

WATER AND LAND

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I consider it a special privilege to participate in this Fourth Annual New Mexico Water Conference. It seems to me this is a very fine thing that New Mexico State University is doing for the people of this State.

The colleges and universities of this country have a unique contribution to make as the Nation studies and restudies its own experiences and as it shapes and reshapes its policies for water and land resource conservation, development and use. When President Eisenhower transmitted a report of his Advisory Committee on Water Resource Policy to the Congress in January 1956 he made this statement: "The policies we adopt for the development of our water resources will have a profound effect in the years to come upon our domestic, agricultural and industrial economy."

No one can help being impressed by the prominence now given to water problems in the United States. The number of committees, commissions, study groups and conferences throughout the country dealing with water policy and water development is an indication of the very high priority being given to this problem everywhere.

Yet there is no national water crisis in any general sense. We are not out of water in this country. On the whole, we are water rich, as in a similar sense we are richly endowed with productive land and other natural resources. To be sure, our water, land and mineral resources are not equally and evenly dispersed. We experience problems of having them in the right amounts and in the right places at the right time.

I think it is especially significant that, even though we are not now confronted with any immediate crisis from a national standpoint, the public is willing to take time to consider seriously these problems. More important, there is a willingness to invest large amounts of public funds in water resource developments in anticipation of the needs in the years to come. It seems to me that everyone can take enormous pride in the fact that in this country we are willing to face problems before they become disasters. This willingness to be foresighted characterizes all of our conservation programs -- not only water, but soils, forests, wildlife, and other natural resources.

I do not mean to imply that the shoe had not begun to pinch before serious nationwide resource conservation and development programs were started. Certainly parts of our country have always been confronted with major water problems. Other communities have experienced the economic decline that has followed the depletion of timber resources. Still other communities have declined as the fertility of the soil became exhausted. But even so, it is significant that conservation programs have been given nationwide support long before residents in most of the country felt the

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economic pinch or experienced it firsthand. This, I think, is a tribute to the educational system that keeps the people of the Nation informed, that provides them with the basis for making appraisals of situations confronting the entire country and that provides a background of judgment on which to base rational action.

Western States have faced special kinds of water problems from the time of settlement. Too little or too much water at the right time -- mostly too little. As more and more communities in all parts of the country have suffered disastrous floods or found industries moving to more dependable water supplies, the East has joined the West in recognizing that there is a water problem that justifies attention and efforts on a nationwide basis.

I shall not attempt to review with you the history of water problems that have confronted the Western States. Certainly New Mexico has one of the oldest histories of organized efforts to control and use water for irrigation. For the purpose of this discussion, I have more interest in reviewing with you some of the circumstances that seem to me have led to water interests in the East joining with water interests in the West and which have resulted in new nationwide programs and new nationwide emphasis on water resource development.

Water and Land Policies Expanded

After a generation of experience and efforts of the Federal Government in reclamation and after a still longer experience in rivers and harbors development, the drought and depression of the 1930's gave impetus to two additional nationwide programs that are now an integral part of our Nation's water and land resource policies.

I refer specifically to Public Law 46, 74th Congress, establishing the Soil Conservation Service and to the Flood Control Act of June 22, 1936. Both Acts initiated far reaching policies with respect to the responsibilities of the Federal Government in protecting and developing the Nation's land and water resources.

It is significant that both Acts have similar wording in their declaration of policies. The Soil Conservation Act stated: "That it is hereby recognized that the wastage of soil and moisture resources on farm, grazing, and forest lands of the Nation, resulting from soil erosion, is a menace to the national welfare and that it is hereby declared to be the policy of Congress to provide permanently for the control and prevention of soil erosion and thereby to preserve natural resources, control floods, prevent impairment of reservoirs, and maintain the navigability of rivers and harbors, protect public health, public lands and relieve unemployment....."

The Flood Control Act stated: "It is hereby recognized that destructive floods upon the rivers of the United States, upsetting orderly processes and causing loss of life and property, including the erosion of lands, constitute a menace to national welfare; that the Federal Government should improve or participate in the improvement of navigable waters or their tributaries, including watersheds thereof, for flood-control purposes if the benefits to whomsoever they may accrue are in excess of the estimated costs, Federal investigations and improvements of

rivers and other waterways for flood control and allied purposes shall be under the jurisdiction of and shall be prosecuted by the Department of the Army under the direction of the Secretary of the Army and supervision of the Chief of Engineers, and Federal investigations of watersheds and measures for runoff and waterflow retardation and soil erosion prevention on watersheds shall be under the jurisdiction of and shall be prosecuted by the Department of Agriculture

It is significant that the policy declaration in each of these Acts recognizes interdependence of water resources and land resources in any program of water control or water utilization. Both Acts recognize the fact that water falls first on the fields and farms and forests of the Nation. Both Acts recognize that the first opportunity to begin control and profitable use of water is on the watershed lands of the creeks and tributaries that make up the component parts of the river basins.

For two decades following the enactment of these laws there was widespread acceptance and adoption of both programs. Thousands of farmers throughout the United States cooperated with their soil conservation districts in applying soil and water conservation practices to their individual farms.

The Soil Conservation Service participated in this movement by furnishing technical assistance to individual farmers in working out and applying management practices to their lands and to the water available to those lands. The Agricultural Conservation Program Service assisted by providing cost sharing for approved conservation practices. Extension Services helped farmers see their problems and take leadership. Researchers sought out workable solutions to soil and water conservation problems.

During this same period, while farmers were applying conservation measures to their farm lands and observing the effects of these measures on the behavior of creeks and streams in the upper watersheds, the Corps of Engineers was cooperating with the States and municipalities on the main stems and river valleys of the major rivers of the Nation. Systems of flood control reservoirs, levees, and channel improvements were being installed to reduce damage from floods in the main stems of the major rivers.

It was inevitable that the experience and observation of the operation of these two important nationwide programs would lead to a demand for closing the gap between them. In 1954, the Watershed Protection and Flood Prevention Act (Public Law 566) was passed to close this gap. The new law provided proper authorization for a program of land and water management on the small watersheds of the Nation. The same year, Congress enacted the Small Irrigation Projects Act that recognized the importance of closing the gap between the small irrigation projects and the large reclamation projects developed by the Bureau of Reclamation.

The Watershed Program

Watershed protection and management as conceived in the Watershed Act is by no means a new concept. The relationship of forest cover to streamflow has received public recognition for more than a century in the United States. The interrelationship between the use of land in the watershed and the behavior of runoff and streamflow has been apparent, not only to hydrologists

and engineers, but also to farm people in communities where soil conservation measures have been most widely applied. While these relationships have long been recognized, nothing very effective could be done about it without the organized efforts of the majority of landowners and other interests in the watershed community. For this basic reason, therefore, significant progress in watershed protection and development on watersheds involving mostly privately-owned land did not take place until a special authorization made it possible for the Department of Agriculture to approach this problem with organized watershed communities on a project-by-project basis.

The Watershed Protection and Flood Prevention Act which now provides for a nationwide program of watershed development places full responsibility for starting a watershed project on local people who will act through their own organizations. Only local organizations can initiate a project. Federal help cannot be given if a project is disapproved by the State government. The Department of Agriculture provides help only when the State takes affirmative action to approve an application for Federal help.

Local organizations, to be eligible as legal sponsors, must have authority under State law to carry out, maintain and operate works of improvement. They must finance their required share of costs of the project including land, easements, and rights-of-way; must acquire any necessary water rights required under State law; must agree to operate and maintain the structures and other improvements after the project is completed; must construct or let contracts for construction of works of improvement agreed upon in the work plan; must obtain agreements from owners of at least one-half of the land above each detention structure to plan and apply soil and water conservation measures; must comply with all State laws governing watershed improvements, water rights, or specifications for structures; and must submit a satisfactory plan for repayment of any loan or advancement obtained under this Act.

A basic principle of the watershed program is that it shall be multiple-purpose in nature. Basic to all watershed projects is the application of required soil conservation measures and farm conservation plans on the farms of the watershed, as well as minimum requirements for conservation practices on the forest lands and range lands, either public or private.

One of the principal purposes as set forth in the Act is flood prevention -- the reduction of damages from flood and sediment. Reduction of flood damages to agricultural areas and to urban areas are equally eligible under this Act. Since the Corps of Engineers also has authorization to protect agricultural values as well as urban values from flood and sediment damages, the Soil Conservation Service and the Corps of Engineers have developed a memorandum of understanding that provides a practicable and workable basis for both agencies to cooperate with local organizations in carrying out projects that may involve urban protection.

Another principal purpose of the watershed program is the development of benefits from agricultural water management. This involves improvements that serve two or more farms, and includes drainage, irrigation, and measures to provide more uniform supply and distribution of water for agricultural purposes. Authorization is also given under the Act to make available to local organizations assistance for the development of fish and wildlife

resources whenever these can be incorporated in a watershed project. Watershed work plans may include developments for municipal or industrial water supply, pollution abatement and salt water intrusion control provided these are integral parts of the plan for protection and improvement of the entire watershed. While these measures are not eligible for cost sharing assistance from funds appropriated under the Watershed Act, they are eligible to receive Federal loans from the Farmers Home Administration in the same way that all other purposes previously mentioned are eligible.

Agriculture's Concern with Water Policies

Evolution of national policies in recent years has been in the direction of greater participation of the Federal Government in resource conservation and development. Responsibilities of the Department of Agriculture and the importance of agriculture generally in water resource development has been brought into the picture more and more. It seems to me that this was inevitable as the interdependence between water resource development and land resource development became more clearly recognized.

There have been several efforts to develop statements of the Nation's water policies. In my opinion, these have never been very satisfying endeavors because of the simple fact that policies for the development of water resources cannot be successfully isolated from policies that relate to the development of land resources. This point of view is borne out by the more recent experiences of the river basin study commissions and by river basin interagency committees. These experiences indicate that it is not practical to try to plan for the development of water resources as a separate and distinct function. It has been found to be more realistic to attempt to plan the development of land and water resources as interrelated resources.

The President's Water Resources Policy Commission in 1950 emphasized that water resources developments must also take into account land development. As a matter of fact that Commission's report "A Water Policy For the American People" gave so much emphasis to river basin planning that it is surprising the Commission did not discover that their policy statement dealt almost as much with land as with water.

President Eisenhower recognized this interrelationship in his letter establishing the Cabinet Committee on Water Resources Policy when he made this statement: "If we are to continue to advance agriculturally and industrially we must make the best use of every drop of water which falls on our soils, or which can be extracted from the oceans." Quite recently the Department of Agriculture expressed the same idea in a report to the Senate Select Committee on National Water Resources. A statement in that report reads as follows: "This Department would list as a problem of first priority the use of water in combination with soil resources for the production of food, fiber and forest products required to meet the increasing demands of the Nation for these basic commodities. With a present population of 177 million people and a potential of 370 million in 50 years, this Nation must manage its soil and water resources for agricultural and forestry production on a sound and efficient basis to meet these future demands."

It is recognized that the competition for the use of water will continue to increase. It is going to be impossible for water resource

developments from now on to escape this environment of continuous competition for the use of water resources. In recognition of this, the Department of Agriculture's report to the Senate Select Committee on National Water Resources emphasizes that the Nation's farmers and ranchers must be able to count on having reliable water supplies in the amount required for good management of lands for economic production.

In economic competition for water, industrial and municipal users can now buy water away from agriculture. Public policies for resource development must therefore beware of shortsighted developments that do not take into account long time agricultural needs. More specifically, this is what I mean -- location of Government installations as well as locations of sites for new industrial expansion frequently offer a wide latitude of choice. It would be possible in many instances to choose locations that would drive out agriculture while an equally good location elsewhere would have little effect on agriculture.

So far there is nothing in the conscience of either the Federal Government or of industry to serve as a reminder that productive agricultural land and water are in fact limited and not replaceable. Future policies should develop such a conscience.

Abundant Agricultural Production an Asset -- Not a Liability

It may seem a little surprising to some that the Department of Agriculture would list as a problem of first priority the use of water for agricultural production. The problem of handling agricultural surpluses over the last three decades has received so much emphasis and attention that the general public might have a right to think that the situation of agricultural overabundance would last forever. While no student of agricultural production would forecast that the surplus problem is about to vanish in the near future, it is, nevertheless, a responsibility of those in policy positions to try to look further ahead than merely a decade or even a generation.

The Senate Select Committee on National Water Resources is obviously attempting to look at the water and land program from a long range point of view. As evidence of this, they have asked the Department of Agriculture for a report estimating the demands that will be placed on lands and water for agricultural production needed by the year 1980 and on to the year 2000. This report is now being prepared.

The Department of Agriculture started this projection of agricultural needs on the basis that population may reach at least twice the present number some time between the years 1980 and 2000. While the report is not yet complete, it is obvious that if people are to eat as well in the year 2000 as they are now eating it will require double the present agricultural production.

In the early history of this country we doubled our agricultural production by doubling the amount of land brought under cultivation. Obviously this cannot be done to meet the situation that lies ahead. Our land resources have been culled over pretty hard. Our last census indicated that we had about 478 million acres of cropland in the United States. The Soil Conservation Service in a study in 1952 estimated that all privately-owned

land falling in land capability classes I, II and III - which are capable of being used for crop production -- totals about 593 million acres.

This means that if prices were favorable enough to pay the cost, cropland could be increased by about 24 percent. This figure, however, does not take into account the fact that nonagricultural uses of land will continually be competing with agriculture for the use of land. We now know that about a million acres a year of potential croplands are being taken up by cities, highways, parks and other nonagricultural uses. This means that the additional cropland that will be brought into production through irrigation and drainage in the next 40 years will be just about offset by the amount of agricultural land that will go into the nonagricultural uses.

Obviously the answer to doubling the agricultural production in the next 40 years to meet the doubling population in the same period is that we will have to obtain double the production from the land and water already being used.

As we look into the future it becomes increasingly apparent that we will have to make better use of our land and water resources, not only for agricultural purposes, but for all purposes. This means that we will not only need to increase our research, but we will have to increase the effectiveness of our research. We not only need to increase education and training in the scientific fields of agriculture, but we also have to close the gap between what our scientists know and what our farmers practice.

We will have to increase the application of soil and water conservation practices that fit soundly into improved efficiency in agriculture. Agricultural uses will have to make way for other competitive uses. We are going to need more room for recreation. Our factories are going to be located in the country. City people will drive out to the factories for a while, and then new cities will spring up around the factories. Increased values are going to continue to be placed on the use of land and water for fish and wildlife purposes. All of these are the inevitable consequences of economic growth and population expansion. Competition for land and water will challenge existing uses and existing rights to those uses.

With such an outlook, resource conservation and resource development must be given first priority. Productive land will become more and more important, not less important in our total economy. Those who would neglect the conservation of productive soils now in the hope that technological advancement in machinery, fertilizers, or biological improvements will make land relatively unimportant would indeed gamble with the Nation's security.

To speculate on what lies in the future is always an interesting thing to do, but whether or not it is a profitable and worthwhile thing to do depends on how well we are able to fit our actions into directions that will pay off in the future without costing too much now. It seems to me that it is a fundamental responsibility of government and of our higher educational institutions to continually look ahead as far as is humanly possible. Who else will take the responsibility for staking out guidelines that give most promising means for meeting present day needs without being shortsighted about the future? Certainly the problems ahead in water resource developments and related land resource developments demand this sort of forward look.

On this note I would like to conclude by again commending the New Mexico State College and all who have responsibility for this series of annual water conferences for directing attention to this important problem -- water and land.