
I intend today to discuss the large question of water because from the standpoint of the Interior Department water pollution is not yet assigned to us.

Water has been regarded as the closest known approximation of a universal solvent. In this modern period of our resource history, it is also the most universal subject of concern across the Nation. Localities which have an adequate supply in quality are frequently lacking in quantity, and vice versa. Some are chronically short on both counts and where an excess of water exists in good quality proposals are immediately made to divert it to less fortunate areas.

A major drought in the northeast, a net deficit in supply for the Lower Colorado States, flood control
policies in the midlands, the declining level of the Great Lakes, suggestions for diversion out of the Columbia Basin, and stream pollution everywhere -- whatever the emphasis, this Nation has become concerned as it never has before over its present and future water supply.

Since I represent the Federal interest in the general subject, it is appropriate that we use Federal water functions as a starting point. A little while ago I saw a chart demonstrating the organizational dispersal and inter-relationships that currently exist in the development of national water policies. While the artistry of the chart may have over-dramatized the point somewhat, the picture was not inaccurate.

Confusion, conflicts, overlaps and obvious difficulty of coordination exist. The classic division between the Bureau of Reclamation and the Corps of
Engineers is but the starting point for the proliferation of functions later added to the Federal responsibility: water pollution matters assigned to the Public Health Service, precipitation forecasts in the Weather Bureau, desalting developments and general water research in my own agency, some aspects of storage licensing in the Federal Power Commission, various water conservation operations in the Department of Agriculture, stream gauging and ground water measurement in the Geological Survey, and so on -- and on.

The chart dealt only with Federal agencies. In the water management field, of course, State, county, and local governments, and a variety of district-type structures with taxing power, as well as various regional arrangements, contribute to a governmental complexity probably unmatched in the resources field.
To order the arrangement a little, let us consider research, developmental, and incidental responsibilities.

The principal water research agencies in Interior are the Water Resources Division of the Geological Survey, the Office of Saline Water, the Office of Water Resources Research, and the Bureau of Reclamation.

In water resource development, our Bureau of Reclamation is congressionally chartered to promote the welfare and economic growth of the arid West. In recent years, municipal and industrial water supply efforts, outdoor recreation, and flood control, have joined irrigation for program attention in Reclamation.

On the incidental side, all of the land managing and wildlife and recreation agencies of the Department
are concerned with water resources.

The question of responsibilities and functional assignments has had recent attention. Congress has created a Water Resources Council made up of the principal Cabinet heads involved, with the Secretary of the Interior as its Chairman. Under his authority to reorganize the Executive Branch, the President has ordered the transfer of most water pollution control activities from the Department of Health, Education and Welfare to Interior. This order is riding out its waiting period before Congress.

In the larger sense I do not think that organization is the basic problem, or that organizational changes will solve many of the problems.

I would like to discuss the shifting boundary which separates public and private activity in water resources fields for understanding of this subject.
ought to help serve the objective of facilitating the expanded activities which the urgency of the subject calls for.

What are our national goals for water resource development? Abel Wolman of Johns Hopkins University has said that although the total amount of water available in the United States is sufficient, its spatial and temporal distribution makes water supply the critical problem, locally, regionally, seasonally, or all three.

Wolman goes on to say that man's inability or unwillingness to capture, hold, re-use, purify, and transport water are equally serious matters, equivalent to the inequitable natural distribution of water. Thus he sees our goal as to increase the supply, and to increase the beneficial use of what is already available, and to do these things we need
first and foremost more knowledge. Basic research is growing but still is minimal. Investigations are needed on ground water supplies, on waste treatment processes, on desalination, on evaporation control, and on better techniques for planning basinwide developments.

The urgency of the subject is great. In the water field, we are approaching limits which will sharply affect patterns of national growth. Strains upon the creaky institutional structures which now cope with water problems are already slowing us badly.

Yet the National Planning Association's Center for Priority Analysis lists "natural resources" (which in their definition includes water) as only ranking eleventh among the sixteen national goals which it discusses -- urban development being third, and
transportation seventh.

To help us organize our thinking, let's try a different "cut". Nathaniel Wollman of the University of New Mexico, sets up a system of classifying demand: (1) withdrawal uses, in which water is actually removed from sources of supply; (2) flow uses, like hydro-power generation, recreation, and waste-carrying; and (3) on-site uses, like maintenance of wetlands as wildlife habitat and land treatment measures for soil conservation.

Much of the water used by both industry and municipalities is returned to the watershed supply system. But such withdrawal uses may alter the water, by concentrating salts, by heating, or by adding organic and inorganic wastes.

Another "cut" is furnished by Luna Leopold, Chief Hydrologist of our Geological Survey and one
of the most perceptive scientists in the field. Except for the problems that arise through our desire to preserve portions of the original environment of the Nation, he says, "all our other water problems are problems of shortage due to geographic and time variations, which, important as they are, can be reduced to problems of economics. Economic problems gradually become solved by the play of forces inherent in the market place. Water will be used in those places and for those purposes which can best afford to bear the cost under prevailing conditions."

Industry's principal stake in the water resources problem, naturally enough, is in the continued availability of water to meet its own needs. Industry will develop ways to use ocean water as a coolant when this becomes cheaper than fresh water. Industry re-cycles its water, installing in
the process its own treatment facilities and thereby advances the technology for sound business reasons.

But this is only to say that applied research is a normal and fruitful field for the private sector. We might as well add that basic research is a normal and proper field for the public sector.

Both statements to a degree beg the question. How do we identify the real nature of the problem? Is the identification and statement of the problem a public or a private responsibility?

It is difficult to assert that this is solely or even mainly a public responsibility for several reasons. The overall political structure -- federal, State, county and city -- seldom acknowledges so broad a charter. In practice, in the water management field, public and private action is often so interrelated as to be indistinguishable. And, taking
the country's resources in total, public and private, the talent pool is woefully inadequate.

Still, the responsibility is public, and cannot be abdicated.

Industry and government operate under different rules, with disparate hierarchical apparatus, and with dissimilar statements of specific motivation.

There are strong plusses in the consideration of what industry can do better than government. Among the plusses are these:

-- Available funds; the drive for diversification approaches a mania, and what to do with accumulated profits occupies a disproportionate amount of management time.

-- Motivation and community leadership; Pittsburgh is the classic example of the willingness of the private sector to take the lead.
-- Prospects of opening up new markets for the products of applied research. The equipment to substitute air for water as an industrial coolant, and other equipment which serves as a vehicle for technological improvements which put laboratory discoveries into the productive process constitute a profitable market.

But Government enjoys plusses, too:

-- Government can commit money to basic research without having to answer too many questions about short turn dollar return. Government basic research has done much for the mineral industry over the past five or six decades, and still does much for that and other industries with which the Department of the Interior is concerned.

-- Government can provide incentives, positive and negative. In the tax areas, for example,
are found both the carrots and the sticks for effective conservation work in the years ahead.

-- Only government can spread the social costs for much of the job which must be done.

What we have to worry about is not the classic distinction between what is public and what is private, and not the bureaucrats' questions about whether a new council or commission should be created to resolve the controversy. Instead, our task is to get a working relationship between the public and private sectors which matches the real world -- pragmatic, ad hoc, empiric, un-doctrinaire.

If research, both basic and applied, is one of the greatest of challenges in the water management field, the basic research end of the scale, the emphasis will be on public activity; at the applied research end of the scale, on private activity.
The interplay of economic forces is not alone a determinant of private effort; quite as much, it affects public action. Similarly, many private decisions are made in the context of public decisions. Government in the water resources field has become a student and practitioner of applied economics, and the sophistication of cost-benefit studies is very great. It is also capable of considerable flexibility.

The Pacific Southwest Water Plan, and related components illustrates the intermingling of public and private decision-making. The consumptive water requirements of thermal generating units to burn the rich coal deposits at mine-mouth plans, the transmission systems and interties, about evaporation losses and power economics -- the complexity is staggering.

In the United States the boundaries between