Concept, Legislative History and Implementation of the Anderson Water Resources Research Act

(Remarks of Benton J. Stong, Professional Staff Member, U.S. Senate, Interior and Insular Affairs Committee, at the Western Resources Conference -- July 16, 1964)

I. BACKGROUND AND CONCEPT

Soon after the 86th Congress convened in 1959, Senator Mike Mansfield of Montana told a conference of Western Democratic Senators -- held in the office of the late Senator James E. Murray -- that water was the greatest resource problem facing not only the West, but the entire nation. He proposed that the group sponsor an investigation of the nation's water situation and the problems which would have to be faced to the year 2000.

Senate Resolution 48 of the 86th Congress was duly prepared and introduced by Senators Murray, Mansfield, Anderson and others. It was passed and a Select Committee was named out of the Committees on Interior and Insular Affairs, Public Works, Commerce and Agriculture.

The late Senator Robert S. Kerr of Oklahoma, a Democrat from the Public Works Committee, was named chairman. Senator Thomas Kuchel of California, a Republican from the Interior Committee, was named vice-chairman. Theodore M. Schad, a senior specialist in the Legislative Reference Service of the Library of Congress, was appointed staff director. Twenty-two hearings were held across the nation. Every agency in the Federal government with a water resource mission was asked to prepare a report in its field. Several special studies were made by Resources for the Future, Abel Wolman Associates, Edward Ackerman, and other non-governmental authorities in the water resources field.

A tremendous job of assembling facts about the nature of existing and impending water problems was done. The first national supply-demand study by water regions in the nation was made. A set of 32 studies were published as Committee prints, and they are today still on the Congressional best seller list, if available at all.

As the staff director summarized the 32 studies, Chairman Kerr, who favored a minimum Federal role in water resources planning, indicated to his Committee that he supported a factual report without recommendations that might engender controversy. The chairman argued that solution of water problems must be found locally and regionally, that the Federal role was to assist, and that the Committee would do well to end its work after arousing the nation to the imminence of its various water crises.

Some of the Committeemen disagreed and caucused privately. Senator Clinton P. Anderson advised Chairman Kerr one day in late 1960 that a number of his Committee members disagreed with his position against recommendations. Senator Kerr's first inquiry was whether a majority wanted to write recommendations because, as he explained it, "if there are going to be recommendations, I want to be in on them".

A majority did support adoption of recommendations for subsequent action. The fact that Senator Kerr was "in on them" is attested by their emphasis on cooperation with the states and stimulation of the states to a larger role in planning and management.

Five recommendations were approved by the full Committee. They included:

1. Federal development, in cooperation with the states, of plans for comprehensive development and management of all major river basins in the nation by 1970.

2. Federal stimulation of States to take a more active role in water planning, development and management through a $5 million-a-year grant-in-aid program extending for 10 years.

3. An expanded and coordinated Federal research program in relation to water and water resources.

4. Preparation of a biennial assessment of the water supply-demand outlook for each major water resource region in the nation.

5. A series of steps by the Federal government, again in cooperation with States, to encourage flood plain planning; amelioration of the economic effect of water shortages in the five water regions confronted with reaching the limit of their supplies by 1980; preparation of estimates of need for storage reservoirs for all purposes in each major basin and preservation of the necessary sites; and assurance of public hearings in the areas involved on all major water projects.

The five recommendations ended with this comment:

> "The Committee hopes that appropriate legislation to implement these recommendations will be introduced in the Senate and considered by the appropriate legislative committees."

The Select Committee did not attempt to prepare such draft legislation.

When Senator Clinton P. Anderson became chairman of the Interior and Insular Affairs Committee in 1961, succeeding Senator James E. Murray, he advised the staff that he wanted to see the recommendations of the Select Committee implemented, and not consigned to a shelf in the Archives to provide background material for the next study of the same subject.

In accordance with the Senator's direction, a bill to provide for river basin planning, the biennial assessment of the water supply-demand situation, and for financial aid to the States was developed.

Both Senator Kerr and Senator Anderson introduced bills to authorize the $5 million annual State aid for 10 years but the bills stalled in the 87th Congress as a result of disagreement over who should administer the fund.

Early in 1961, before the Kennedy Administration took office, the director of the Bureau of the Budget had sent to Congress in the name of President Eisenhower a bill to authorize establishment of Federal river basin planning commissions. They were to include some members nominated by the States involved, but appointed by the President if he approved the nominees.

The bill developed for Senator Anderson in the planning, supply-demand inventory and State aid field was a three Title measure. Title I established a Federal Water Council composed of the Secretaries of Interior, Army, Agriculture and HEW, and the chairman of the Federal Power Commission. This Council was charged with guiding and supervising Federal responsibilities in river basin planning, with preparation of the water supply-demand studies, and with administration of the State aid fund.

Title II of the bill was an almost verbatim adaptation of the Eisenhower Administration proposal of early January 1961 to authorize Federal river basin planning commissions.

Title III authorized the State aid program, as proposed by the Select Committee and the Anderson and Kerr bills, to be administered by the Federal Council.

The whole package was transmitted to the Executive Branch for study. It was revised some in details and submitted to Congress by President John F. Kennedy as a Kennedy Administration proposal in July 1961 becoming S.2246 by Senator Anderson in the Senate and H.R.6177 by Congressman Wayne Aspinall, chairman of the House of Representatives Committee on Interior and Insular Affairs, in that body.

Hearings were held in the Senate. Bitter opposition to Federal planning was expressed by witnesses for several States, and on behalf of all States through the Interstate Conference on Water Problems affiliated with the Council of State Governments.

As a result of nearly 2 years of hearings and conferences with the Interstate Conference on Water Problems, National Reclamation Association, executive agencies and many others concerned, Title II of S.2246 was extensively re-drafted. The proposed river basin planning commissions have become an entirely new concept of Federal-State commissions in which the States participate as autonomous entities, naming their own representatives, participating in the commission budget, and sharing the decision-making with the Federal government.

That revised bill, S.1111, has passed the Senate with the support of both the Executive agencies and the States. It has been given hearings by the House Interior Committee and is being considered in executive sessions of the Irrigation Subcommittee. If enacted, as there is now reason to hope, it will implement recommendations 1, 2 and 4 of the Senate Select Committee.

II. THE ANDERSON BILL

S.1111 is an Anderson bill, but not the Anderson Bill with which this paper is chiefly concerned. However, the Select Committee background, and the total Federal water resources program which that Committee recommended, including expanded water resources research as one item, are the background from which the research bill emerged.

Recommendation No. 3 of the Select Committee on National Water Resources said:

> "3. The Federal Government should undertake a coordinated scientific research program on water. This should include both research into ways to increase available supplies, and ways to increase efficiency in the use of water required to produce manufactured goods and crops. The committee recommends that existing programs be strengthened by taking the following action:
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> > "(a) Expanding the program of basic research dealing with atmospheric physics, solar activity, hydrology of ground-water movement and recharge, the physical chemistry and molecular structure of water, photosynthesis, climatic cycles, and other natural phenomena associated with water in all its forms. Such research is essential to a major breakthrough in such fields as short- and long-range weather forecasting, weather modification, efficient management of underground reservoirs, evaporation reduction, desalinization, and pollution abatement, as well as to major improvements in works for the storage and control of water.

"(b) Providing for a more balanced and better constructed program of applied research for increasing water supplies through desalinization, weather modification, and evaporation and evapotranspiration reduction.

"(c) Providing for an expanded program of applied research for water conservation. Special emphasis should be given to research on improved waste treatment methods, on ways of increasing efficiency in the agricultural use of water, on fish and wildlife needs, and on methods of system planning for the optimum development of water resources of river basins.

"(d) Evaluating completed projects with a view to determining modifications to enable them more effectively to meet changing needs, to provide better guidelines for future projects, and to better determine their effect on the local, regional, and national economy.

The executive branch should be requested to review present research programs in the field of water and to develop a coordinated program of research designed to meet the foregoing objectives. This should be submitted to Congress in January 1962, so that it can be considered along with the budget estimates for the 1963 fiscal year. "

The Select Committee report containing those recommendations was filed January 30, 1961.

Three weeks later, on February 23, 1961, in his Natural Resources message to Congress, President John F. Kennedy acknowledged the assignment that had been given the Executive Branch and advised that he had asked the National Academy of Sciences to undertake a broad, basic study of federal research relating to all natural resources and that, in the interim, he had asked the Federal Council for Science and Technology to review ongoing federal research programs on natural resources, including water, to determine ways in which they might be strengthened.

The January 1962 date for the Executive Branch to recommend a coordinated program of water research suggested by the Senate Select Committee came and passed uneventfully. The Legislative Branch heard unofficially that the Council for Science and Technology had established a subcommittee on water research composed of representatives of the various agencies with a mission in the field, and that it was making little or no progress toward agreement on a report.

In May 1962, Senator Anderson set in motion a Committee survey of water resources research in the Federal agencies, in land grant colleges and universities, and in a sampling of non-land grant colleges, universities, foundations, private firms, and by individuals.

Responses to the Committee were prompt and were submitted by nearly all those to whom inquiry was made. A considerable number accepted the Senator's invitation to express their views on the subject. The replies were published as a Committee Print in September 1962, but some of the conclusions which grew out of that survey previously had been incorporated in a bill, S.3579, the predecessor of S.2. It was introduced in the Senate on July 27, 1962, to serve as a basis for between-Congress discussions with Executive Agencies and non-governmental groups on the merits of the proposal and on its refinement.

In addition to confirming the need for expanded water resources research, the Interior Committee survey reflected an urgent need for hydro-scientists, and the desirability of combining research and education.

Dr. Joseph L. Fisher of Resources for the Future wrote:

> "We believe that there is a genuine shortage of well-qualified personnel for water resources planning, research and administration. In view of the very large investment the Federal Government is called upon to make in water development, it may wish to consider possible arrangements for assisting universities in strengthening programs of study for graduate level students in various aspects of water development..."

Dr. John C. Geyer, chairman of the Department of Sanitary Engineering and Water Resources at Johns Hopkins University wrote:

> "Scientifically trained people of exceptional ability rarely go into the water field. If an attempt were made to establish broadly based fresh water science research institutes, difficulty would be encountered in staffing them with competent people. Universities need support in developing water science training programs to provide staff for such institutes. Students should be attracted from all the sciences and professions and afforded an opportunity to pursue any of a variety of educational and research projects related to water. "

Dr. Carl E. Kindsvater of the University of Georgia wrote:

> "I would emphasize that research and education cannot be considered separately for just as education is essential to the performance of research, so is research essential to the

education process. I believe, therefore, that a considerable part of the Federal government's investment in water-related research should be earmarked for the support and intensification of university research and graduate study programs."

The responses to the survey reflected the broad, multi-disciplinary nature of water research, involving, as Dr. Geyer stated it, "all the sciences and professions." They likewise reflected the fact that water problems vary in relation to the environment in which water occurs, and therefore a need for widely dispersed research centers to permit assistance even to local agencies and officials concerned with water planning and management. Also, it was clear there was a need for a system of communication of information from the research centers to millions of water users who will be increasingly involved in its conservation and wise use as stringency of supply and demand increase.

On the latter point, Stephen Dedijer, a Russian scientist who chose citizenship in the free world, wrote in the Journal of Atomic Scientists that the essential element of democracy which has made it succeed is the sharing of technical and scientific knowledge by all citizens -- not just an educated elite.

Those of us who have always lived in a free country may regard the guarantees of equality and individual rights as a more fundamental essential characteristic, out of which this wide sharing of educational opportunity and knowledge grew. But Dedijer's observation underlined one reason for our great successes in the agricultural field, and one of our water resources research needs -- a system for communication of results of research to millions of citizens who manage water on their lands, in their factories, their communities, or their homes, and use or misuse it, waste it or conserve it.

The pattern of agricultural research in the United States, conducted by State Agricultural Experiment Stations as well as Federal in-house laboratories, with appropriate results widely disseminated through information and adult extension education programs, consequently suggested itself as a desirable model for adaptation to the water research field.

Title I of S.3579 and S.2 was closely modeled on the Hatch Act of 1887, which created the state agricultural experiment stations system, on the 75th anniversary of that Act. It authorizes $75,000 increasing to $100,000 a year for establishment of a water resources research institute at a land grant college or state university in each state, or other higher educational institution designated by the state legislature, for support of a multi-disciplinary water research center, and $1,000,000 growing to $5,000,000 the fifth year and thereafter, as dollar-for-dollar matching funds for specific water research projects undertaken by

those centers.

If Title I of the Anderson water resources research bill is as successful as the Hatch Act has been in agriculture, 75 years from now we will have only one remaining water problem -- floods. Our cups, or reservoirs, like our grain bins, will "runneth over".

Title I of the Anderson bill varies from the Hatch Act in that the water centers are to be collegewide, or universitywide, to assure participation of all disciplines available in water research. It is the author's hope that in many states two or more colleges and universities will cooperate in the state water resources research center to provide all of the schools of knowledge necessary to a fully rounded water research program.

During Senate consideration of the bill an amendment was attached to permit division of the basic grant for a research center between two or more schools. This was amended by the House and there is agreement that the $100,000 basic annual grant per state for a water research center is little enough for one adequate center and that it should not be divided. States are encouraged in the bill to join together, and pool their grants in a single multi-state center. There is some skepticism about this happening in very many instances. Certainly there should be cooperation among states within a river basin, or in the Great Plains area, on common water problems. It is even more urgent that schools within a state pool resources -- their schools of knowledge in particular -- in a single center so the state's finest engineers, geologists, hydrologists, agronomists, chemists, mathematicians, economists, political and social scientists and lawyers -- to name just a few -- may all be available to work on water problems which impinge on their field.

The author of the Act was fully aware of great competence in water research in more than one college or university in many of the states. The Interior Committee survey reflected research underway in two or more colleges or universities in 15 states. Dr. Jerome Weisner was especially perturbed about the possible exclusion from support of some of the centers of greatest excellence in hydro-sciences in the nation.

The State of New Mexico, home of the principal author of S.2, happens to have at least three State-supported schools with national reputations for outstanding water resources research, the state university, the University of New Mexico where Nathaniel Wollman recently issued a landmark study of the economic values of water in alternative uses, and the New Mexico Institute of Mining and technology, presided over by S.J. Workman outstanding for his work in atmospheric physics relating to weather modification. Each school submitted an impressive report on numerous water research projects in the Interior Committee survey.

Here in Colorado, both the State University and our host school, the University of Colorado, have contributed, and can continue to do good work on water problems.

Title II of S.2 -- stricken by the House Committee and restored in limited form for a 10-year trial period in the conference between the House and the Senate, was designed to meet two needs: 1) support of the non-designated institutions of competence both for the value of their research work and for assistance to their training of hydro-scientists, and 2) to provide the Department of the Interior with contract authority to have research done on water problems related to the Department's missions. The Department of the Army, HEW and Agriculture have such authority and Interior will now have it in a comparatively limited way.

The money authorization in Title II was limited to $1 million a year at the House's insistence for a 10-year trial period. Under the language of Title II this sum can be used for grants, matching or contracting for research projects with any colleges, universities, foundations, private firms or individuals or public agencies with competence. It is an essential part of a total federal water resources research program and while disappointingly small as finally adopted, it is established and will have the opportunity of proving its value.

It is the hope of Senator Anderson that S.2 will make available to citizens, communities, conservation districts, state officials, river basin planners and administrators and federal agencies the services of water research centers capable of both basic research and applied research on the problems important in the varying environments across our land. It is also the hope that, as in the case of agricultural research, Federal dollars will be multiplied by matching dollars, and that the useful results of research will be widely disseminated to all who can benefit from it through existing channels of communication.

The language of S.2 puts as high value on basic research as on applied.

There are a number of things which the Anderson water resources research bill does not do.

It does not supplant Federal inhouse research on water problems, nor Department of Interior inhouse research in the field. The water related research of Department of Agriculture, the Corps of Army Engineers, HEW, Commerce, and other Departments will be unaffected, as will the work of the Geological Survey, Fish and Wildlife Service, Bureau of Reclamation and other agencies within the Department of Interior. The Interior Department saline water conversion program will continue and the hope is that the Bureau

of Reclamation's small beginnings on weather modification in the upper Colorado and upper Missouri River Basins will be expanded speedily in size and geography. Efforts to increase the Bureau's funds $1 million a year for this work is now underway.

The Anderson Act is not the coordinated federal water resources research program for which the Senate Select Committee called. Neither S.3579 nor S.2 in their original form provided for the Interior Department or anyone else to undertake to coordinate the water resources research of all federal departments. The language was combed by federal agencies for any such directive. The legislative history is filled with disclaimers in the Senate.

The development of such coordination, and of the coordinated federal program envisioned by the Select Committee has been underway through the Council for Science and Technology since President Kennedy directed that group in February 1961 to determine ways to strengthen the total federal research effort relating to natural resources.

The House Interior Committee amended S.2 to use it as a vehicle to direct the President to coordinate the water research programs of the various Federal agencies. The Senate accepted that amendment.

The amendment, and the sharp reduction in Title II funds as well as its provision for House and Senate review of proposed research projects, are in reality expressions of impatience in Congress with the lack of coordination of water research work in the federal establishment and lack of progress toward coordination since 1961.

The Council for Science and Technology filed a review of Federal Research in the water resources field February 12, 1963, with recommendations.

In that report, finally prepared under the direction of Theodore M. Schad of the Library of Congress' Legislative Reference Service who was previously the Select Committee staff director and was called in by the Executive Branch to draw the OST review to a conclusion, the Council Committee recommended an Interagency Coordinating Committee on Water Resources Research within the Council for Science and Technology.

The report, which has since been implemented and the Interagency Coordinating Committee established, commented:

> "The order of difficulty in accomplishing these (coordinating) tasks in the Federal Council is not underestimated. The required deliberations would be time consuming, and the progress in reaching the goals outlined above would be measured in years rather than months. But, if the goals are clearly agreed on as

being desirable, and sufficient understanding of the technical problems and objectives is developed, the task group believes that the recommended coordinating agency can accomplish the functions intended. In this regard, we are not discouraged by unfruitful short-term efforts of the past."

The only interpretation which can be put on the House amendment directing Presidential coordination is that Congress is discouraged with the unfruitfulness of the interagency effort at this time.

The Anderson Bill, with the House amendments, still is not a Federal coordination bill. It still leaves that job in the hands of the Executive, as the Select Committee did in 1961, but in a more imperative fashion.

Because of the increasing urgency of water problems throughout the nation, however, unless the Executive Branch comes forward with a coordinated program as requested by the Select Committee, and now mandated by S.2, there is likelihood of further Congressional action.

III. IMPLEMENTATION[1]

Implementation of the Anderson Act by the Department of the Interior was left in the hands of the Secretary of the Interior.

S.3579 and S.2 both contained a section which provided for the establishment of the Water Resources Service in the Department of the Interior to administer the program. It also provided certain extra supergrade positions to assure that the Federal investment in water research would be administered with necessary competence. The Bureau of the Budget requested the elimination of the section on the grounds that the authority to establish such a Service already existed in the hands of the Secretary, and that an allocation of necessary supergrade positions could be made from the special supergrade pool already provided in the Federal Employees' Salary Act of 1962.

With these assurances clearly recorded in discussions on the Senate floor, Senator Anderson agreed to the deletion of the section when such an amendment was offered by Senator Gordon Allott of Colorado.

In view of this legislative history, the Secretary of the Interior has set up an Office of Water Resources Research (OWRR) to administer the bill as a unit independent of any one of the several subordinate bureaus or agencies in the Department of the Interior

[1] This section was slightly revised July 18, 1964 following the President's approval of S.2, making it Public Law 88-379

dealing with a limited field of water problems. It reports directly to the Secretary and is thus at a level in the Department where it can assist all of the Interior agencies in enlisting the interest and assistance of the State water research centers, and the other centers of competence available to the Department under Title II of the bill.

Such an independent agency assures that the program will not be so pre-occupied with the limited mission of one Interior agency but will keep in mind all Interior Department water missions as well as needs for water research within the states themselves. Dr. John C. Calhoun, Jr., director of the new office, is a vice president of Texas A. & M. on leave as science advisor to the Secretary of the Interior. He knows the problems of the colleges and universities in the research field.

The mission of the Department of the Interior in relation to water are, in total, without limitation. Geological Survey is concerned with basic research into the nature of water and all aspects of the hydro-logic cycle. The Bureau of Reclamation, the Bureau of Outdoor Recreation, the National Park Service, the Bureau of Land Management, the Bureau of Mines, the Bureau of Indian Affairs and the Fish and Wildlife Service among them have water problems common with every geographic area in the United States.

The Act contemplates that the programs it authorizes shall get underway at once. It authorizes appropriations for the fiscal year beginning July 1st just passed. The Bureau of the Budget has advised that there are funds in the President’s contingency fund in the 1965 budget to cover the costs. However, because time remains in this Congress to obtain a supplemental appropriation, such an appropriation will be requested.

The requirements for a college or university within each State to qualify for the $75,000 to $100,000 grant under Section 100 are delineated in the Act. If more than one land grant college or university exists in a state, and in the absence of a legislative Act to the contrary, the Governor designates which land grant school may qualify.

Procedures for showing competence, or the capacity to become competent to do water resources research, are in preparation in the Department of the Interior and should soon be available.

Proposals for research under the $1 million annual authorization in Title II, to support work in institutions other than those which get institutes or centers, can be made at any time.

The Department of the Interior will undoubtedly want to have preliminary consultations with other agencies of the government, the colleges and universities and others competent in water research before promulgating rules and regulations. Some of this has been done. More will need to be done, but there is every reason to hope that during the fall of 1965 the program will become operative.

One caution should be kept in mind. By explicit language, the Act requires the Interior Department to make quite diligent and detailed examination of applications for grants. It also is required to make annual reviews and reports to Congress about activities under the program. The Interior Department will be requiring more information than schools are accustomed to supplying for other grant programs such as, for example, the NSF grants. You should be aware that the Act itself makes this obligatory. It results from a good deal of reluctance, especially in the House Committee, to launch a new research grants program in the natural resources field.

Continuance of this program will be very much affected by how well universities enable the Interior Department to dissipate Congressional doubts and reservations by a good clear showing of what the grants are being used for and how they produce new knowledge that is valuable for solving local, regional, and national water problems.

The Anderson Act has potentialities paralleling those of the Hatch Act of 1877. The support given it by the association of land grant colleges and state universities, by non-land grant institutions -- Harvard, Johns Hopkins, University of Georgia, Stanford Research Institute and many others -- and by private firms and individuals and State officials through the Interstate Conference on Water Problems and the Council of State Governments, are assurance of the widespread readiness to cooperate in the work which will make it a great success.

It is the hope of the author of the bill, I know, that the State centers will be useful to and used by State and local governments and other local water oriented agencies; that Title II will prove its usefulness and be restored to the size originally contemplated; that any shortcomings in the bill will be worked out in subsequent Congresses, and that S.2 (now Public Law 88-379) will prove of major usefulness in meeting our increasingly urgent needs for this basic and universally necessary resource.