which seventeen are not much of a representation, and on the House side by a much higher predominance of eastern urban representatives who don't benefit? Their constituents don't benefit from the Reclamation program at all.

The way it works is sometimes cynically known as "pork barrel" or "log rolling", but essentially what it amounts to is this - there's a legitimization process. There's a general tacit agreement among the actors in the business that it is in the federal interest, or it has been in the federal interest, to settle west. Settling the arid states required that you build some very expensive projects. (I'm talking now from the viewpoint of people who put this in motion back in the pre-World War II days and the early days of the century.) These projects would not come along without federal involvement, and so there should be federal involvement. The agreement on the part of the non-westerners is that there was a federal role in developing the west.

Now, to get from there to a specific project proposal, what you have to have is a general tacit agreement. You have to have a set of rules. When we propose a project in State X, and that project meets those set of rules, then the people in States Y and Z are going to help get that project authorized, because when their project meets the rules, then their project will be authorized.

So there is this kind of arrangement. There is no single reclamation project that a predominant number of people in Congress want, but there is a predominant number of people who are willing, if you come to the floor with a project that meets the criteria, to go along with it; either because they want one of their own later, or because they agree that the program has a national significance.

Back in the late '60's we ran into a tremendous confrontation over the Colorado River Basin. There was a Central Arizona proposal in which Arizona was proposing to build the project, which would have used Arizona's legal share of the river's water, but would have denied it to some current users. It would be another big draft out of the Colorado River, and there just was not enough to go around. When somebody gets, somebody gives. This thing got locked up tight, and it grew into a bigger and bigger controversy.

It started out with an Arizona versus California controversy. California uses more than it's share of the river right now under the law of the river, and therefore it was in California's political interest to try to keep anybody else from developing projects. So, in the political arena, they fought the Central Arizona Project. Then there got to be an argument between the Upper and Lower Basin states. The Upper Basin states, which are not yet developed, said, "Well fine. Now California is fighting Arizona, but once Arizona gets the project, both California and Arizona will fight us when we want to get our projects." So there was an Upper Basin/Lower Basin controversy.

Then we got into the argument about aumentation. A lot of these people who were in trouble among themselves said, don't worry about it, because we're going to bring water down from the northwest. Everybody is going to get plenty, so this shortage situation will not be perpetuated. So we had a confrontation between the Colorado Basin and the Pacific Northwest.

You put on top of that what grew out of the Bridge Canyon Dam proposal. A big part of this project at the outset was supposed to be a dam to provide economical pumping power for the Central Arizona Canal. The dam was to be located in the lower reaches of the Grand Canyon, and it became one of the monumental environmental fights of all time--the damming of the Grand Canyon.

So here we had this tremendous fight. It started in 1945, and in 1967 it was still going strong. By the late '60's this argument had stopped federal water resource development in the west, because everybody was holding something hostage. For all practical purposes, projects and even planning had stopped. There was a desire on the part of everyone to get out of this deadlock and start moving the Central Arizona Project so that they could get things going again. There was a real threat to the legitimization of all water resource development at the federal level, even reaching over into the Corps of Engineers, because of this quid-pro-quo aspect. So we were seeking an accomodation.

One of the problems was that Chairman Aspenall of the House Interior Committee, who came from the Upper Basin, had gone home and made quite a few speeches to the effect that he would not let the Central Arizona Project be constructed unless there were constructive steps being taken to solve the future water problems of the Colorado River. What he meant at that time was an all-out study of augmentation from the northwest.

As things developed, the Senate included five projects in its bill from Mr. Aspenall's home district, adding up to $360 million of construction. Pressure was on him from back home to quit stonewalling this package, because it's got all of this stuff in it for the western slope of Colorado, so he had to find some turning room. The House bill had in it all-out augmentation studies, but on the Senate committee were Senator Jackson, Senator Church, Senator Hatfield and Senator Len Jordan. It was not, therefore, in the cards that there was going to be any bill that included studies of massive water diversions from the northwest. When a compromise was struck, Mr. Aspenall produced a proposal for a Westwide Study. He came into the conference one day and said he was willing to take out the augmentation studies if he was given this language, and he had drafted language which, with some modifications, was the direction to have a Westwide Study.

It said, in effect, you will study the problem. And what he said when he went home was -- I have chosen to go along with the Central Arizona Project because I am convinced that out of this Westwide Study will come the knowledge we need augmentation of the Basin. Jackson, Church and Company said fine, we'll buy it if it's coupled with a moratorium on any specific studies of augmentation, and the deal was struck.

Now, along with a 4.4 guarantee to California, which I will not go into, there were the whole passel of Upper Colorado Basin projects, the moratorium

for ten years and the agreement to use a coal-fired power plant in place of the Bridge Canyon Dam. We got a package. We got the Central Arizona Project off the drawing boards, and we resolved this stalemate, and everybody got back to business as usual in the water resource business.

That's the legislative basis of the Westwide Study, and you can conclude several things about it. First of all, it was pretty uncertain what everybody wanted. It was even uncertain whether anybody wanted anything. Secondly, there was precious little consideration given to whether or not this particular study really added much to the whole picture of the water resource planning that already was going on. How, you have probably heard -- in fact I know you have heard from reading the transcripts from some of your earlier speakers -- that many water officials thought it was redundant to the comprehensive River Basin surveys and all the other things that were either in progress at the time, or about to get started.

I understand that you have seen a copy of the Act. I was going to read you the language of the Act, but that has been done. I will go back to an old presentation which I made to the Pacific Southwest Interagency Committee right after the Act passed in December of 1968. I made some statements about Westwide, and I'm going to read a little bit of that.

What I said then was "The provisions of the Act which are most explicitly involved with long-range water resource planning are those found in Title II entitled 'Investigations in Planning'. The interpretation of the provisions of Title II, I am sure, will be part of your business for some time to come. As in the case of any other complex statutory language, the full meaning of Title II does not even exist today. It will have to be developed over time as specific problems and issues arise. Many of you and your agencies will participate in defining Title II. It is surely obvious that the multitude of detailed considerations in regional planning were not examined by those who drafted the language. They could not be. The language is intended to set out guidelines and boundaries, authorizations, and prohibitions. The title occupies only about one page of print. You need only to compare it to the quantity of print generated in the first year of any comprehensive basin survey to appreciate the amount of definition which will be necessary.

"Briefly, the provisions of Title II are these: pursuant to Reclamation Law, and to the Water Resources Planning Act, the Secretary of Interior is to complete a reconnaissance study of the general plan to meet the future needs of the states lying west of the Continental Divide. Progress reports and a final report by June 30, 1977 are called for. Ten years from the date of the Act, the Secretary is prohibited from making reconnaissance studies of the importation of water to the Colorado Basin from basins lying outside of Arizona, California, Colorado and New Mexico. (In a sense, all that this permitted was a study of diversions from the north coast streams of California into the Colorado Basin, which could have been done, and at that time was thought to be a possibility.)

"Satisfaction of the Colorado River deliveries under the Mexican Treaty is declared to be a national obligation and the first obligation upon augmentation works planned under the title. Areas of origin of possible importation

are provided protection from loss of water rights or financial loss, and the necessary funds are authorized."

Given that set of instructions, you might sit back and think what you would have done. The people who had this job didn't know either what they were supposed to do. There was a lot of consternation and some of it exists to this day. There was a question about the comprehensive river basin plans. At that time the comprehensive river planning was just getting off the ground, and there were tremendous arguments among the agencies and the states.

In a given region, how much new irrigation are we going to postulate? How much new development will we postulate for the Pacific Northwest? The federal agencies and Water Resources Council were trying to fit all of these puzzles together. In other words, they were unwilling to accept predictions of irrigated agriculture from the southwest, California, and the northwest if, when you added them together, they became nonsensical in terms of national output. In many cases, when you added them all up, they came out orders of magnitude more than anybody was willing to predict for the nation. So the federal agencies were trying to constrain the regions. The regions, of course, didn't want to be constrained, and the states individually had their own views. The Bureau of Reclamation had lost several arguments in the comprehensive basin survey game, and a lot of people saw this Westwide Study as a hunting license for them to go out and do their own study under their own ground rules and compete with everything that was being done under the Water Resources Planning Act.

The state prerogatives were not clear. The Bureau began to talk about writing plans for each of the states, and the states began to wonder how much they were going to have to say about it. Other federal agencies such as the Corps of Engineers were disturbed about it. Everybody was disturbed about it. There was tremendous consternation about how much the Bureau would go out and do its own thing and overwhelm all of the other planning efforts by virtue of having more money and more time and by laying this study over everything else that was being done. There was some question about the part of the National Water Commission, which got started at exactly the same time with a lot of the same kinds of mandates.

Look at what was going on at the time: the Columbia-North Pacific Comprehensive study was completed in 1972, the California Comprehensive Study in 1971, the Great Basins Study in 1971, the Upper Colorado Study in 1971, the Lower Colorado and the Missouri Study in 1971. All of these detailed comprehensive basin studies were underway and all destined to be completed before Westwide.

The Bureau milled around just about forever. From September of 1968 to November of 1970, nothing happened. The Bureau just didn't take it seriously. There was an ad hoc study planning committee formed in November of 1970, and that was the first real concrete effort to start doing something with Westwide. They finally got going and produced a project plan. In 1972, the Public Works Appropriation Act came before Congress, and it had in it a schedule and a budget for the Westwide study. The House Appropriations Committee said, "No, go back to the drawing board, that's too big a deal, and it's too

much money, and it's too much duplication of other things that are going on." In March of 1972. three and a half years after the Act passed, they finally got a modified plan together, and they started working.

Then, in January of 1973 they got an administrative redirection from the Secretary of the Interior, which in essence was an order to quit studying and write the book. He said to quit by July 1974 on a study that was supposed to go on until 1978. I don't know who the players were in that game, whether it was OMB, or the Department of the Interior, or objections from other federal agencies, or the states raising a lot of hell; but in any event, they shut the study down and gave them six months to write the book.

Among the implications of that was that the states were not ready, so the state comments didn't get put in the book. Another implication, in my judgment, is that after all of this getting ready, and all of this milling around, when they finally printed this report, they swept up whatever they had, stapled it together and that is what you got. So a good bit of the most significant analytical work was never completed.

To further complicate matters, if we will look a little bit at history, in 1968 when these people started to think about this, there wasn't any thought about environment. The National Environmental Policy Act was signed on the first of the year in 1970. Most of the really significant pollution control laws were passed after 1968. Actually, I think the argument over the Bridge Canyon Dam was won by the Sierra Club on the same day the Westwide Act passed. It was the same piece of business. I think that victory signaled the beginning of a general national viewpoint that the environment was something that we had to pay attention to in water resource programs.

So the Westwide study team was trying to cope with a totally new, unknown kind of value system which was growing in the country while they were studying. The energy crisis didn't come along until damn near the time they printed the report, so that was a little worse. Again, people were studying in an old situation and then writing a report which is supposed to deal with a new situation.

Well, so much for the background. I'll give you my impressions of the study as I read it. When I was invited to come here, I sat down with the big thick report and I started reading it. I didn't expect much, because I knew all of this that I've told you. I knew that they were working under a heck of a handicap and that this report had been shortstopped.

With all due respect to my friends who worked on this thing, I don't know how the talented people who worked on the Westwide study could have produced a document that is this bad. I really don't. I have friends who worked on that Task Force, and I could lock them in this room without a book and they could write a better report in two weeks. They've got far more information and knowledge in their heads than you'll find in that document. I don't know how that happened. I could speculate on it, but essentially, I think it was the disorderly way in which it took place, and the shortcircuiting at the end. I think they were just about getting ready to do what they should have done when they got the order to stop.

The total cost, I'm informed by the Bureau, was $8,205,000, which is not an inconsiderable sum of money. A man can write a pretty good report for eight million dollars. I would say that maybe 8 million dollars was pretty cheap for getting out of the mess we were in when we were deadlocked over the Central Arizona Project, but the question is, did we get anything else for the money?

The big report is a 457-page version, and I didn't read the Executive Summary until I got on the plane. I read the Executive Summary on the way out, because Jack told me that was what some of you people had read and I wanted to be sure that they fit together. I can tell you a couple of things.

First of all, I was appalled to find that the Executive Summary omits the Conclusions and Recommendations, which are spelled out in the big book. The big book, at every few pages, has a series of things labeled Conclusions and Recommendations. None of them are very exciting, but they are in there and they are labeled, and in the Executive Summary they don't label them as such. The same thoughts are somewhere in there, but they are not nearly as specifically stated.

The other observation I would make is that if you read the Executive Summary and not the big book you are to be congratulated, you didn't miss a thing. The only thing that is added to the big book is that it repeats everything at least six or seven times, and sometimes twenty or 30 times. It also includes a great big thick section of old 1970 population data and a lot of water data which can be found in the Comprehensive River Basin Studies, and which can be found in the National Water Commission Report. I didn't sit down with those tables to compare them, but if the footnotes may be believed, they are drawn from the same body of data that many other reports are, and therefore the only possible contribution that they might make is they may be compiled a little more concisely than they are elsewhere. The big book might be useful to you in that it pulls a lot of stuff together in one place. It can't conceivably be useful to a state water resource engineer, because he has all those other books and he has read them, and he knows where the tables are.

When you read it, there is a kind of a Chinese food syndrome. You can read for awhile and you get full, but after a while you are hungry again. There is nothing there. When you sit back and think about it, it didn't really say anything. I'm sorry that I can't say more about it than that, because I did note that some of the other speakers, although they said they were mad at the Bureau because of the way they went about the study, kept saying that there is useful data in it. I didn't find the useful data. Any useful data in that report, I think is someplace else and probably was before the report came out.

The organization is poor. It's tremendously repetitive. There are paragraphs of platitudes that are repeated over and over again. The thing starts out with Westwide problems, regional problems, and state problems, region by region and state by state. Almost every one of them has a section on the energy situation and every one of those sections says the same thing, and essentially it doesn't say anything. It says we've got an energy problem, there's a lot of coal in the west, and this kind of thing.

The data is nearly all 1970 stuff. You might recall that when the 1970 census came out everybody said, "Oh, my God, we've been wrong!" We discovered that all the projections were not going to work in the future when that census was published. It was the first time they found out that Los Angeles was no longer growing, for example, so that's the datum that's in there. There is no effort made really to predict the future on the basis of what that revealed, not any real effort to recast what we might be looking for in the western states from now on. I have pulled out a good many of the cliches that I found in here that go on page after page.

Here's one paragraph that says "The recently coined phrase 'energy crisis' is rapidly becoming a byword in today's conversation. The facts of today's United States energy picture speak for themselves. More energy has been consumed in the past 30 years than in all history before 1940. One of the most critical trend lines is the continuing increase in per capita energy consumption of the United States. Even if current United States birth rates approach a zero population growth, high energy lifestule is expected to put new demands on all energy resources." That's all it says about energy in this particular roundup. This is on page 5. There's about a 10-page introduction and that's what it says about energy. Well, there's essentially no information in that. There is nothing that anybody that reads the newspaper doesn't know and it doesn't even relate to water.

It says here "Available projections of future food and fiber needs present a cloudy picture at best. The assumptions made in the Obers Projections (these are the projections we use in the Comprehensive River Basin Plans) and those of the National Water Commission Analysis, which suggest that further allocation of water for irrigated agriculture is not warranted in the near future, seem to be in conflict with recent national and international food shortages. The beneficial effects on United States trade balances and the need for national and international food reserves, raises agin the question of what indeed is the appropriate role of the federal government in extending financial assistance to new irrigation projects." What, indeed, is the role? When you get to page 455 it has said nothing except that a question has been raised.

There are pages of this, absolutely reams of it. Some of it isn't even grammatical, as a matter of fact, so the editing was hurriedly done. Whoever edited the final copy had a hard time differentiating between singular and plural.

Okay now, all that having been said, what can we say about the results? What's in the report that we can look at in a technical sense and evaluate? One thing the report does is catalog western water problems. I don't think it deals with them adequately. I don't think it describes them aptly. It dertainly doesn't describe them in depth, though it describes some of them 20 times. And it certainly doesn't deal with the solutions. The conclusions or recommendations are very vague. <u>But it does list them</u>.

We look at them and we see what the people who wrote Westwide really think the problems are today. You can find that out pretty quickly if you look at the index. The index is always the first thing to read in any book, and sometimes that's all you should read.

The index lists 17 westwide problems. The Executive Summary indicates that there was no priority arrangement intended here. The summary, in fact, says we did not try to put these in priority order. The big report does not imply that. It implies, to me at least, a priority order, but in any event there are 17 westwide problems.

The first one is water for energy, the second one is municipal and industrial water supply for small communities, and the third one is the need for water on Indian reservations. They go on and on with flood plains, environmental information, flatwater recreation, wild, scenic and recreational rivers and all this stuff. It's interesting that they don't get around to developing federal irrigation projects until item 16.

There is information in this. When you go through the regional problems and the state problems, you keep finding energy and Indians at the top of the list at each step. Every place they rehearse these problems, energy and Indians get way up on the list. That is important, because it is perfectly clear that the people who wrote this report viewed two of the principal future concerns for water resources to be the energy problem and the Indian water rights problem. I discount this municipal and industrial thing for small communities. I suspect that was a place where the Bureau thought it would have a role.

One unique thing about this report is that you don't see very much of a role for the Bureau, and I think that the prominence assigned to the municipal water thing is because it was calculated to be a problem by which the Bureau might squeeze out a few more projects rather than the fact that it is of such overwhelming significance.

The other thing that is remarkable is that the Bureau of Reclamation would write a report of this length and wouldn't get around to talking about irrigation projects until number 16 or 17. Those two observations should be revealing to the student of water resources planning and management.

You can characterize most of the conclusions and recommendations as something to the effect that "We conclude that there is a critical problem, and somebody ought to do something about it." And also "we ought to study it." That's another big one. I read that so many times that I decided I was going to go through the report and count all of the studies that they've recommended just to see what they add up to. But there were so many of them that I just gave up. I would have liked to have completed it, because I suspect it would have run into the hundreds.

Here are some of the water for energy recommendations: "Initiation of a westwide assessment of hydro-electric power potentials with the emphasis on increasing capacity of existing structures, and surveying the role of pumped storage and integrated power systems should be considered." Now in my judgment, if you go back to what they were told to do in Westwide, they should not have concluded that it should be considered, they should have done the assessment. It is clearly one of the things that we might do with water in the future.

"Policies should be formulated to encourage coordinated regional planning to give proper attention to complex environmental and social interactions and interdependencies of water and land use planning. Establishment of new organizational arrangements should be pursued to facilitate advance approval of energy sites and improved long-range planning of energy facility requirements." That's a typical recommendation. I don't know for sure what that means. I think it means that we are not really siting power plants these days, the utility companies are, and that gives us problems. That's what it means to me. It's a conclusion, I don't think it's a recommendation.

Here's the last one. "Priorities should be given to developing an overall energy policy for the nation, which will assure that long-term energy needs are met through a combination of energy conservation, research and development, new energy sources such as solar, geothermal, nuclear fusion and wind, and exploration and development of known energy sources such as oil, coal and oil shale." I don't think we needed that recommendation from Westwide, somehow. I really don't think that is a contribution.

Now, I think what this reveals is that the Bureau of Reclamation, or even the traditional federal water development programs across the board -- the Bureau, the Corps, and the Soil Conservation Service -- are largely irrelevant to the pressing water problems of the west today. Therefore, when you study the west from their viewpoint, you have a terrible time trying to figure out what the problems are. But when you identify them, they are meaningless to you. There's nothing you can do about it, so you find yourself saying, "Boy, this is a critical problem", and "gee, somebody ought to do something about it." If the problem were food and fiber shortage, the Bureau in the 40's could have told you chapter and verse what to do about it and back it up with data, charts, proposals, and estimates of all sorts. But they find this energy development is taking place and its really unguided, and it has all kinds of implications, but we don't know what they are. They have never studied anything like that, nothing that they do has a hell of a lot to do with it, so they're left with this kind of a conclusion. A part of this report, I think, reveals a kind of frustration on the part of the Bureau to find any relevance to the real problems that we are facing today.

What are the problems? Largely they are institutional. The energy thing is a development problem. It is a land use problem. It is a state and local governmental regulatory problem. It's a question of whether you are really going to change your way of handling water rights or not, or whether you are going to use a leverage of the state to tell people where to site power plants, as opposed to simply saying yes or no when they tell you where they want to put them . The federal government's role is going to be negligible, and it's probably going to be a backdoor role through the air pollution laws or something like that.

The legal issues are horrendous. Indian water rights is a very big problem and this report states that it's a big problem. The report concluded that we ought to study it for 20 years, but I would submit to you that we can't study it for 20 years, it's a problem today.

State/federal water rights conflict is a problem. It is a bigger problem today than it used to be because of the fact that there is decision-making about energy facilities. The state has some kind of leverage over these things, and the feds have some kind of leverage. There's going to be a tug-of-war about who is going to say whether the facility goes in or not, because there's a national interest in energy facilities in the west.

Land use management and environmental regulations are the problems. How do you arrange broad scope intergovernmental planning at the regional level?

Have you ever thought about regional planning? You run into a very peculiar problem in regional planning. We don't have a legitimate government at the regional level in this country. If you have a problem which is regional in scope, you are represented by states. Now, if the planning problem requires that somebody gives and somebody gets, and a decision is made by some regional forum, for example that this state is going to get the dirty power plant and that state is going to get half of the power, there isn't any way to enforce that decision in the United States. One state does not dictate to another state, and regional commissions do not get elected and therefore they can't tell anybody what to do. In the state that gets the bad end of the deal somebody will get up and say "I'm running for governor, and if you vote for me, I will tell them where to head in". And they will vote for him, and he will tell them where to head in, and that's the end of your regional plan. So regional planning is an exceedingly difficult thing to do in these United States.

These are the kinds of problems that we face right now, along with an awful lot of state and local problems. What happens if they build a coal gasification plant in your back yard, and 1500 people move to town and you build school and struggle to get everything together. The thing runs for a year, and it turns out that it is economically unfeasible, so they shut it down and everybody moves away? Those are the problems that we face.

Briefly on water for energy - I'm going to use some old remarks here for a couple of pages, just because they have the numbers in them, and I have trouble remembering numbers.

The energy problem is very big. The water for energy problem is not as big. To gain some appreciation, it is useful to estimate the gross incremental needs for water. The first requirement that you have is to postulate an energy development program. You have to, in effect, build a useful model of what energy development might take place.

A useful model was built in 1974 by a task force on energy at a national academy of engineering. I tend to use that one a lot because it actually itemized specific numbers of specific plants. Most of the energy studies talk in BTU's or barrels of oil or something like that, but this one said -- this many coal-gasification plants, this many power plants -- and so it makes a useful model. If you roughly convert that to water requirements nationwide, what would it take to support such a project? It turns out it would take about 10 million acre/feet per year over and above current use by 1985 to service this Project Independence concept. The major portion of that demand would be cooling water for new fossil and nuclear power plants, and that number

is based entirely upon cooling tower consumption. To the extent that you have seacoast plants or once-through cooling, you would have a smaller number.

The total streamflow in the United States is about 1.3 billion acre feet annually. According to the National Water Commission report, in 1970 our total national withdrawals were about four hundred and fourteen million acre feet per year, of which 99 million were consumed. So the estimated water for Project Independence amounts to less than .8 percent of national streamflow, about 2.5 percent of current withdrawals, or about 10 percent of current consumptive use.

In gross terms, that amount of incremental water use is not very exciting. In the Water Commission report, in the earlier reports, and in the national assessment, water resource planners have been projecting increases of 25 million acre feet in annual consumptive use by 1985 anyway. They have included the old figures before the energy crisis, about 2.6 million acre feet annually for new energy uses, mostly thermal power plants. That, of course, is much less than the 10 million that you would need. They've also included in those projections about 12 million acre feet for new irrigated agriculture which was supposed to come into effect between 1970 and 1985. We already know that it will not.

What I am saying is that at the national level, we water resource people have been making projections that we were going to have to find this much new water, and nobody thought it was very exciting. Now the energy crisis comes along and people look at the gross numbers and they say, "Oh, my God, we're in terrible trouble on the water resource problem", but we are not. This is business as usual to turn up the water for energy.

I admit that national figures are meaningless, and that you have to look at the critical regions, and I have done that as a matter of fact. I have taken these same figures and I have taken road maps and put pins in them and, in effect, sited the plants. It's not really that hard to do, because you have certain established facts. First of all, we know where the people are thinking about building. We know that the oil shale that will be developed first is all on the western slope of Colorado, so we don't have too much trouble siting the potential oil shale plants in Colorado or maybe Utah. We know that some states have no coal or oil shale, so we can forget about siting mines there. We know where the coal is, and as I say, we know what the plans are. We know something about where the kilowatts of electrical production have to go by regions.

If you look at what are presumed to be the critical regions, the Colorado River Basin and the Upper Great Plains -- and these are the critical regions, because they have both energy resources which may be developed and a relatively short water supply -- you can't get too excited. There's plenty of water in the Colorado Basin to support whatever energy development you can reasonably postulate. There won't be more oil shale plants than you can build, and if you postulate more than you can build, then that is unreasonable. The kinds of oil shale development that even the optimists are projecting can be accomodated very well with available water in Colorado.

So there isn't much of a problem with quantity of water. The problem with energy is a siting problem. It turns out that in a coal-liquification plant a payment of $100 per acre foot for water represents 5¢ per barrel of oil produced. Oil on an international market now is somewhere rattling between $10-$15 a barrel, so a nickel a barrel is not going to scare anybody away. You get similar results if you deal with coal-gasification or oil shale. What that translates to is the fact that if you want to build one of these energy facilities, the cost of the water that you need is inconsequential with relation to the total cost of the product. You can pay $100 an acre foot, or if you have to pay $200 that's fine. You are working in the rural agricultural west where water is currently worth somewhere between $2-$10 an acre foot, and where most farmers can't buy it at $10, even in the really productive areas like the Pheonix area.

The energy people can move into the west and they can buy what they need, and if government stands back and takes a hands off attitude, the energy people will certainly not inconvenience themselves unnecessarily, so they will move in and they will buy the most convenient source of the water they need. In some rural counties this could be disastrous to the agricultural economy, because they'll buy up some percentage of the agricultural water. This water is already developed, it's already delivered, it's easier to get ahold of. The rights are firmed up, they're probably old rights, you won't have court cases, you get the rights and you use them. The rest of the agricultural economy has what is left, and in some cases that might even mean that the service industries would no longer be viable. Shipping would no longer be viable. Food processing would no longer be viable. You could, in fact, cripple a whole county or two-county area by buying some appreciable portion of the agricultural water. The guy you bought it from is alright. He moves to San Francisco. But the people who are left, the people who work in the area, have a problem.

These are social impact problems that have to be examined on a site-by-site basis. They are not insoluble problems if government will direct the siting because, first of all, the coal is just about everywhere. If you don't have enought water in one county, or if you don't like the consequences of siting in that county, you can go someplace else. There is lots of coal. You hav other options. You can bring the water in. At $200 an acre foot, you can build a lot or works, and those works will be around when the energy plant has been retired 35 years from now, presumably to be used for something else. So you can build works that you couldn't built for agricultural use.

You can also go to water economy measures. You can use other kinds of cooling. You can grossly reduce the amount of water that's necessary to run one of these installations - at a price. You can move the coal. You can't move shale. The bulk is such that you are going to have to process it on site, but you have flexibility in siting coal-fired plants because you can move both the coal and the electricity. It takes about 20,000 acre feet a year to cool a million kilowatt power plant. It would only take 2,000 acre feet a year to move the coal for that plant through a slurry pipeline. Right there is an order or magnitude saving, if you simply put the coal in a pipeline and take it to the plant. Put the plant where there is a water supply. There are all

kinds of options to plan around these problems.

The difficulty is that we don't have institutions today that allow us to foresee the consequences and to preclude the energy industries from operating on a straight profit motive basis when they site these plants. In my judgment, that is strictly a local and state problem. It's a police power problem. It has to do with zoning and taxing, and state water laws. The federal government is not going to be able to do it. When the federal agencies start trying to do it by indirection, it's going to get messed up, because they are only going to have a regional or national viewpoint. These facilities have got to be looked at on a case-by-case basis.

The Indian water rights situation is a big problem and I don't think it is going to go away. I see it getting worse every day, and I don't think that we can study it for 20 years. I also don't think that a recommendation that somebody ought to do resource studies of the reservations is constructive.

The problem that we have is this: a long time ago we had a national attitude toward the Indian people to the general effect that we were going to get them off the reservations, parcel out the reservations, and cease identifying Indians with Indian communities, with tribes and with real estate. We had that policy of termination as an overt federal policy for awhile, but it is gone now. It was wiped out several years ago. The final signal that it ended was in the early years of the Nixon administration when President Nixon made a very important policy statement that he was going to endorse the policy of "self determination without termination." The termination policy didn't work out too well for a variety of reasons.

We are now passing acts that reverse termination action which took place in those days. It is now the national policy that we will bring Indians on reservations into the mainstream of American life as a community on the reservation.

An Indian reservation is a community of people with a resource base that must be brought up to some common economic standard. That is not my policy, it is the national policy and as yet I know of no argument with that. It's in the statute books, it is in the pronouncements of all the policy makers.

It follows that if you are in the arid west and are going to create economic development out of a piece of real estate, you need a water supply. The average Indian reservation is currently using an amount of water that supports a very marginal economy, because that's the situation of Indians. That's the problem. Indians live at a marginal economic level, and the water they use supplies that marginal economic level. If that economic level is going up, the water use is going up. It is just that simple, if water use doesn't come up then the economic development is not going to come up.

Where will the water come from? In central Arizona, you can't get any more out of the stream. Some areas are a little bit better off. In the northwest, most streams are not at the point of total appropriations, so some water can come out of the stream, but it has to come from somewhere. It

isn't going to work to simply go out and catalog the water because you are going to find out what everybody already knows - that the current uses are not adequate for an acceptable future.

I don't know how we are going to face that problem other than in a court. The Indians have a legal right to water. They think they know what it is, and other people think they know what it is, and they are far apart on what they think. The courts will ultimately decide these things when the Indians get into court and assert their rights. If the courts come down heavily on the side of the Indians, there are going to be tremendous dislocations in the non-Indian communities in the west. If they come down heavily against the Indians, then there isn't going to be any economic development on Indian reservations. In any event, the courts are not going to proceed from the standpoint of wise water resource planning, they are going to proceed from what the ancient treaties said, what the precedents in court cases said, and a lot of other things that don't have much to do with the socio-economic development of either the reservations of the communities on the perimeters of the reservations.

I think that is a big problem, and I don't think Westwide sheds any light on it. I think, though, that one of the constructive things about Westwide is they kept saying it. That was one place where they really needed to say it 20 times over. The Indian water problem is a big one. That's about all it says, but it says it on every second page and I'm glad for the recognition. I hope that everybody who reads it gets worried about the fact that there is an Indian water problem. The Westwide report may be worth some portion of that 8 million dollars if it really makes people think about that one before we wind up in court doing it the hard way.

Transbasin diversions - I'll be very brief on that issue unless you want to talk about it more. I've been obliged to talk about it for about 10 years, but I don't take it very seriously. I once did a cost estimate back in the 60's and it came out to be something like a capital cost investment of 20-30 billion dollars to construct a major diversion. You need to divert about 10 million acre feet a year to make it worth the trouble. You can't get that much out of the Snake River, so you have to go downstream and take it out of the Columbia and go over a couple of mountain ranges. You are talking about 10-30 billion dollars owrth of investment, and water at the other end that's going to cost somewhere around $120-150 an acre foot. These are 1960 price levels, so you make your own judgment what inflation would do to them.

It was not a viable scheme before the advent of the environmental movement. In those days there was "surplus" water in the Columbia - 168 million acre feet a year surplus. And that surplus went away when the environmental movement came to be, because we now recognize an awful lot of things about water in that stream that were not even thought about in terms of water use in those days.

Some people even appreciate it just because it's there. We've discovered a lot of things about estuaries that we didn't used to know. We're not at all certain that if nothing ran out of the Columbia the estuary would stay the same as it is now. You can't talk about a gross surplus running into

the ocean. It may not be surplus, even below Bonneville Dam. Above Bonneville Dam there is the hydroelectric power aspect which has become very critical to the northwest. The northwest does not have fossil fuel resources, so diminishing hydropower is not as easily said as it once was.

It anything, there are more obstacles to the transbasin diversion now than there were in 1968. In 1968 I felt that it was not politically feasible, because I really didn't believe that the rest of the United States would let us spend all of the public works money on Arizona for the next ten years. That is roughly what that kind of an investment would imply. I really didn't think it was going to work out then even if there were free rein and if there were no Senator Jackson, no Senator Church, no Senator McClure, and no Senator Hatfield on the Senate Interior Committee.

But the diversion scheme serves a purpose, because in the southwest everybody in the planning business knows that someday there's going to be a water shortage. Of course, the water shortage seems to stay about 20 years ahead. When I first began working on that basin we were going to have the shortage about now. Now we're going to have it somewhat later. It always moves ahead with the planning process. But it's undeniably there and someday they will be taking water away from one beneficial use to give it to another beneficial use.

At that stage in the game, there is nothing they can do, they say by that time they will have augmentation. Then they can think about the things they can do something about today. So the diversion scheme serves that purpose in the south, and any time they write a report on water resources in the Colorado Basin, there is always going to be at least a chapter or paragraph in it that says "This is what we are going to do after augmentation". I don't expect them to abandon that.

My conclusions about the Westwide Study are that the Bureau got an improbable task that's led to a predictable result. I think if they'd had the additional three years they would have had a more defensible document. In my judgment if they had had time to finish the study they would have had a good analysis. They probably would have said something a little bit more meaty and specific and up-to-date. I think what they lost by being cut off early was not any substance in a policy sense, but a lot of substance in the data sense and in nuts and bolts analysis. I'm afraid that they really just threw it together in a few months, and it's a shame to have put the report out.

The viewpoint of the Bureau of Reclamation was clearly the wrong one from which to be studying western water problems in this day and age. The Bureau just did not have the vision and the standpoint from which to look at these problems, so it was probably the worst agency you could have picked to write the report. It is a good agency to write a data filled, specific engineering report, but they didn't write that. It's a very bad agency to be commenting on the political and social problems of the west in a time of tremendous transition, because they don't have the breadth of vision to do that.

The world turned upside down while the work was in progress, and I don't know whether anybody would have done much better. All I can say is that at least they didn't go back and restudy all the obsolete dam sites using the multipurpose-whatever-it-is program that they have developed for analyzing them. From what

I understand, in fact, they very nearly did do that.

Now I'd be pleased to take some questions:

Q. I'm curious about your comment about the cutoff date of the study. I was working in Interior back when it happened, and Morton made that decision prior to the Supreme Court decision on the $27 billion appropriation for the water pollution control act amendment, and OMB's power to impound those funds, which led me to believe that Jackson could have come back after that court decision and demanded that the study be finished, because he could have demanded that the remainder of the appropriations be spent. I was curious about why that never happened.

A. Well, it never happened because nobody in Congress particularly wanted the study finished. The essential thing here was that you have a study. I don't know how blunt I want to be about this, I may edit my remarks, which I understand I am privileged to do, but I don't mind telling you that it was no idea of Senator Jackson's or the Senate Interior Committee that there be such a study. This was plain and simple turning around room for Mr. Aspenall who had told his people that there would be no Central Arizona Project unless there was an augmentation study. And this was what he told them was going to be the augmentation study, even though studies of explicit augmentation were prohibited. What he implied when the bill passed was that before we can go into anything as important as augmentation, we're going to need an inventory of everything that is going on today and we are now going to have the inventory made. It would take 10 years anyway, and therefore, the moratorium doesn't mean anything, because we will be doing all of the things that we have to do. As soon as the moratorium is up, we will be able to move right into surveying the line over the mountains, because we will know all about the west. That's what he implied to the people on the western slope, and therefore it was all right then to go along with the Central Arizona Project and, just incidentally, pick up that 360 million dollars worth of hometown projects. So that's why Westwide got started. Very few of the policy makers on the hill really cared about this study or saw it as being a very urgent piece of business. I saw a lot of criticism, incidentally, in the comments of my predecessor speakers about the coordination of the study and the input that the states and the other people had, all of whom are listed in the front of the report. Nobody was dismayed when this study was shut down. It was cut back by Congress first.

Q. As a follow-up question, I gather that Aspenall's defeat has changed the entire complexion of the western water picutre as far as his committee is concerned, is that right? In other words, what kind of role are his replacements on the committee playing with respect to the kind of thing that he did?

A. Well, not much, but there's a much bigger picture than that, because of the fact that the water resource policy situation was destined to change anyway whether he'd been there or not. He might have been able to fight a rear guard action against such things as environmental constraints but not much, because he had already lost several major battles. He tried to prevent the National Environmental Policy Act from coming out of the House

and he didn't have much luck with that. It's true that the people who followed him were not anywhere near the dominant figures that he was, but his influence over water resource policy often was to nit pick. He was great for writing constraints on things, most of which we are sorry we have today. For example, recreational policy.

The Corps of Engineers in the east is really up against it, because the constraints in the Federal Water Projects Recreation Act keep them from doing all of the things that any damn fool knows they should do. He wrote most of those constraints in because it was his judgment that when you build a water project you shouldn't waste a lot of money on the nonessentials like recreation. The money ought to be to buy more concrete for more irrigation and that was it. That Act is still on the books, and nobody has had time to go back and review it. There is a whole series of our fundamental water policy laws where Aspenall's influence was to constrain the hell our of what you could do. It may have been appropriate for his time, but it isn't appropriate for the way things have come about.

Also bear in mind that the Congress usually is a little bit more susceptible to the state viewpoint than they are to the views of federal agencies. The states have always hated the Westwide Study. They didn't like it at the outset, they didn't like the way it was managed and they don't like the report. They weren't in Washington urging Congress to put the money back in.

Q. When I asked you the question, I was thinking in terms of something constructive that might have come out of it had it been finished, rather than the way it turned out.

A. We couldn't predict that. This notion of mine that it would have had better hard data in it if they had the time to finish it is a notion I've developed since I read the report in the last couple of weeks. I really wasn't following it that closely while it was underway. I'm not sure that we need the hard data regurgitated in another report anyway. It's all available for people that know where to find it.

Q. You mentioned a total cost of eight million dollars. I was wondering, how much money was budgeted for this study at the time it was approved?

A. As I recall, the Act did not set a figure, it authorized as much as was required. The Bureau, of course, didn't do very much at the outset, and when they finally put together that first big comprehensive plan and brought it to Congress, it had a very, very large sum. That is when the Appropriations Committee said to go back and replan, "rescope" was the word, and they trimmed it way back. It has been through all of these different stages and this figure is just the sum of all the money that they acquired at all stages of the game.

Q. I'd like to ask a question that has been bothering me for several years. The Bureau of Reclamation seems to be an example of a federal agency which was built for a purpose, served that purpose, largely lost its purpose, and which is spending a great deal of time seeking to rationalize

another purpose or continuation of the same one. It seems to be functionally obsolete except in a caretaker capacity in many ways, and this might be done by other agencies. Yet somehow our federal setup doesn't have the capacity to redirect or eliminate a resource, and it attains a life of its own and the struggle for tariff goes on costing us hundreds and hundreds of millions of dollars. From a congressional viewpoint, do you think we have the capacity to redirect natural resources, and if so, why don't we reassess something like the mission of the Bureau and the resources there, and the national needs and do something?

A. Well, the fact is we do that from time to time, but I have a theory about that. It goes something like this. If you take any particular area of public policy, whether it be natural resources, water resource development, you name it, you can go back through history and see the development of that policy. What you tend to find is something like this - something will happen that will make that policy very important. There will be a situation like we are having right now in energy policy, an outpouring of basic fundamental legislation. We'll set up some institutions and we'll establish some policies, and then everything will be left to the institutions. Those institutions will oversee policy, and essentially what it amounts to is that instead of the President and the leadership in Congress being concerned about it, some subcommittee chairman is in charge and in the Executive Branch the agencies are in charge. Changes in policy are incremental. The programs will rock along like that on the same set of policies for a period of time. They are on a track, but society is doing something else, and the policies get more and more out of whack with society. Then all of a sudden it will become apparent that the policy area is really in bad shape. Another one of these big upheavals of policy making takes place and you rewrite it all. Operationally, that's all you can do if you look at the time constraints. How many public issues a year can there be where they really get the big guns around and think it over and throw out the old sacred cows and involve the congressional leadership and the President. They can only handle a few of these a year, you see. It's a big government, they may be working on welfare this year, or civil rights or something else. That kind of decision making has happened in the water resource business. If you go back you can track those occasions in water resources, and they come along about every 10-15 years.

The last one was during the time of the Senate Select Committee. What happened then was that they had been building projects like crazy. They had been through a tremendous project building phase after World War II, and they were building in the Missouri Basin, on the mainstem of the Upper Colorado, and they were building dams in the Northwest. The Corps and the Bureau were going like crazy. They weren't developing new policies and there got to be some strains in the 60's. It became apparent at that time the agencies weren't coordinated, and were fighting each other. There were some new technological developments coming in. It seemed like a heck of a big problem, and the Senate Select Committee was formed. You'll recall that up through the early days of the Kennedy administration there were presidential proclamations about every 2 months on water policy. The President was actually addressing water resource groups. We got the Planning Act and the Research Act and I could cite several

others if I had time to look at a list. In the mid 60's they completely rewrote water resource policy, and that should have been good enough for another 10 or 15 years.

What happened is there was this tremendous blip in all the curves, and everybody was caught short. The projections that were made in the late 60's never came about, so these policies have gotten further out of whack by now than they would have. Thus far, however, they do not command the attention that it will take to revise them. I think it will come. It will come when there is some big confrontation, some big water issue confrontation, probably between the states and the federal government. When that happens, everyone will suddenly discover what some of us already know, that the Corps and the Bureau have lost their political clout. Now there are a lot of people who don't know that. We haven't had a Senate vote on that issue in a long, long time. We've had pro-forma votes on projects where everybody comes down and they vote for the public works bill, but there has not been a real debate on a water issue in a long, long time. People think the Corps is the politically powerful organization it always was, but what they don't seem to realize is that nowadays when the Corps says to you "I'm going to give you a dam in your district", you can't be sure they are doing you a favor. I'm not sure that if a major water policy decision were subjected to real debate in the Congress today that you'd find that there is any such political influence. I think you could redirect programs. I think there is always going to be a big federal presence, but what happened is it's gotten to be more an issue of water quality than quantity, and the quality game is growing over here while the quantity boys are trying to keep in business over there. You have to get them together.

Q. Can you say that this Westwide study is useless, could you recommend any other study or report which deals with problems of water for energy and its requirements?

A. Okay. What background data would I use if I were going to sit down and try to do something constructive in the water business today, let's say I had to write an issue paper or something. In terms of what the policy problems are, I would use the National Water Commission report. It is the best statement of the policy situation, particularly if you go beyond it to the background reports of the Commission's contractors, the input to the Commission report piles high. There's a chapter in there on Idaho water rights and there's a contractor report on Indian water rights from which that chapter was distilled. That is the best statement of the policy issues. If you want data -- maybe you are concerned with how much water is in the stream, what it is being used for today, and what kind of predictions some people have made -- then of course, the Comprehensive River Basin Plans. The National Assessment of Water Resources, which the Water Resource Council made, is now out-of-date. The new one will be out within the next year. It will then be the most up-to-date statement on the actual hydrologic situation in a macrocosmic sense. If you take those Comprehensive Basin Plans, the only problem is that most of those were completed before the energy crisis. They don't reflect the energy situation in their projections. But as far as a statement of fact, a statement

of the current situation, they are pretty accurate.

There are no good projections that reflect the energy crisis because nobody has constructed one yet. The problem is that before you can deal with the energy crisis, you have to predict an energy future for the United States, or else you have to predict four or five of them. In any event, you have to put them on paper, and they've got to be disaggregated by regions, and that's never been done. The best statement of the western water situation regarding energy that I've seen was a little booklet put out by the Western States Water Council, about the same size as the Executive Summary. As far as I'm concerned, that's the most competent statement of the energy situation in the western states that I've seen.

Q. What is the title of that book?

A. I don't remember the name of it, it was put out by the Western States Water Council. It's called Water Requirements for Project Independence or Energy Development or something like that. The precedent to a good study of the energy problem is a good statement of where the development is apt to take place and that is totally uncertain. It's going to have to be postulated for high, low, middle or maybe 5 or 6 potential future situations. At this point we don't know whether there's going to be a Project Independence, although an ambitious one seems pretty unlikely.

Q. You were saying that there isn't a regional institution to handle the problem, and yet you intimate that the states in the west are going to be making some of these policies with regard to energy. It appears to me that there is need for some kind of overall institutional framework. I noticed our governor now says "No, we don't want the Orchard site, or the energy in our state", and California says "maybe we won't have nuclear power plants", so it seems to me there's a need. If there isn't an institutional framework now, is the federal government going to solve the problem, or will there be a birth of a new institutional framework?

A. The way it has been happening may not be the best way. What I see developing is this: planning and negotiating are being done at the regional level. Now the reason that is worthwhile is that the states, who are the political entities at the regional level, have to have a very strong hand. When you get into an out and out conflict among member states of that region, then the only say to resolve the conflict is through some federal action.

The trouble is that the federal government hasn't always really got the leverage. It has a lot more in the west than in the east, because of the public land involvement. It's pretty hard to build anything of any consequence in the west without getting some kind of a permit from the Secretary of the Interior. Either he has a piece of your powerline route, or he has your facility site, or he has your coal mine, or he has something, so there can be a pretty heavy-handed federal role in guiding development in the west. There is a problem with that if you slip into the idea that we are going to have a general national policy for how the

west is going to develop and the Secretary of the Interior is going to see that it develops that way. If that policy does not reflect some concensus from negotiation among the states, I think you would have a very bad situation. I don't think it would wash anyway, I think the states would rise up in righteous wrath and knock it on the head and go back to regional anarchy. So, I don't think there is going to be any dictation from the federal government.

A good example is this business of the water out of the federal reservoirs in the Upper Great Plains. The Secretary thought he was going to decide what he would do with the available water, but he soon found out he wasn't! The governors were going to have something to say about what he did with it. The political arena tends to take care of that.

It would be ideal if the states could make the inputs at the regional level, the plan could be developed at the regional level and then the federal leverage could be used to implement the plan. That would be ideal. That is the best thing that we can hope for, and to some extent, that is what will happen if the federal agencies quit trying to decide for the states, and stand back as technical advisors. We need some good strong river basin commissions where people really go and negotiate hard around the tables. We have a couple now going, and I hope there will be some more.

Q. I surmise that if the Pacific Southwest Interbasin Committee had been as strong an entity or as cohesive an entity as the Pacific Northwest River Basin Commission, we might have had even a different tone on the Westwide Study.

A. The Bureau has a tendency to be a Colorado River Basin agency, and they tend to dictate policy quite a bit more down there than they do up here. Many of the states down there, up until very recently, simply turned over their problems and their planning to the Bureau, and the Bureau was their state agency. There are not any left like that now, but it's only recently that they've come away from that.

Presentation by

RAY RIGBY
Member, Western States Water Council

It's a real pleasure to be here with you today, ladies and gentlemen. I had to sit here and smile a moment when I thought of coming on the campus at WSU. I graduated from the University of Idaho, and I recall about the only times I ever came on this campus was when you were whipping us in a football game, or a basketball game. So we created our little mischief as I suppose you're still doing, but we were always friendly rivals.

I want you to know that this is a real challenge to come here today and speak to a bunch of students. I understand you're all graduate students. I also don't know the extent to which you've gone into the subject matter and I'm not going to try to digest this entire book on the Westwide Study, or give all the comments of the states. I might say that is the biggest problem I have, trying to decide on those things that might be interesting to you.

Let me start by giving a little background, in hopes that you may more easily understand the states' viewpoint on some of the conclusions of this federal study. In the early days, settlers who came out to the west were encouraged to take up the public land, and put the public water upon it and they acquired legal rights in that water. The riparian doctrine that was so prevalent in the eastern states gave way to a new philosophy in the west. The miners diverted the water from the stream and ran it through ditches some distance away to work their sluice boxes. Later when people came to farm and ranch along those streams they claimed the use of those waters by the riparian doctrine. The miners refused to let them have it, claiming they had diverted the water from those streams, had put it to a beneficial use, and now owned the right to the use of that water. The matter went to court, and the Supreme Court of California agreed, so a new doctrine evolved, "first in time, first in right", regardless of how far away from the stream it was used, so long as it was diverted and put to a beneficial use.

That was done under state practice and custom, and was approved and institutionalized as law by a state court. The concept was embodied in the law in one way or another in all of the western states.

In some states, like the state of Idaho, if a man owns a water right, it's a property right. If he conveys it, he conveys it by deed. If he obtains a title to a piece of property, it's one of the appurtenances that goes with the land, just like the soil, the trees and everything else, unless it's specifically reserved. It's a real property right. And that again was a right that was first recognized by the constitution of the state of Idaho, and the constitutions of all the eleven western states are very similar in that respect. They recognize the water to be owned by the state, administered by the state, but subject to appropriation by the public.

When the water right is obtained other than by diversion and appropriation to a beneficial use, it is through a decree of court or a license from the state. It is administered by a state agency and is protected by the state. And if the matter becomes an issue in a case before a federal court, the federal courts administer the state laws with regard to that water right.

As a result, then, the states in the west evolved a very sophisticated system of water rights and water administration. One of the interesting things to me now, working with the Interstate Council on Water Problems, which involves all of the states of the union, is to see the difference in the emphasis that's placed on water and water rights by the eastern states, and particularly the southern states, when their problem is how do you get rid of the extra water, not how do you find additional water.

There are a long series of acts even in the federal establishment. For instance, there's the Conservation Act, the Homestead Act, the Desert Land Entry Act, the Carey Act, and the Reclamation Act. All of those, in effect, encouraged the people to go upon the public land, take it up, take up the public water, and obtain title to the land and water. Naturally, there came a day when some became concerned that maybe we are developing too much of the land. Maybe we have enough reclamation, and enough farm land, and that we ought to preserve the rest of the public lands. So the environmental movement gained a great impetus during the last ten years, and particularly in the last four or five years.

Coupled with that concern was our concern for ways of developing new sources of energy. About 2 years ago the state agencies received a request from the director of the U.S. Water Resources Council that invited the states to look for water related energy resources so that this nation could become self-sufficient in the energy field. This request was fair and proper but somewhat alarming when this federal agency further suggested that there might have to be some reallocation of space in storage reservoirs; some interbasin transfers of water (for instance, Pacific Northwest water to the Pacific Southwest); and the states were particularly alarmed when this federal agency suggested that the states consider federal jurisdiction and federal supervision of water rights. Of course, the confrontation developed immediately and it has become a real question of states' rights versus federal rights in the water field. The states themselves recognize that something and everything must be done that we can to develop all of the energy resources that we can, but not by transferring state jurisdiction over water rights to the federal government.

We started hearing reports of the amount of water it was going to take to develop the coal fields of the west, by slurrying that coal and conveying it to the power generators wherever they might be, even if they're back east; and also reports of the amount of water that it was going to take to take oil from the shale rock in Colorado, Wyoming and Utah. We wondered where that water was going to come from, since it was nearly all being used.

Here were people already wondering how they were going to find the water for the projects that had already been approved in a lot of those states. About that time we also heard that the United States Department of Interior

was going to have a comprehensive study of the critical water problems facing the eleven western states.

Immediately, state organizations became very concerned about how this was going to be done because it's been our experience that the problems are so diverse that it's difficult to imagine how anyone could come in and say this is a water plan for the eleven western states.

We talk about the Colorado River, its problems, its compacts and cases, particularly the case of Arizona vs. California, which decreed the water rights on that river; and the treaty with Mexico and how we're going to furnish the water that we owe them; and I can tell you even in the Western States Water Council there came a time a couple years ago when it almost broke up. There were representatives in the Council strongly urging that the council be dissolved because they felt the interests of the northwest were so diverse from the interests of the southwest that we weren't really accomplishing what we should have been.

Some nationwide planning is necessary we know. But an overall plan, as you will see from the comments I will give you from the several western states with regard to the Westwide Study, has to have more state involvement in the planning process.

I'd like to start on those comments, because that's my purpose being here today. The Westwide Study has been completed, such as it is. The full report has been printed, and the executive summary has also been printed. Now we are going to get a third publication to set forth the comments of the states. I'm going to try to give you a preview of those comments today. To start with, the Western States Water Council, on July 1, 1969, after learning that this study was going to be made, passed a resolution, and I'll give you the highlights of that resolution, because there are so many things to go into and my time is so limited.

> The Secretary of the Interior is to cooperate with state agencies to conduct a full and complete reconnaissance investigation for the purpose of developing a general plan to meet the future water needs of the western United States.
>
> The Secretary of the Interior is hereby requested to consult with the Western States Water Council to insure maximum coordination in preparing the plan of study, time schedule, the principles and guidelines under which the western states reconnaissance investigation will proceed.
>
> The Western States Water Council and the individual states may provide input to the western states reconnaissance investigation applicable to the needs of the respective states.

The states took the position that if the federal government was going to do it, then for heavens sake, it should make sure it considered what has happened in the states. There was a time when the states didn't have the expertise to do the type of planning that they really should have done. But

the states feel differently about that now. They feel like they have more expertise than the federal establishment has in determining what is to happen within their particular state or their region. I would ask you to keep in mind, as I'm giving these comments, that states have developed their own water plans, some are complete, some are partially complete. Others are working on them. States have recognized the necessity of getting together by compact. In my state we have a compact that determines what's going to happen to the water of the Snake River as it comes out of Wyoming. How much jurisdiction does Wyoming have and how much jurisdiction does Idaho have? The Bear River goes from Idaho down into Utah, and there's a compact between those two states. We formed the Pacific Northwest River Basins Commission under a federal act, but again, it's a commission that's worked beautifully. We've had quite a lot of experience with all the river basin commissions in the United States, and I really believe, without a doubt, there's not a commission that comes as close to doing the job that ours does. So we were saying to the federal agency, "if you're going to come in here and study, please look at the plans that we've already been working on for years; please look at the plan of the Pacific Northwest River Basin Commission." I think you'll find from the comments that the states felt that they just didn't get much input into the study.

The Western States Water Council passed another resolution directed to the Commissioner of the Bureau of Reclamation this way:

> The Council will review the principles, criteria and planning assumptions to be used uniformly throughout the investigation, the plan of study, schedule, budget and organizational plan, identifying work items, responsible federal or state agencies, study due dates and funding requirements. The individual states should be given a strong role in developing the projections of most probable locations and alternative patterns of future development, attentive water requirements and all other water requirements. Evaluation of the means of meeting future demands for electric power should recognize economic and environmental value of hydroelectric power. Every effort should be made to accomodate the views of the states.

As you can see, the states guard their position jealously but remember they have been working at it for a long while. The states really feel they have an expertise in the field of water resources.

After the study report was issued, the states were asked to comment, and I'm going to give you some of those comments. I'm assuming that you have a generaly familiarity with the Westwide Study. Here are some comments from the state of Arizona, which consists of comments from their governor and also from their water administration people.

The governor of Arizona said he questions the value of an after the fact response. He admitted that possibly their task was impossible from the outset. He further said,

> The final report does not fulfill the objectives of the authorizing act. Instead of resulting in a regional plan to meet the

future water requirements of the west the investigation concludes in recommendation for an additional 72 federal studies to be completed in the next ten years at an estimated cost of $167 million. This is in fact the major finding of investigation. We challenge the need for all these additional studies, believing many to be premature and others repetitive. We are concerned that the presentation on the Colorado River water supply is incomplete and will mislead many readers to the incorrect and unintended conclusion that the water supply for the central Arizona project is inadequate. Yet the report says this does not negate the fact that the central Arizona project is a feasible development within the estimated projections of water availability.

I don't know how much you know about the central Arizona project. When it was originally designed, it was intended that the water the project would deliver from the Colorado River would be used basically for agriculture. Today, as the installation of the big pipeline is started, it is now planned that there won't be an ounce of that water used for agricultural purposes. They are mining their underground water as you undoubtedly know, with a drop in that subterranean water table every year It's an old glacial pool under the Salt River Valley and as they bring that water up and use it for agriculture, it just isn't being replenished. So to them this project is an absolute necessity. Some more of their comments:

We believe that selection of only three hydrologic traces to represent probable flows of the Colorado River, none of which are comparable to the long term mean and two of which are of lesser quality, was unfortunate and tends to mislead. We suggest that the use of traces is much less satisfactory and meaningful than the long term averages, unless a very large number of traces are presented.

And they said with three traces there is no way they could come up with a proper conclusion as to the probable flows of the Colorado River and therefore they think the report is misleading.

They disagree with the finding of the study that says water resource development will not play as dominant a role as in the past; that land use will become the controlling factor, with water use a necessary adjuct to service. In Arizona they've got hundreds of thousands of acres of land to develop and land use planning has nothing to do with it, it's a question of where they can get the water. They have no new sources except their entitlement in the Colorado River.

Another summary point of the study:

There is an urgent need to organize a multiagency, multidisciplinary group with sufficient authority to formulate a comprehensive long range plan for the lower Colorado River and to extablish the means for coordinating the various federal, state and local programs. This is to be a federal/state group with opportunity for active public involvement and should include representatives of all state and federal agencies having designated responsibilities in the area.

To this the state of Arizona makes the comment, "Why do we need another group, multidisciplinary, multiagency? We have the lower Colorado River Management Program Coordinating Committee. It has been in existence since 1971. It's chaired by the regional director of the Bureau of Reclamation. It has served the states and the federal government well." And I think that's true. They're doing a good job and they have a lot of expertise, a lot of background, and a lot of experience. So they resent the idea that the federal government would now spend $192 million to conduct some more studies and create some more agencies to do the work that's already being done.

The state of California was happy to see a recognition of environmental concerns in the study. I think you'll see from this report the new administration in California is more environmentally oriented than previous administrations. Their comment continues,

> The recognition that traditional approaches to planning, including federal assistance of irrigation development may no longer be valid in light of changing priorities and needs of western water development. The report properly emphasizes programs of water conservation and improved management as a means of meeting water needs during the remainder of the century.
>
> It appears likely that many of the projects not yet constructed that have already been planned will not be completed and will have to be reformulated to accomodate the policy changes suggested in this report. Of course, this is a fact of life we also are aware of. Hundreds of projects that have been planned for years and years, a number of them have been approved by Congress but never funded, there's no question about it that Congress and all federal agencies are going to be taking a new look at those projects. The numbers that we'll actually get funded are going to be significantly less.

They point out that in some instances the discussions are too brief and superficial. Areas of controversy are omitted. For example, there is a good report in there on the interrelations between ground and surface waters. They point out the problem beautifully, but they haven't given us any discussion in depth to form a background for these considerations and, no question about it, it's a matter that must be determined in the near future.

The last comment of the state of California was that the change has come about so rapidly, and we have so many changes already that there's many parts of the report that are already out of date.

If you will remember, the report talks about the number of communities in each state that are small municipalities that have inferior water systems. Either they have an inadequate supply of water or they don't have good quality water. California points out that they do have a lot of communities that are in need of better water systems and you engineers should take note that means good engineers. As a matter of fact, everywhere I go to these water meetings, I find water agencies trying to entice other agencies' engineers. It seems to me the field's wide open for water engineers. Every state is looking for

people qualified in this area. If you want to read that report, I think you will be intrigued by the hundreds of different avenues for study and expertise of the college graduate.

The report states that the net effect of consumption of water through evaporating cooling without return flow is usually increased salinity concentrations downstream. California says:

> This is true only if the water is not used and allowed to flow downstream for dilution. An alternative use of the water with return flow, would cause a much larger increase in salinity concentrations downstream. From the standpoint of salinity, use of water for evaporative cooling without return flow is a better alternative.

> The report is overly optimistic concerning the potential of weather modification for producing augmented water supplies. The claim of technological advancement sufficiently developed to warrant demonstration programs leading to full scale operations in water short areas has not yet been substantiated.

There's been a lot of activity in this field, as I'm sure you're aware, in the last few years. They've even formed a national conference, Americans like to do that, on weather modification. In fact, a recently released report indicates that more experimental work is necessary. Rather than emphasizing the sociological, legal and environmental considerations as recommended in the report, California says the technical problems must first be resolved. The California comments further state:

> Federal agencies in several of the western states are increasing their efforts to develop more effective salinity control measures and techniques. But the study neglected to mention the major salinity control legislation passed in 1974, the Colorado River Basin Salinity Control Act, PL 93-320. This act not only enables the United States to comply with its obligations to Mexico in regard to salinity of the lower Colorado River, but also to proceed with upstream controls to protect and enhance the quality of water in the river for use by both countries.

I've heard a discussion given on this, which indicated that very possibly, in time, we will actually be able to take care of our treaty requirements with Mexico from that source alone. It's intriguing.

Potential savings of Colorado River water supply of 300,000 acre feet annually are possible through operational changes, increased efficiencies and wastewater reclamation, says the report. California experts say the feasibility and amount of water saved by each of the listed measures should have included more statistics in the report so that the reader can analyze the reasonableness of the estimates.

Timing is based on commitments which are not defined in the report. So California objects that the vague commitments that have been made should not

be used as a basis to plan for the water but only use those contracts that have actually been entered into so that we know it's going to be worthwhile when we make the findings.

> The long list of the problems of the lower Colorado River did not include one of the major problems. That is, the lack of any firm water supply for development of California lands along the river that are outside of existing districts having rights to mainstream Colorado River waters. We disagree with the statement that there is a need for multiagency, multidisciplinary groups with authority to make plans for the lower river.

They again point, as Arizona did, to the federal/state Lower Colorado River Management Program.

I understand you've heard from our own state of Idaho, so I won't talk much about that, other than that Idaho had the understanding that the views of the states were to be contained in the report itself. Since the report had gone in and Idaho didn't get to report, it didn't look like it would do much good now, so it didn't even comment.

The state of New Mexico says that it's regretable that funding was not available to complete a general plan to meet the future needs of the western states as contemplated when the study was undertaken. Their state water engineer, with the approval of their governor, says: "From a general point of view, the Westwide Study provided a good synopsis of the water related problems, but there are certain areas in each state which are affected quite materially, again because of generality." I think that's the big comment all of the states had. It makes general statements about a situation as diverse as it is in the eleven western states when it comes to water, and it is going to leave some wrong impressions when you apply them to each individual state's problems.

New Mexico talked more about the Indian water rights problem, which is very fascinating now. There is some legislation that's being kicked around in Washington, we understand, that would, if passed, give all the water of Arizona to the Indians in the state of Arizona. That may be an oversimplification, but that's what the people from Arizona think.

New Mexico says:

> We must make a differentiation between Indian reservations and Indian pueblos, because the law is different with regard to each one. The federal courts require the present and future requirements to be identified to legally dimension the Indian water rights. It might be inferred that Indians have a right to any amount of water that may be needed for all present and future water requirements if you would accept the language of the report. The statements are not consistent with the legal principles governing Indian water rights on reservations that have been established by the courts.

Again, referring to the case of Arizona vs. California, they set forth the rights of the states and what they thought were the rights

of the Indians.

> Principles governing the water rights of Pueblo Indians are yet to be established. The question of whether the Pueblo Indian water rights are controlled by the reservation doctrine or by the doctrine of prior appropriation is presently being considered in the federal courts.

Of course, where should it be considered? That's one of the biggest issues in the water business today, because the Justice Department, Mr. Walter Kiechel, the Deputy Attorney General of the United States assigned to natural resources, has proposed a bill. The Kiechel bill would say, we're going to quantify all federal water rights. All federal agencies would be asked to list every water right claimed to be used now or that might reasonably be anticipated to be used in the future by the federal government, including all water rights that belong to Indians and all water that raises on federal lands and all water that is under federal jurisdiction in any way, shape or form. Those claims would be published and presumed to be valid, and the burden would be upon anyone disagreeing to disprove the federal claim or it would prevail.

Now when I think of the water it would take in slurrying coal and taking the oil out of shale and Indian water rights and all the rest, and I think of the area where I live, the watershed of the Snake River, where 95% of the water comes off federal lands, and I contemplate the possibilities of the Kiechel bill, I can get mightly concerned. Does it mean that the federal government would say, this is our water right and we don't care that you have a water right granted to you by the state; we don't care that we've recognized in the federal courts and in decision after decision after decision for over 100 years in state courts or in federal courts employing the state law, that you've got a water right. We're assuming that is yours to use until we want it, until we claim it and we're now in here claiming it. If you want some interesting reading, get a copy of the Kiechel bill.

ICWP formed a task force on this subject and we held meetings in Denver and in Atlanta, and we invited all the states to participate and give their views, and we submitted a report. That report showed 50 states in opposition to the Kiechel bill. Typically, bureaucratically, Walter Kiechel says we're going to introduce it anyway.

Q. Is it in committee, or what's the status of it?

A. I'll tell you what. I'll send Professor Warnick a copy. I'd really be interested in having you people take a look at it. It might be marked up, a few comments on it. Disregard them. But it's a little bit frightening.

Q. It sounds to me like if knowledge of that bill were widespread, that'd almost be enough to start a civil war in the western states.

A. We had a congressman in Idaho that stood on the floor of the House one time and said, "Not that fooling around with another man's wife is all

that desired in Idaho, but maybe one could get away with it easier than one could with fooling with another person's water." So I think you're right.

Q. Who is the gentleman submitting it? What's his background?

A. He's an attorney, but he's been there for years. He's the Assistant United States Attorney over natural resources.

Q. Did he used to be a senator from California?

A. No, that couldn't be the same one.

Q. That's what I was wondering about, that kind of confused me.

A. I don't think so, I think he's been there for a long, long while. But I could be wrong, I don't know. I'll get you a copy of the bill and you can get his name and then you can check all that yourself.

Principles governing the water rights of Pueblo Indians are yet to be established. The question of whether we go into it by a state court or a federal court is interesting.

New Mexico shows a list of all the cases now involved in determining water rights in the state of New Mexico. They point out that there is a case there called State vs. United State of America et al. This case was filed in the state district court, moved to the federal district court and then the state and certain private interests joined in a motion to remand it and it has been remanded to the New Mexico district court. Now that's interesting, isn't it? Because according to Kiechel's bill, federal agencies would try the case; it would be tried in federal courts under a federal act, using federal doctrines that are a part of the Kiechel bill. We're not denying that the federal government has water rights. But when we adjudicate a stream and for over a hundred years our state courts have been adjudicating them, why not have the federal government come in with their claims right there so that they can be put in the proper perspective with all the other water rights in that stream. Let's find out what those federal claimed rights are not, instead of the vague uncertainties created by an adjudication of all other rights but not the federal rights, because the federal government refuses to set forth its claims in a state court and wants to rely on the reservation doctrine. As our Supreme Court said, we don't know but what twenty years from now you'll want a Disneyland on top of the Salmon Mountains and you'll want the water for that if we're going to leave it to speculation. And how can the states, particularly, do any planning with that threat hanging over their heads? So Kiechel says, fine, we'll have an adjudication by this bill I'm proposing and then we'll know. The sad part of it is, we fear that what we'll know is that they own all the water.

Q. What happened to the concept that's implied on one of the amendments to the U.S. Constitution which states that all rights not specifically granted to the federal government are reserved to the people and nowhere do you see in the Constitution that the water rights were reserved by the federal

government? What happened to that constitutional concept?

A. We could have a very pleasant discussion about that. We could also talk about the police powers and a lot of other powers that have moved to Washington, couldn't we? Even when I went to college over here we didn't know of the police powers being exercised by the federal government. I mean the laws governing health, safety and morals and so on of the community were determined by the state, always by the state. The federal courts and Congress historically left those with the states. They're involved in all of it now. That's the implied powers provision of the U.S. Constitution and you're right. The federal government has to be given specific powers. Well, of course, they're saying since it's federal land they have jurisdiction. We say, how about the fact that when Idaho became a state or when Washington became a state we had a proposed constitution, the Enabling Act required it. In that constitution it said that the waters of that state belonged to the state. And you, Congress, accepted our constitution in the Enabling Act that created us as a state, and since you bought our constitution you bought the doctrine.

In our discussion with Mr. Kiechel, we find those career people don't really concern themselves with states rights. As a matter of fact right now, it just happens that I have a friend who is in the U.S. Attorney General's office, in the civil division. He went back there with stars in his eyes and a real desire to make some changes. He found there were 170 lawyers, most of whom had been there throughout their careers, and they made it clear to him in a hurry that they were not appointed, but were there under civil service. They told him they had seen many appointments come and go, and he would come and go, but they would continue to run the department. As a matter of fact, that's one of the frightening things of the whole federal system. How do you change it? Every president that goes back there thinking he can change it has the same problem.

You can almost get emotional about these things because it's an issue that is important. I know a lot of people think the states are like dogs in the manger, that they are guarding their rights jealously and they're not thinking in the national interest. But I don't think it is true that thay aren't thinking in the national interest. They want state participation and interplay at least with the federal agencies.

The governor of the state of Oregon said, "It is misleading to say that legal precedents have been overcome in the acceptance of our minimum flows. Our established minimum flows are administered as water rights. Thus, in a year of water shortages those minimum flows will be curtailed because of their low priority date." Again, our state did not pass the act. A minimum streamflow bill has been before our legislature for quite some time, but has never passed yet. Most proposals do say that a minimum flow law would establish a priority as of the date the act was passed. So any prior water right would still take precedence. Some states don't accept that doctrine. Some states never give up the title to water, it remains with the state. If you use it you use it under a license that can be revoked. Some states, and certainly the federal government, are saying now that we simply must no longer follow the concept that property rights and priorities can be established in water.

The state of Utah said the report presented the western water picture with reasonable accuracy. Further:

> We deemed it unfortunate that the study was terminated with so little time allowed for analysis since the final report is hardly representative of the sizeable funding and manpower expended. The further we move from 1973 when the draft was formulated, the less the report really reflects the critical problems. Knowledge and policy regarding energy problems has changed drastically since the report was written.

Utah has its own report. The Western States Water Council also has a report on the energy needs of the west. I would invite you to read the Western States Water Council report on the energy needs of the west and compare it with what you find in the Westwide Study and I'll let you be the judge. I think, again, it only demonstrates the capabilities of the people in the local area.

Utah says it doesn't need federal assistance in determining how it wishes to use its remaining Colorado River water and every one of the southwestern states in the Colorado River Basin made the same comment. Utah's water is and will continue to be allocated by the state engineer in accordance with state law. The study says that local water shortages are far more critical in Salt Lake Valley than in other parts of the state. But Utah says that the statement is misleading. I use that disagreement as an example of several like it cited in the state's comments. I'm just using a couple or three to show you that they got so involved in making general observations that they said the greatest shortage in Utah was on the Wasatch front. Of course, the state of Utah said that just isn't a fact. It's in the Uintah Basin.

The state does not believe a level B study led by the Bureau of Indian Affairs would be desirable for the Indian reservations. So the feeling of the state is that Indian water should be developed under the direction of the tribes themselves with state and federal agencies assisting to the extent requested by the tribes.

Utah thinks a publication of this kind might be helpful if prepared on an annual basis, or on a biennial basis with greatly increased state participation and that the national assessment program of the Water Resources Council has established a mechanism whereby this could be accomplished. But the problem of meaningful state participation is as yet unresolved.

The ICWP is the standing state advisory committee to the U.S. Water Resources Council. It has been very exciting to be involved in this work. You can't imagine the doors that have been shut in our faces, the meetings we've been kicked out of and the time we've had getting basic reports that any citizen in the United States ought to have. But the representatives of the states have insisted that we should be present at those meetings, we should be given status so that we can give the states' input and we feel this last year that we've made more progress and acocmplished more than ever before. And we do meet with them now.

We don't need another group of federal agencies. After all, we've got the river basin commissions. Where we don't have river basin commissions we have councils like the Colorado River Basin Council and we have been getting along very well. Let's involve them with the U.S. Water Resources Council and get a good state input to the U.S. Water Resources Council and let them proceed on their national assessment program.

I even brought a little literature on that from Warren Fairchild's office. I think it's got some potential, as long as they're willing to listen to the state and their input.

The state of Washington gave a real good report, but you probably already have it. Maybe I could just point out a couple items. "It overestimates its impact or potential impact on water resource management and planning activities." Water resource planning and management activities will be based on the results of the Westwide study, they fear. If it is, then they're going to go back to Washington and they're going to use this study to go to Congress and say the states have had their input so this is the Bible now. This tells how we're going to determine what projects there'll be and where the money is to be spent. I suppose I could quote Jack Barnett, who is the executive director of the WSWC and this is what he says:

> The Westwide report was conceived by the federal government under the auspices of the Bureau of Reclamation to determine the water resource problems across the west. The western states were never too enthusiastic about the study effort when it was initially proposed. Some were fearful that a study effort of this nature, prepared by the Bureau, would simply be a massive study effort that would ultimately become nothing more than a shopping list for the Bureau of Reclamation to go to Congress and try to solicit new western water resources projects to further the status of the Bureau.

We recognize that we like to make the plans and get Congress to fund it. To some people that's an inconsistency. I could tell you, having been a state legislator, that that's true of most things. As a legislator I would say, "If the federal government would give us their revenue raising ability, we would show how to govern on a local and state basis." I'm really convinced of it. I think the capability on a state level, which is next to the problems, if it had the resources of the federal government, could show them how to govern.

I think we could show them how to manage, develop and administer water resources. The state of California is doing a good job of it. The state of Utah is doing a good job of it. Our state isn't doing too well yet, we just haven't had the funds. But the whole thing is this, the states now have the capability to plan and they are planning, and they're coming up with comprehensive plans. They know the projects they want. They're coming up with the funding. So I suppose if I could characterize the whole discussion I would say the states are now beginning to look those gift horses in the mouth and wondering whether it's all worth it or not.

What do the states expect? This is a federal report and it's not surprising at all that the conclusions in the report are not as the states prefer them. That's the comment made by Mr. Kaufman of the Bureau in the Denver office in reporting this Westwide study. As a matter of fact, most of the states were really surpised that it even came out because it was nearly a year before the last contact had been made and nobody had even heard any more about it. As you know, when the study was first considered, it was going to be this great big massive study. All of a sudden it was cut short, the funds were cut and it was bottled up and we thought the thing was over with. Then a year later, out came the report. Then they asked for the comments of the states. That doesn't excite you to want to be very cooperative, I suppose.

The western states have always been very autonomous in their administration of water rights. As I say, we've been dependent on the money. Now we are satisfied that water resource development must occur within the states. The states are critical of these types of reports, because they feel that the federal government and its agencies should not be predetermining what the total resources are within the state. Should they determine where the state will ultimately decide where to put their projects or the allocation of their reserves.

I just want to comment quickly about the state of Wyoming. I thought theirs was a particularly good report and very comprehensive. They had submitted a review draft very early upon which they had spent a lot of time, and they couldn't see one thing in the final draft taken from their comments.

Now I'm going to give you some of those comments and see what you think.

> It's not evident that due consideration was afforded these comments and consequently, a further detailed evaluation would not appear to be of particular value. The principal conclusion of the report is the identification of additional studies proposed to be undertaken at tremendous cost and it is to meet the future water needs of the eleven western states. A number of studies have been conducted or are in the process of being conducted or are being planned to be undertaken by various agencies which relate to land and water resource problems. Consequently, in order that duplication of effort might be prevented and only studies of essential necessity be undertaken, the status of activities of this nature should be carefully evaluated before starting another program. It is suggested that the selection of future studies associated with the Westwide Study be determined in consultation with designated states' representatives.
>
> Let's not meet the objectives of the law to prepare reconnaissance plans to meet the water needs of the eleven western states, particularly those within the Colorado River Basin. Instead, the report identifies water and land resource problems and suggests a five year study program at a tremendous cost.

I meant to bring a little clipping I found in an ERA magazine written by a state senator in North Dakota. He was talking about some planning they

were contemplating and he made a full circle about all the planning and the studies and reporting to committees and then they were now going to study what the committee found out ten years ago and evaluate it and reports of two or three others and at the end he only concluded that we don't know what we were talking about in the first place.

The fact that the state participated in the Western U.S. Water Plan in identifying issues along with federal agency representatives does not mean that we agree with the program. Among the questions in our mind is, how will the program suggested in Westwide relate to the ongoing studies, the requested studies that cover the same issues. I defy you to find, other than a cursory reference, those plans that have been going on for years.

In view of the fact that there will be many ongoing efforts throughout the west covering problems that are identified in the Westwide Study, how will these ongoing studies be incorporated into the study suggested? A significant cost not included in the $138 million shown for federal agencies which they planned for this study doesn't even take into consideration the money that may be spent by the states trying to keep up with it.

We had to participate in the state of Wyoming in five different Westwide study teams. The basic criticism we have is that few of the federal agency representatives were stationed in Wyoming and they were not fully cognizant of the fiscal situation in Wyoming, nor of the institutional factors such as water laws, project authorization, or even state agency functions that affect the problems and needs of Wyoming.

It fails in many places to recognize not only state water laws but also such institutional arrangements as court decrees and project authorizations. We appreciate the discussion of the fact that the projections cannot adequately describe the population growth in the now sparsely populated energy rich areas such as Wyoming. This chapter recognizes the water planning activities of states and the fact that current national policy attempts to place responsibilities for water resource decisions to state and local governments.

This statement seems contrary to the conclusions of the study for massive federal planning. There seem to be implications that a wide variety of uses both on and off the reservation of the Indians should be available to Indians. We cannot agree that off-reservation water uses are reserved to the tribes. Water for irrigation use downstream, it's the non-Indians that will apparently continue to have difficulty in obtaining necessary water supplies until the Indian water rights are resolved. The conclusions and recommendations overlook the need to find a legal basis for Indian water rights as distinguished from the state water rights.

That is a tremendous confrontation in those states that have them and of course we have, as the one report indicated, 187 different Indian tribes in the western states, each of which can lay claim to a water right. And what is that water right? As one spokesman for the Indians said, it doesn't just mean we have a right to the water that's on their reservations, it means that we put them on a reservation and that implies that they are to have whatever is necessary to make them self-sufficient. So if they need that water to build a dam to put in saw mills, to do mining, to do whatever they want with it to make them self-sufficient, they would have the right to do it, even if the water must come from off the reservation.

Again, I don't want to appear to be fighting the Indians and their rights. It's just that if that should be the case, and that is the temper of the bill that is kicking around on the hill right now, then how do we manage the water rights of the states? Or even the federal government as far as that's concerned.

> Wyoming also believes "the lack of criteria for determining instream flow needs was pointed out. Most of the existing methods applied to anadromous fish are a statistical approach which is based on the flows at a given point in a stream. Flows derived from existing criteria fail to recognize factors such as sediment problems and existing diversions. The estimated flows are often so high as to require nearly all available water for instream flow purposes. Water projects to provide such flows would be rather costly and would prohibit development of consumptive uses of water. The first step in the suggested instream requirement studies should be to derive acceptable hydrologic and biologic criteria and then to proceed on an area by area basis.

Every state insists that the approach must be on an area by area basis. Each state believes it should have the prerogative to control the uses of its waters and the designation of its rivers functions. And they'll say once you consider wild and scenic rivers, they'll make the recommendations. Of course, we know that the federal government doesn't believe this, because a law has been passed in Washington that tells us what the wild and scenic rivers are.

The report fails to recognize the property right aspect of state water laws, as well as the complex body of water law that has been developed through state legislation and in the courts of the states. It's one thing to desire legal and institutional changes and quite another to achieve them. How are you going to achieve them? Are we going to pass a federal act declaring water to be owned and administered by the federal government, and are we going to have court decisions holding that all water laws of all states that are contrary thereto have no standing?

The strong implication is made that the federal government may claim its reserved water for mineral reserves located on both public and private lands where the federal government has retained the mineral rights. The suggestion that the federal government has reserved water for such purposes is unacceptable to the state of Wyoming. Wyoming believes that water for industrial development should be obtained through the normal state water law process.

Wyoming concurs that water requirements for federal reservations should be quantified but not to the extent of taking from the states without them having anything to say about it. They think the study team that is suggested should include an irrigation engineer and a representative from the private sector who is knowledgeable about irrigated agriculture.

> Wyoming says, "We do not believe the Secretary of the Interior has specific responsibilities to do several of the things stated in the report. He certainly does not have specific responsibility to apportion water flows according to the Upper Colorado River Basin Compact of 1948."

The last report comes from the Pacific Northwest River Basin Commission. It says that its report, which seems to have the concurrence of all the member states, is going to be finalized and out next year, in 1977. The commission is proud of the report. And yet they said it wasn't even given consideration in the Westwide report. So they feel that they have been overlooked. But as Mr. Kaufman of the study team said, and I heard him make the statement, they really didn't expect the states to like the report, they did it from a federal point of view, and not from the states.

Well, it's a complex matter and there'll be a lot said and done about water. It's getting scarce; it's getting more expensive, and we're going to be challenging a lot of the old concepts that we've taken for granted up til now. Land use planning and water planning have got to go hand in hand. The states, I realize, have got to be flexible, and I think they will be. I know they would be if they could see an attitude on the part of the federal officials of wanting to work together to resolve these problems, rather than an attitude of dictating to state people. I think we've got to work together. It's much like the competition for water between the northwest and the southwest. Recently I put together, for a talk, all of the studies that had been made about importation of water to the southwest from the northwest and Canada. I don't think there is any doubt that there have been many feasible reports and that there are a lot of people who will still be looking in this direction for water as soon as the moratorium is over.

As water gets more expensive, every possible source will be studied. We in a state like Idaho think we have the power of regulation and administration of the waters of the state. If that power ever gets to Congress, we've got two congressmen and two senators out of a total of 565. The political muscle to make decisions would surely shift. The people in the southwest say that the water should come to where the people want to live. However, I believe we should do what the southwest did a long time ago and that is put the water to work. We have, as all of these reports will show, acreage that is very susceptable to high crop production if we put water on it. I know we must consider the environment, and uses of water other than industrial and agricultural. However, you may remember how the United States was highly criticized at the World Food Conference a short time ago, when they really poured it on the United States for not accepting its responsibility of feeding the poor of the world. We also saw, a few years ago, our surpluses of foodstuffs dwindle and go away in this country. It shows what happens in a hurry with the population increasing and the land decreasing. (Two million acres per year on

an average in the last ten years have been taken out of production in America just because of highways, shopping centers, homes, factories and so on.) Agricultural land will be increasingly more in demand, and Idaho has a great potential to furnish it and utilize our water fully. We've got to be mindful, if we're going to do long range planning, not to overemphasize the aesthetic to the detriment of our agricultural base that has, after all, made this nation have a better standard of living than any place in the world.

Q. You said just at the beginning of your talk that first in time was first in right so long as the water was appropriated and put to a beneficial use. What is a beneficial use, has that been established by the courts?

A. That's a good question. Recently we're moving away from the doctrine of requiring diversion to appropriate water to a beneficial use. Historically, that has been the doctrine, as you know. What is a beneficial use differs slightly from state to state. Is it a beneficial use to leave water in the channel and raise fish? That's an instream use, but is that a beneficial use under the law? It isn't diverted. Is it appropriated? I guess it is now, at least it is in Idaho. But if you had asked me that ten years ago, I'd have said absolutely not. Is the Thousand Springs Area in Idaho where the water comes out of the mountain and comes down the canyon wall and presents a beautiful sight, all aesthetic, is that an appropriation? That bill was passed in the Idaho legislature saying that it was, just like the waters in the Payette Lakes. That one has been on the books in Idaho for many years and we now say that is the precedent for saying yes, a beneficial use can be swimming, boating, water skiing, aesthetic views and so on. I can't give you a breakdown among the states, but I think you will find, in Washington under the Department of Ecology, that you have probably gone further than any state, unless it's the state of California, in extending the concept of what is a beneficial use.

Q. Extending on that idea a little bit further, is there any implication in the law as to the quantity that defines that beneficial use, such as saying that for such and such a crop the beneficial use is defined by four acre feet per acre or on the aesthetic one at Thousand Springs, how many cfs quantifies the aesthetic use there?

A. There is quite a lot of discussion in this report on that topic. We've had a lot of discussion in our state. We have some lands in our area that have decreed to it nine inches of natural flow to the acre. Some say that is too much and an extravagant use of water, yet that quantity is decreed to that land. I would like to see the legislature consider a bill that would allow an enlargement of the burden of water by allowing decrees to be amended to include additional lands using the same amount of decreed water. Our pioneers put a ditch across a 160 acre tract that was uneven land and it would take a lot of water to do a proper job of irrigation. Today's farmer says, deliver to me just half the water you delivered to my predecessor and I'll put it in a sprinkler system and I'll irrigate all the land previously irrigated and still have enough to irrigate several acres more. In Idaho you can't do that because you are

enlarging the burden of water. I represent a group with a beautiful project up in the area just west of Jackson Hole on the Idaho side of the Teton Peaks. They bring the water out of the mountains through a pipeline. It comes down to the valley floor and runs all those sprinklers without one motor. Out of a total of 307 cfs of decreed water for the project land we can water that same land for just about 115 cfs. The question is, what happens to the rest of that water? They have used it up til now, and it seems to me if we want to really find some water resources we ought to say to those people, if you'll spend the money and institute some efficiencies that will make available additional water you ought to be allowed to sell that water right to somebody else to put it on new lands. I think we could triple the acreage watered in our state without enlarging the amount of water decreed. But now they don't, you see. They run it out and they do anything to hang on to it because they're afraid of losing it.

Q. You brought up an interesting point there about the fact that the federal government has supplied most of the dollars which have created the water rights that we're now fighting to keep. It occurs to me that it is inevitable that we will see more federal demands and more maneuvering of this type to get more federal control over the water at some point, I'd say the point of creation of production. I think an analogy that more clearly illustrates this trend is the highway trust fund. The highway trust fund is in the same boat as the irrigated agriculture because they have allowed themselves to get to the point where they are completely funded by a federal trust fund and along comes the mass transit lobby and says well, you can't have that be your backbone anymore, we want part of it. The same thing is happening with the petroleum companies in the case of irrigated agriculture because they happen to own the coal companies. It's just another pressure group that's hopping on the back of the federal government which happens to pay for all this. Do you see any way to reverse that sort of thing? That's really what's happening, I think. I'm just picking out petroleum companies as one, the Indians are another one, obviously.

A. Yes, I do. I think, again, the state of California is the best example of that. I hesitate to even say what the appropriation is for water resource projects in that state. But I was told a short time ago that there's actually more money spent by the legislature of the state of California than by Congress now in new projects. In the state of Idaho the American Falls Dam and Reservoir is now going to be built by private funds. That's why I said I think a lot of people are looking that gift horse you're talking about in the mouth. That's the only alternative I know of. They're going to use their own funds, because I just don't think they're going to get them from the federal government. I think new projects won't be funded until we have a greater need for them; but I hasten to add that I fear that we're going to wait until we need them desperately, right now, just like we did with energy. We let the situation get so back that maybe we overcorrect. That's all I hope we don't do in the food business. We better have lands available, we better look ahead and plan those projects that will make foodstuffs available.

Q. There are other areas in Idaho, for instance, where I think the same thing is happening. Power production is one of them. You look down the road twenty years you can see where Idaho might not get any benefit out of this sort of thing at all, provided the federal government does something, does certain actions based on the fact that they provided the money to build additional power facilities. I think we have a lot of areas where that kind of thing happens.

A. I'm sure you're right, they're going to remind us of those things. But all I can say is, they're apt to shove us over the cliff, but we will leave tire marks all the way.

Q. You're talking about the reluctance of the federal government to continue its policies of investment in irrigated agriculture in the west and the states moving, as California and others, to do this. Do you see some risk in this that the projects that are yet to be developed are in many cases the more expensive ones, the bigger and more difficult ones. The possibilities we're finding here in Washington on occasion, the private enterprise and the less well financed organizations are not in a position to carry the big projects. They therefore take the cream of the crop, the easily developed lands, develop those and leave the burden of the less easily developed ones for someone else. This eventually may make it more difficult to get production off of those lands because we didn't develop them as a package in the first place. Do you see this as a problem?

A. That's a good comment. We talked about that a little bit coming up here and you're surely right. It's unfortunate that we couldn't have planning for a total area, but the sad part of it is, as of today, we can't get that talk from anybody. They're not that much interested in talking about projects. In Idaho, we're talking about Carey Act developments. We've got an emphasis now in Idaho on Carey Act projects, simply because the Act of 1965 cut off practically all of the desert land entries, homestead and mining claims and so on, but they overlooked the Carey Act. The Carey Act is still on the books. It hadn't been used for a good many years but it's still on the books. So Bob Lee, who is the former director of the Idaho Water Resource Board, got several people and went out in the desert and put together a Carey Act project. Both the federal government and the state government had to shake their heads because they hadn't even thought about that one for years. So we're saying the same thing. Cal made a good comment, just like yours, that an area can be spoiled without planning.

Q. Do the states recognize this and intend to do something in their own right?

A. Yes, by land use planning and water planning. We've got a state water plan, just completed, and that plan takes into consideration the federal government water rights. The federal government hasn't yet really recognized our Carey Act projects. They have accepted the filings and have temporarily withdrawn for study the lands in those projects. They hope that by the time they get it studied Congress will have acted to prevent anything like that happening. If the state isn't geared up for planning

now, yes, that could happen. Could that happen under your new Department of Ecology law in the state of Washington? It's pretty comprehensive, but maybe it could.

Q. We're nearing our time limit, I suppose you may want to leave, but I noticed you mentioned earlier in your comments that perhaps the Water Resources Council was making some progress towards the concept of overall planning. Several times in class I've depended a little bit on the Bureau for one standpoint, but somebody does have to look at it from the overall viewpoint, to unify state viewpoints. Here you see the two states of the northwest saying we don't want a diversion, but I see a need for someone in a broad eleven western states approach to look at studies of planning. Certainly in the energy thing, if somebody says they're not going to build energy plants in their area, and then relies on another area that says, "that's not what we wanted to do, to supply you with energy." That's one problem. But even the land areas. Maybe we're not interested in applying the water to the land along the Colorado that might be developed that could be done with transfer and it seems to me there's need for it. Have you envisioned anything in your Western States Water Council or in the U.S. Water Resources Council that will enable us to do that?

A. As I say, I really think all of the things on the scene right now, the United States Water Resources Council's national assessment policy, because it does involve state input, has the most potential. Warren Fairchild laid that all out to us just about a month ago. I think he's got a sincere desire to work with the states, because going back to your previous comment, I suppose what we're saying is the northwestern states have done a pretty fair job. It's areawide. Our compacts have done a pretty fair job. But I guess what we don't want is the Colorado River Basin states doing our planning on the Columbia and vice versa. They never considered us when they made all their plans and cut up the pie with the Colorado River and yet they would help make the decisions and take part of the water in the Columbia. It would be very simple if they could say, "well, Congress passed a law that provides for the building of a pipeline from the Dalles over here down to some point on the Colorado River system." So it's a fact of life, whether we like it or not, and maybe some man could be God and sit in Washington and press buttons and pull strings and pull all the facets of the whole nation together and build one beautiful irrigation system and water system for industrial and municipal, but as you work with it you see the impossibility of it. It's a dream, but it's kind of a utopia dream. It just isn't practical. You've got to get right down and work with each individual area. As the comments of the states point out, you can't always apply a general statement to situations in the state of New Mexico, for instance, the same way you would apply it to northern California. Northern California has plenty of water. They don't need our water, but California needs water in its southern part. Why don't they do something about that? New Mexico talks about the possibilities of a transfer of water from Texas. Well, who's going to make those decisions? Is Washington going to make them for the people of the northwest? As I work with and watch these situations happen, I guess I just don't have confidence in any one man or one agency sitting in Washington, or in Denver as they did here, and say this is the plan that's going to pull all of those things together and make it all come out right.

APPENDIX

GRADUATE STUDENT PRESENTATIONS

Fourteen graduate students made oral presentations on various problems identified in the Westwide Study and submitted written papers on their reading and the information they gained from participating in the seminar. These presentations were naturally greatly influenced by each student's background and interest. The diversity of student participants made for a questioning and searching attitude in the seminar that was stimulating and hopefully has served to broaden their perspective.

To summarize the students' presentations, a title and brief synopsis have been prepared to preserve the ideas put forth and to reflect their attitudes at this point in time to the so-called "westwide problems".

EROSION AND SEDIMENTATION PROBLEMS

Debbie Appleford
Jon Babcock

Ms. Appleford and Mr. Babcock reviewed the causes and adverse effects of soil erosion and sedimentation, then presented information on the present role of government agencies and private business in administering solutions to all the related problems. They contended that for many of the erosion and sedimentation problems the technology is now available for at least a partial solution to the problems. They indicated there was little incentive for landowners and contractors to utilize methods now available. Their study of the problem led them to believe that the economics are such that it is more profitable at this time to ignore the problem than to try to solve it. They advocated state and local programs, indicating that they might be better received than federal programs. They also advocated levying of fines and joining in cost sharing programs, but were not optimistic about acceptance in places like our local Palouse country.

WATER FOR THE INDIANS

Thomas R. Comish

The Westwide Study pointed to the commitments and responsibilities of the federal government to the Indians and the long standing controversies over Indian water rights. Mr. Comish reviewed several important court cases concerned with the problem, in particular the case in Montana that resulted in the so-called Winters Doctrine. He emphasized the writings of Susan Campbell who argued for the quantification of Indian reserved water rights. The main argument being that inventory and quantification of Indian reserved rights would give non-Indian appropriators some certainty regarding their use of water and in addition, elimination of inhibitions of state planning for water use.

Comish cautioned against what he reported as a state-by-state approach to the Indians and the Westwide Study request that would take up to 25 long years to complete. He closed with hoping that it would not be the tendency of the past to transfer Indian lands and resources to non-Indians.

PROVIDING FOR FUTURE NORTHWEST PEAKING REQUIREMENTS WITH PUMPED STORAGE

Larry D. Coupe

The Westwide Study suggested that once existing conventional hydropeaking potentials are developed and thermal base loading provided, utilization of abundant

pumped storage sites should receive increasing attention. Mr. Coupe reviewed the energy situation in the Pacific Northwest and explained the various alternatives for providing peaking capacity. He explained the advantages of pumped storage providing the peaking capacity and pointed out the several uncertainties of population growth in the west, rate of development of thermal base load units, the public opposition to peaking with existing dams, opposition to new impoundments and the increasing interest in using river flow to meet instream flow requirements. He contended that pumped-storage represents the most economical means of providing required future additional peaking capacity for power production and even with opposition to impoundments that will be prevalent, the Pacific Northwest represents excellent potential for meeting that need for much of the west.

MODIFICATION IN WESTERN WATER POLICY WITH RESPECT TO INSTREAM FLOW REQUIREMENTS

George S. Edwards

Mr. Edwards reviewed the concepts of water rights and pointed to the thrust of new legislation to recognize instream use as a valid water right. He contended that a critical issue is the sacred cow of pioneer-dated water attitudes especially towards comprehensive water resources planning. He touched briefly on the need to revise the idea of having water rights apply perpetually into the future and noted that no one seems to address that question. He wondered if federal control will move into that area and overrule western states' claims to water rights.

THE COOLING WATER DILEMNA

John Ewing

The Westwide Study points to the important effect on water quality from consumption of water through evaporative cooling, cautioning that the net effect is usually increased salinity concentration downstream. Mr. Ewing reviewed the expected requirements for cooling water. He pointed to great lack of efficiency in use of heat in energy production and enumerated many problems of keeping ecological balance. He made an appeal for other modes of energy production that might have less environmental impact. Some caution was expressed in the discussion on the hopes for geothermal power production.

WASTEWATER REUSE - AN ALTERNATIVE

Stephen K. Hughes

Mr. Hughes indicated that the Westwide Study only casually treated the benefits to be gained or the problems associated with recycling of wastewater. He reviewed current applications of water reuse and emphasized irrigation reuse, industrial reuse, recreational use and domestic nonpotable reuse. He contended the important question is and will continue to be, "When is water reuse economically feasible?" He enumerated the following as guidelines in answer to the question:

1. When existing water supplies are limited.
2. When existing water supplies are relatively expensive.
3. When developments need large volumes.
4. When treatment provided waste water provides effluent of very high quality.
5. When regulatory agencies require higher degrees of treatment for discharging waste water into receiving streams and lakes.

MEETING FUTURE ELECTRICAL ENERGY NEEDS OF THE WESTERN UNITED STATES

Daljit S. Jawa

The Westwide study indicated that the role of western water in meeting high-priority energy needs is tied primarily to the mining and processing of large reserves of coal and oil shale, to waste heat disposal from thermal electric and fuel conversion plants, to supplying municipal growth directly associated with fuel production, and to providing hydroelectric peaking capacity. Mr. Jawa worked with a survey of all westwide energy reserves and potential sources of energy and developed a linear program model to assess in a gross way the possible ways to solve the energy needs. He presented tabular results showing that cost of water would not greatly influence the pattern of different modes of production in meeting potential energy demands of the west. If the objective were to minimize the amount of water used in energy production, then the cost of meeting the energy demand increases and a different pattern of which modes of production was predicted in his presentation. This confirmed the observation of one of the guest speakers, Dr. Dan Dreyfus.

COORDINATED LAND AND WATER USE PLANNING

David A. Morency

Mr. Morency reviewed the various significant acts pertaining to land and water resources planning. He grouped the problems as follows:

1. Problems with data collection and presentation.
2. Problems related to intergovernmental cooperation.
3. Problems of financing planning.
4. Problems of public participation.
5. Problems of adequately trained personnel.

He pointed to features of the National Land Use Policy Act as a possible solution and emphasized that the solution lies beyond traditional approaches. He explained the unwieldy nature of independent pieces of legislation that has scattered the planning process, especially with regard to land use planning.

INCREASING SALINITY IN THE MAJOR RIVER SYSTEMS OF THE WEST

T.W. Pack

He reviewed the aspects of the Westwide Study that indicates that the most practical way of controlling increase in salinity appears to be impoundments and evaporation control. He pointed out that subsurface irrigation application, scientific irrigation scheduling and proper drainage are the technologically feasible methods of salinity control, but he cautioned that these techniques were not likely to be used until farmers can be shown that it will be financially advantageous to them.

PRESERVATION OF NATURAL WATER AREAS IN THE WESTERN STATES

William Piispanen

Mr. Piispanen reviewed the history of John Wesley Powell's surveys of the west, the thrust of the conservationists like John Muir, Bob Marshall, Aldo Leopold and Arthur Carhart. He pointed out the various efforts toward environmental protection and gave considerable detail to the Wild and Scenic Rivers

Act and other efforts to protect water. He contended that the burden of proof should be on the developer, not the preservationist, and that legislation should provide protection for all rivers having preservation value. He favored states adopting plans for scenic and wild waterways. He was concerned that legislation alone will not ensure the continued preservation of wild and scenic rivers. He was hopeful that with continued interest and demand by the public for natural area recreation and preservation there will be additional attention given to alternatives to development.

FEDERAL ASSISTANCE TO IRRIGATION DEVELOPMENT

Jacob Rajala

He reviewed the various federal acts that have provided federal assistance to irrigation development in the west and reviewed various arguments put forth on both sides of the issue either favoring or not favoring federal assistance. He thought the questions that should be asked are: Is federal assistance to irrigation development the spending of public money for private gain or is the national interest served? Is sharing the costs of irrigation development really a subsidy to irrigation, or is it the public contribution to multipurpose development from which various types of benefits can be harvested. He contended that with the emphasis changing to an optimal use of the available water, irrigation will have to compete with other uses of water.

WATER CONSERVATION AND REUSE

Rebecca Tanghal

Ms. Tanghal reviewed seven different ways to conserve water:

1. Water conservation by constructing reservoirs.
2. Water conservation and construction.
3. Farm ponds.
4. Water spreading.
5. Artificial groundwater recharge.
6. Zoning for water conservation.
7. Sprinkler irrigation.

She pointed to the extremely large losses in evaporation as a possible place to effect major gains in conserving water. Another potential reuse possibility was the use of sewage effluent in recreational water use. As a lesser amount, she pointed to the recycling of waste water within industrial use.

ABSTRACT

This report is a proceedings of discussions and presentations that took place in a joint University of Idaho-Washington State University interdisciplinary graduate seminar conducted on the two campuses during the spring semester of 1975-76. The subject chosen was the water problems of the eleven western states, and in particular the U.S. Bureau of Reclamation report on the Westwide Study, authorized under PL 90-437 of 1968.

Seven formal presentations were made by guest speakers and questions were entertained from participants that included faculty and graduate students from various academic departments. Students were required to investigate individual aspects of western water problems and make class presentations. A summary of the students' ideas on the specific subjects are presented in the report.