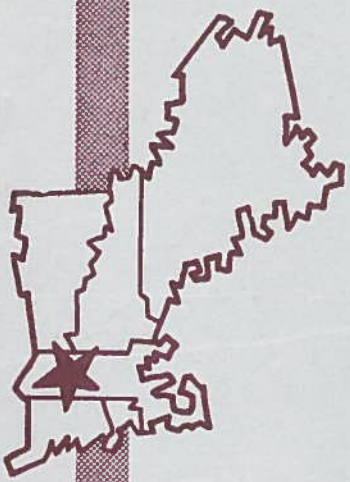
1964 PROCEEDINGS

New England Agricultural Economic Council



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DISCUSSION OF STRATEGIC ECONOMIC CONSIDERATIONS IN SMALL WATERSHED DEVELOPMENTS

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I do want to express my appreciation to the Council for the invitation extended me to participate in the program of the annual meeting. Also, I should indicate at the outset that my remarks here today represent my own opinions rather than those of my employing agency, the Economic Research Service.

Water problems--in one form or another--are of increasing concern in all regions of the nation. Most of us are aware that continued economic progress and development of our country is not unrelated to the choice and care which we exercise in the use--and control of flow in channels-- of our water resources.

Efforts of the Federal government toward flood control and related development of water resources in areas of private ownership may be thought of as mainly being in the hands of the two agencies represented here today. The Corps of Engineers is, among other things, primarily concerned with downstream structures and measures for flood control, while the Department of Agriculture, incidental to its pervasive concern with the nation's land resources, has the task of dealing with upstream areas.

While larger structures were originally considered to belong in downstream areas, advancement of the government further and further to the flood control field has resulted in expanded activity in upstream areas with an accompanying increase in the size of structures there. However, regardless of where "upstream" ends and "downstream" begins or which Federal agency is most concerned, flood control and general water conservation measures require coordinated effort throughout the basin and, of course, not only by Federal agencies. Certainly, the effort of State agencies, local organizations, and individual initiative are as essential as those of the Federal government if our water resources are to be properly used and controlled.

Taken together, the two papers presented here today have provided us with a unified and coherent discussion of the past, present, and future outlook of interrelated watershed and river basin planning and program activities at the Federal level. The papers were broad in scope and not exclusively confined to economic considerations.

Mr. Lane's paper Strategic Economic Considerations in Small Watershed Developments is an excellent one, stressing the pragmatic approach of the operating agency he represents, the Soil Conservation Service.

He has presented sufficient historical and legislative background to enable us to gain a clear comprehension of the present status of the Small Watershed Program and the direction in which it appears to be moving. For all practical purposes, P.L. 566 has subsumed within its administration the early flood prevention and "pilot" watershed projects, though a different legislative authority is involved in the former.

With regard to the status of the Watershed Program it is indicated that the National Inventory of Soil and Water Conservation Needs shows that more than 8,000 small watersheds embracing about 1 billion acres have water and related land problems that cannot be solved by landowners and operators. However, I am not sure we can comprehend the full meaning of these "needs" when no relation to a specific time period is indicated. Presumably, the projection is an "open ended" one and as such it is difficult to come to grips with.

Also, I am not certain as to what the meaning of "needs" is in this context. The word "needs" may be interpreted to mean "requirements", "demands", "goals", "objectives", and so forth. Also, it may refer to economic or physical phenomena. In this case it apparently refers to the latter. If this is so, then it appears that watersheds are being thought of almost exclusively as an engineering entity, not a marketing entity. A broad view and integrated analysis of watersheds can incorporate both approaches since they are not mutually exclusive.

Moreover, with regard to the aforementioned projection of "needs" it seems evident that additional research toward clarifying just what is the "felt need" in any of these watersheds might prove a fruitful undertaking. In this connection one is reminded of the comment of an old Maine storekeeper to an over-eager salesman. "You must remember that in this part of the country, young feller," said the storekeeper, "every want ain't a need." We have probably done too little research into the identification of "needs", most likely because it is easier to quantify more readily identifiable physical and social phenomena.

In any event, considering the great backlog of proposed projects, any critical analysis of their "felt need"--the results of which could lead to a possible reordering of priorities--should cause no concern that there will not be an ongoing cooperative Federal-State Small Watershed Program in the years ahead.

Mr. Lane goes on to discuss some of the characteristics of the Small Watershed Program.

1. That benefits of a project must exceed its cost. And in so stating, he includes appropriate reference to the new guidelines set forth in Senate Document 97. The major changes in the analysis of projects being affected by these new guidelines apply to interest rate determination, the extended time period of project life, and the inclusion of wildlife and recreational considerations.

2. The expanding multiple purpose aspects of the program. I think the recreational aspects mentioned by Mr. Lane are especially worthy of note. By this time, most of us may be getting tired of hearing the recurrent cliche concerning "the boom in outdoor recreation," but with evident mounting demands--however, difficult to quantify and subject to conventional economic analysis--recreation is here to stay and thus every effort must be made to properly account for it in project analysis.

3. Mr. Lane mentions that the community effects of watershed projects are becoming better understood, identified, and measured. I readily agree that this is so--indeed, the Economic Research Service has been doing considerable research along these lines. However, I do want to enter one cautionary note with regard to the study he cites concerning the application of the multiplier in secondary project analysis. The methodology developed by Back and Jansma, with refinements expected from additional research will doubtless prove a real aid in helping to evaluate net secondary project income, or increases in net incomes of other local people through multiplier effects of primary income. However, it should be made clear--and this is not clarified by the SCS paper--that the results of the captioned study are applicable only to other local areas with economic characteristics similar to those of Roger Mills County in Oklahoma. Nonetheless, this study is a definite step forward in the development of methodology needed for improved project economic analysis.

I will conclude my comments on the SCS paper by again complementing Mr. Lane on his informative presentation. One additional point. I must say that I admire his "heroic" forecast--or, more correctly, projection--regarding the future outlook of the Watershed Program. If his estimates are even 50 percent correct--and only time will tell--then I would say that those of us engaged in planning and economic aspects of conservation work generally and water resources planning and development in particular, had best get very well acquainted with Public Law 566, The Watershed Protection and Flood Prevention Act.

The Gidez and Back paper Economics in the Comprehensive River Basin Planning Program packs a great deal of discussion into a half-hour presentation; in fact, the authors just about cover the whole course.

The historical background provides us with a basis for understanding the present-day setting of the now rapidly emerging river basin approach to water and related land conservation and development.

They tell us that the "concept of comprehensive development of the nation's river basins has been with use at least half a century." It is really not important for present purposes that we have a precise understanding of when "comprehensive development" began--it is here, that is the important fact. However, I recently had occasion to read an essay by Irving Fox of Resources for the Future wherein he stated his view that the first major river basin program was prepared at the beginning of the 19th Century under the direction of Albert Gallatin, Secretary of the Treasury in the Jefferson and Madison administrations. Historically, Mr. Fox has noted an interesting point. Gallatin's basic objective was to unify the nation through an improved system of transportation.

And, of course, the Corps of Engineers was on the job in the 1820's when significant improvements--for that period--of navigable waterways began,and from that time to the present the Federal government has played an increasingly important role in the development of the nation's water resources.

Without question the Governor's Conference of 1908 was an important and significant meeting in the annals of American conservation. Since that conference--and despite increased Federal responsibilities--the basic administrative structure that prevailed then still exists today. However, as the national water program is now infinitely more diverse and complex than it was at the turn of the century, perhaps we have actually fallen behind--at least in some respects.

Hopefully, as Gidez and Back point out, passage of the "Water Resource Planning Act" may create the needed administrative mechanism and overall policy to guide national water resources development.

Indeed, we have already seen some beneficial results stemming from the original proposal of 1961 through subsequent creation of the ad hoc Water Resources Council and its active Interdepartmental Staff Committee.

The current program for "comprehensive river basin planning" is effectively outlined in the paper. Right now this program is making hard demands on all the

concerned Federal agencies, particularly since there are so few resource-trained economists available to participate in project planning, formulation, and analysis.

Mention is made of the arrangement which the ad hoc Water Resources Council has recently completed with the Office of Business Economics, Department of Commerce, to undertake a four-year program of economic studies in accordance with the needs of water development agencies. There is much enthusiasm concerning this analytical and projective program for some sixteen major river basins and designated sub-basins. For income, where necessary data is not available by counties, OBE would carry out analyses at estimating county income by major classes of activity. Data for individual counties would be used "building block" fashion to approximate sub-basins. Sub-basins in turn would be used to approximate large basins. In effect, all data, including income estimates, would be available at the end of the four-year development period for individual counties which would be aggregated into specific watersheds or river basins, the significant water resource management units, or other specified regions. In about a year and a half preliminary estimates of population, income, and employment would be available for the sixteen regions. By the end of the four-year development period, county estimates of population, employment, and income would be ready. Part of the fourth year will be spend in up-dating employment and population statistics from the 1964 Census year.

The agricultural aspects of the OBE economic studies will be the responsibility of the Economic Research Service. And since this is a meeting primarily of agricultural economists, I will briefly outline the extent of our expected participation.

With regard to the proposed studies, agriculture's primary objective will be to develop and employ project planning and evaluation systems of analysis which will enable the measurement and projection of the relationships at different points in time between water development and:

1. Agricultural efficiency and land use; and

2. The impact of development on local economies. This objective relates to specific project authorizing studies: to Type II, Type III, and Type IV Studies. Agriculture has a further objective, namely, to project future water needs of heavy water-using processors of agricultural products--the food processing, wood processing and pulp and paper industries. The Forest Service will, of course, be responsible for analysis and projections of elements of the forest economic base.

If it were possible, we would like to build a national interregional system which could project agricultural efficiencies and land uses, given a specific water development program. Information we would need for such a system would include:

1. Projections of demand for agricultural products by regions;
2. Cost of production of crops by products and land resource types, and with water development of specified types;
3. Projections of transport and processing costs (initially we would probably assume that processing costs are uniform among regions);
4. Prospective depletion of natural resources for agricultural use;
5. An identification and understanding of institutional and other factors that influence resource use and mobility.

If we could employ such a system, we would not need regional agricultural output projections. The need for regional projections results from the fact that we cannot now use this system.

A number of models including a minimum cost linear programming model will be considered in attempting to make and use regional projections.

Agriculture will attempt to develop a system which enables estimation of the effect upon regional costs of producing agricultural products of: (1) Changes in the amounts of land of various qualities available for agriculture; and (2) changes in water available for agriculture. We would like to be able to answer the question--what is the effect upon marginal and total agricultural costs of production of water development such as drainage and flood control?

However, it is well to realize that projections of what may happen in a future period, although necessary in project and policy planning, are indeed difficult to make. Thus one is inclined to agree with Gidez and Back that the analysis of a given region's economic base--and the understanding of interrelationships derived therefrom --may be of greater import than the regional projections. Any projections are almost always subject to further revision in the light of new and emerging data.

The problems which the planning economist must handle--and in a sense in which we are all involved--are not easy. Among other things he needs to properly estimate the aggregate level of economic activity based upon such considerations

as population growth, labor force participation, length of work week, etc. This is where the OBE analysis will help greatly. Then he must anticipate the changing structure of the regional or basin economy as it proceeds through time so that he can determine the allocative problem which Gidez and Back identify as involving the "major thrust" of strategy concerning investment considerations in water resources development. Economic theory will help, of course, but still there are many problems and uncertainties. Indeed, as Nathaniel Wollman has pointed out with regard to such an analysis--"A complete system of economic knowledge would consist of a general equilibrium analysis among all economic entities moving through time in accordance with known dynamic forces and having designated spatial attributes for each point in time. If such a system could be designed, its complexity would probably confound the imagination. . . . The most sophisticated cross-sectional studies that have been developed are in the form of inter-industry input-output tables, wherein a matrix is constructed, with 500 industries and final demands listed in the vertical and horizontal margins. The resulting rows and columns show the inputs from each industry into all other industries, and of course simultaneously, how the output of any one industry was disposed of. A one-dollar change in output of a given industry will have an effect on each supply industry, each effect in turn setting up its own chain of sequences. If we describe our economy by using 100,000 products, the matrix must contain 10 million boxes." Clearly, the evaluation of a regional or basin-wide economy on such a systematic basis is beyond our capability at present. A Leon Walras might delight in contemplating such a system of equations as Wollman describes; for most of us, however, it would be less joyful, and even less comprehensible.

I suggest, therefore, that the application of economic efficiency criteria to the allocative problem which Gidez and Back focus upon is indeed a difficult one--and a continuing challenge to all resource economists participating in project planning, formulation, and analysis. Clearly, a great deal of economic research--not to mention continued research in the natural sciences--must be accomplished before "comprehensive" river basin planning is a reality rather than an ideal.

Lest I close on too dour a note, it seems pertinent to point out--at the risk of some repetition on my part--that there has been much progress in recent years, significant progress, toward achievement of the goal of truly comprehensive water resources planning at national and regional levels. Among other things we have seen:

1. Passage of P. L. 566, the Watershed Protection and Flood Prevention Act. This Act--which has already had a significant conservation impact

in its relatively short history of about 10 years--is one of the turning points in the policy and political orientation of the nation's water resource activities. Small watershed developments are now underway in more than 500 communities. Over 40 percent of these developments have multipurpose objectives, combining watershed protection and flood prevention with recreation, irrigation, fishing, and municipal water supply.

2. Acceptance by the Administration--and thus the Bureau of the Budget--of the goal that comprehensive plans be developed by 1970 for all major river basins, as set by the Senate Select Committee on National Water Resources in its report of January 1961.

3. The formation of the ad hoc Water Resources Council consisting of the Secretaries of the four departments with major water resource responsibilities, namely: Agriculture, Army, Interior, and HEW. Although Congressional endorsement is desirable--and is being sought through proposed legislation--the ad hoc Council has been able to perform its coordinating function quite effectively to date working through its very active Interdepartmental Staff Committee.

4. The preparation, approval, and publication of Senate Document 97 "Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources," dated May 29, 1962. This document was prepared under the direction of the ad hoc Water Resources Council.

5. The preparation, at the direction of the ad hoc Water Resources Council, of a projected framework of economic growth through the year 2010, including such factors as population, GNP, employment, consumption, productivity, investment--gross private, foreign, and public construction --number of households, etc., for use by the concerned agencies in connection with water resources and related conservation planning activities. These projections--which are, of course, subject to revision as necessary --will serve as basic assumptions for more detailed sector analyses, regional analyses, and river basin investigation, and other research related to general economic growth assumptions.

6. The recent agreement with the Office of Business Economics, Department of Commerce, to develop comprehensive river basin projections for 16 major regions of the United States. As a corollary to this agreement, a

companion program embracing the agricultural and forestry sectors of the economy will be undertaken by the Department of Agriculture under the general technical leadership of the Economic Research Service.

7. There is now pending proposed legislation to implement the report of the Senate Select Committee on Water Resources. Proposed legislation includes:

   (a.) S. 2, 88th Congress, 1st Session, a bill which implements the committee's recommendations of expanded and coordinated Federal research on water. There is a possibility that the bill may become law this year, permitting the initiating of water resources research centers at colleges and universities in each state in the nation.

   (b.) S. 1111, 88th Congress, 1st Session, is a bill which would implement the recommendation that plans be prepared during present decade for the development of each river basin in the nation. Among other things this bill, if passed, would establish a permanent Cabinet-level Water Resources Council, as a continuing administrative mechanism for bringing the concerned Department heads together on a regular basis for coordinated planning of their respective water and related land resources responsibilities. Equally important, the bill would also create a framework under which joint Federal-State commissions can be established where needed for planning the comprehensive development of the water and related land resources of river basins, regions, or groups of related river basins in the United States.

8. Finally--and by no means of least importance--there has been increasing rigor in the application of improved economic analysis techniques in the design and evaluation of proposed water resources projects. This kind of critical economic analysis has eliminated many uneconomic projects in the early stages of water resource planning.

On this note, I will bring my remarks to a conclusion. I do wish to thank all of you for the kind attention I have received.