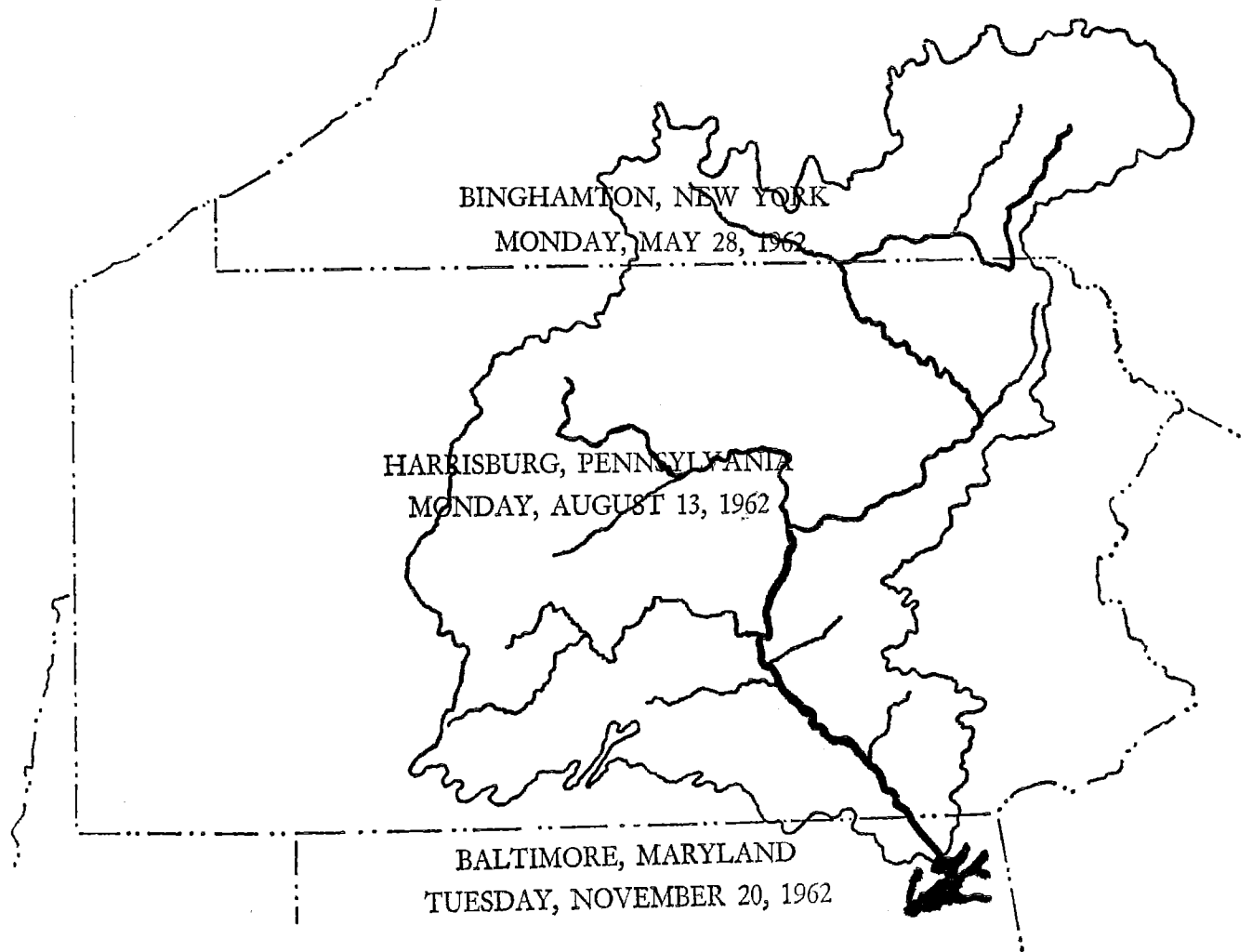


RECORD
INTERSTATE ADVISORY COMMITTEE
on the
SUSQUEHANNA RIVER BASIN



RECORD
INTERSTATE ADVISORY COMMITTEE
on the
SUSQUEHANNA RIVER BASIN

BINGHAMTON, NEW YORK
MONDAY, MAY 28, 1962

HARRISBURG, PENNSYLVANIA
MONDAY, AUGUST 13, 1962

BALTIMORE, MARYLAND
TUESDAY, NOVEMBER 20, 1962

INTERSTATE ADVISORY COMMITTEE ON SUSQUEHANNA RIVER BASIN
OFFICERS AND MEMBERS
1962

OFFICERS

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James J. O'Donnell, *Vice Chairman*
Harold G. Wilm, *Vice Chairman*
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Secretary of Forests and Waters
John P. Robin
Chairman, State Planning Board

Representative Harris G. Breth
Chairman, Joint State Government Commission
Senator George B. Stevenson

FOREWORD

On June 29, 1961, the House of Representatives of the Commonwealth of Pennsylvania adopted House Resolution No. 68 which reads as follows:

"In the immediate future public hearings will be conducted by the United States Army Corps of Engineers in conjunction with a preliminary survey and report on the advisability and desirability of a development program for the Susquehanna River watershed. The survey and report being conducted by the Federal Government deal not only with every conceivable phase of flood control but also reforestation, water transport, hydroelectric power, tourism and recreation.

"The Susquehanna watershed development program can be of immeasurable value in the economic advancement of our Commonwealth. It is therefore imperative that we do everything within our power to cooperate with and assist the Federal Government in this project, therefore be it

"RESOLVED That the House of Representatives hereby directs the Joint State Government Commission to conduct a preliminary study of the Susquehanna watershed development program for the purpose of rendering information and assistance to the Federal Government in carrying out this project and be it further

"RESOLVED That the Commission make a report of its findings from such study to the 1963 Session of the General Assembly."

To facilitate the study, the Joint State Government Commission appointed the Task Force on Conservation. This task force conferred with representatives of Commonwealth departments concerning plans and developments and held public hearings in Wilkes-Barre and Huntingdon. As a result of the initial inquiries by the task force in Pennsylvania and after conference with appropriate authorities in New York and Maryland, plans were made for an interstate conference which was held in Binghamton, New York on May 28, 1962. As detailed in the record of that meeting, the conference adopted Articles of Organization for the creation of the Interstate Advisory Committee on the Susquehanna River Basin as a preliminary organization to

foster the proper development of the resources of the Susquehanna Basin and to provide appropriate permanent machinery for intergovernmental coordination.

The Articles of Organization set forth the functions of the Interstate Advisory Committee on the Susquehanna River Basin to be:

"A. Promote, coordinate, cooperate in and where necessary undertake studies of the Basin and its problems.

"B. Assist in the formulation and implementation of plans for the development and proper management and use of the water and related resources of the Susquehanna River Basin.

"C. Seek to coordinate the activities of the appropriate state and federal agencies in such planning and the implementation thereof including but not limited to, the abatement of pollution, flood control and zoning, the general use and control of the waters of the Susquehanna River Basin, the development of recreational areas, the encouragement of agricultural and economic development in appropriate areas, and the conservation and wise utilization of the forests and other natural resources of the Basin.

"D. Encourage appropriate policies in the three states and the enactment of state laws for their effectuation.

"E. Study and recommend legislation for the creation of a permanent intergovernmental agency for the proper management and effective utilization of the resources of the Susquehanna River Basin."

In accordance with the Articles of Organization, the Interstate Advisory Committee on the Susquehanna River Basin was organized and elected officers at its meeting in Harrisburg, Pennsylvania, on August 13, 1962.

On November 20, 1962, the committee met in Baltimore, Maryland to review with representatives of the Federal Government (the U. S. Corps of Army Engineers and the Public Health Service) the progress of the Federal Government and the role of the states, particularly the role of the state legislatures in the development of the Susquehanna River watershed program.

The record of these meetings is presented herewith.

TABLE OF CONTENTS

	<i>Page</i>
The Meeting at Binghamton.....	1
The Meeting at Harrisburg.....	51
The Meeting at Baltimore.....	69

TRI-STATE CONFERENCE
BINGHAMTON, NEW YORK

TRI-STATE CONFERENCE
BINGHAMTON, NEW YORK
MONDAY, MAY 28, 1962

ATTENDANCE

NEW YORK

Senator Warren M. Anderson
Henry M. Baldwin, Chairman, Board of Supervisors,
Broome County
Senator Elisha T. Barrett, Chairman, Joint Legislative Com-
mittee on Interstate Cooperation
Adeline D. Badala, Secretary to the Chairman, Joint Legis-
lative Committee on Interstate Cooperation
E. W. Bartley, Manager Area Development, N.Y.S.E. & G.
Corporation
Peter R. Biondo, representing Hon. Joseph F. Carlino,
Speaker of Assembly
Jerry W. Black, Chairman, Navigable Waterways Commit-
tee; Member of Assembly
John J. Burns, Mayor of Binghamton
Charles R. Cerosaletti, Councilman, Davenport
A. F. Dappert, Director, Bureau Water Resource Services,
Department of Health
Mrs. Frank L. DeMunn, League of Women Voters
Frank Dolan, Evening Press and WKOP, Binghamton
Senator D. Clinton Dominick, III, Member, Joint Legisla-
tive Committee on Interstate Cooperation
J. Gordon Downie, Supervisor, Oneonta
Frank M. Dulan, Mayor of Utica
Clifford Eldred, representative of Oneonta Chamber of
Commerce
Horace S. Evans, Executive Director, Flood Control, De-
partment of Public Works
Ralph Garrison, Justice of the Peace, Davenport
Mrs. James Gaw, President, League of Women Voters
John G. Gridley, Chairman, Board of Supervisors, Chemung
County
Edward M. Griffin, Chairman, Water Resources Committee,
Binghamton Chamber of Commerce
Paul B. Hanks, Jr., Member, Joint Legislative Committee
on Interstate Cooperation
Kenneth C. Hawk, Vice Chairman, Water Resources Com-
mittee, Binghamton Chamber of Commerce
Hugh E. Hogan, representing Mayor Tyrell, Owego
A. C. Hollister, Assistant Mayor, Windsor
Mrs. A. V. House, League of Women Voters
Leonard L. Huttleston, Director of State Parks
George L. Ingalls, Majority Leader of the Assembly
Robert W. Jamison, representing Senator Austin W. Erwin,
Chairman, Finance Committee

Leland L. Jones, Supervisor, Vestal
Irwin King, Public Relations Officer, Department of Con-
servation
Senator Thomas J. Mackell, Member, Joint Legislative Com-
mittee on Interstate Cooperation
Guy L. Marvin, Member of Assembly
Edwyn Mason, Member, Joint Legislative Committee on
Interstate Cooperation
Guy D. Moore, Supervisor, Nichols
Dr. D. D. McMahon, District Health Officer
John H. Rhodes, Bureau of Industrial Development, Depart-
ment of Commerce
Mrs. John Ritchie, League of Women Voters
Ronald L. Robinson, County Supervisor, Waverly
Leigh E. St. John, P. E., Upper Susquehanna Water Shed
Association and Broome County Flood Control Com-
mission
George P. Savage, Member of Assembly
Walter C. Shaw, Secretary, Assembly Ways and Means
Committee
Jean Storey, Associate Director, Joint Legislative Committee
on Interstate Cooperation
Harvey A. Strong, Chairman, Otsego County Board of
Supervisors
Elizabeth G. Tamsett, Tri-County Watershed Group Repre-
sentative, South New Berlin
John C. Thompson, Chief Engineer, Water Resources Com-
mission
Meredith H. Thompson, Assistant Commissioner, Environ-
mental Health, Health Department
A. T. Tobey, Regional Assistant to Congressman Robison,
33rd District
F. W. Utz, President, Safe Harbor Water Power Corpora-
tion
Edwin Vopelak, Associate Hydraulic Engineer, Department
of Conservation, Division of Water
Robert Warner, State Editor, The Oneonta Star
Commissioner Harold G. Wilm, Department of Conservation
Frances A. Young, Stenographer, Joint Legislative Commit-
tee on Interstate Cooperation
Frederick L. Zimmermann, Research Director, Joint Legisla-
tive Committee on Interstate Cooperation; Professor of
Political Science, Hunter College

PENNSYLVANIA

- James H. Allen, Executive Secretary, Interstate Commission on the Delaware River Basin
Gordon Avery, President of Council, Thompson
Thomas Baldwin, County Commissioner, Bradford County, Towanda
Richard Boardman, Chief, Stream Quality Section, Department of Health
Rep. Harris G. Breth, Chairman, Joint State Government Commission
Dr. Erich F. Bordne, Associate Professor of Geography, University of Pittsburgh
C. R. Brown, County Commissioner, Wyoming County, Tunkhannock
Roy B. Campbell, Director, Bradford County Planning Commission
Senator Zehnder H. Confair
Rep. William B. Curwood, Chairman, Task Force on Conservation, Joint State Government Commission
Guy W. Davis, Counsel and Director, Joint State Government Commission
M. J. DeHarde, Alternate for E. L. Peterson of Bradford County Planning Commission, Towanda
Ed Dieffenbach, County Agricultural Agent, Montrose
Mrs. G. M. Dusinberre, League of Women Voters, Wellsboro
E. D. Dunklee, Mayor of Wyalusing
Adam F. Erat, Mayor of New Milford
Robert E. Evans, Area Advisor of Vocational Agriculture, Towanda
Wilkin A. Evans, Mayor of Thompson
Charles Fox, Troy
Harry G. Ganoë, Clearfield
Dr. Maurice K. Goddard, Secretary of Forests and Waters
Gerald H. Goldberg, Special Counsel, Joint State Government Commission
H. O. Hallman, Administrative Assistant to Congressman Herman T. Schneebeli
Charles R. Harte, County Commissioner, Lackawanna County, Scranton
George W. Harter, Rural Area Development Agent, Pennsylvania State University
Rep. George B. Hartley, Task Force on Conservation, Joint State Government Commission
Robert F. Hurley, Mayor of Susquehanna
W. B. Krisher, Towanda
Andrew Kulenich, Mayor of Mayfield
Richard A. Lane, Assistant to the Chief Mechanical Engineer, Philadelphia
Bryan Lee, County Commissioner, Wyoming County, Mehoopany
Reuben H. Levy, Member, Susquehanna River Basin Association
W. A. McCracken, Chief Clerk, Scranton
Senator Paul W. Mahady, Task Force on Conservation, Joint State Government Commission
Mark J. Murphy, Council President, Susquehanna
Senator Martin L. Murray, Task Force on Conservation, Joint State Government Commission
Rep. James A. O'Donnell, Task Force on Conservation, Joint State Government Commission
Francis A. Pitkin, Executive Director, State Planning Board
John P. Robin, Chairman, State Planning Board
E. T. Schuleen, Assistant Manager, Safe Harbor Water Power Corporation, Conestoga
Myron Shoemaker, Laceyville
Frank Slattery, Mayor of Wilkes-Barre; President, Susquehanna River Basin Association
Rep. Orville E. Snare, Task Force on Conservation, Joint State Government Commission
Hobart Sockman, Assistant State Conservationist
Alan J. Sommerville, Chief Water Resources Development Engineer, Department of Forests and Waters
Senator George B. Stevenson, Vice Chairman, Task Force on Conservation, Joint State Government Commission
David G. Unger, Soil Conservation Director, Department of Agriculture
Rep. Paige Varner, Task Force on Conservation, Joint State Government Commission
William Voight, Jr., Mechanicsburg
Senator John H. Ware, III, Task Force on Conservation, Joint State Government Commission
Rep. Harold G. Wescott, Member, House of Representatives
Harlan J. West, Pennsylvania Power and Light Company
William E. Wickert, Jr., Bethlehem
Ralph R. Widner, Assistant Director, State Planning Board
Rep. James E. Willard, Task Force on Conservation, Joint State Government Commission
Rep. Elisabeth S. Wynd, Task Force on Conservation, Joint State Government Commission
Orville A. Yoder, County Agent, Bradford County

MARYLAND

Albert P. Backhaus, Director, Department of Public Improvements
Joseph F. Kaylor, Director, Department of Forests and Parks
James J. O'Donnell, Director, State Planning Department

F. S. Silver, Director, Darlington
Doris G. Smith, Research Analyst, Department of Legislative Reference
J. S. Vancherie, Mayor of Havre de Grace

FEDERAL GOVERNMENT

Mark Abelson, Chairman, Northeast Field Commission, U. S. Department of the Interior, Boston
Alfred W. Buck, Park Planner, National Park Service, U. S. Department of the Interior
B. H. Dodge, C. L. Planning Branch, North Atlantic Division, Corps of Engineers, New York City
Gerald W. Ferguson, Project Director, Chesapeake Bay-Susquehanna River Basins Study, U. S. Public Health Service
E. L. Hendricks, U. S. Geological Survey, U. S. Department of the Interior
Lester M. Klashman, Regions I and II, U. S. Public Health Service, Regional Program Director for Water Supply and Pollution Control
M. A. Marston, Chief, Division Technical Services, Bureau of Sport Fisheries and Wildlife, U. S. Department of the Interior, Boston

Frank Paradise, Branch Chief, U. S. Forestry Service, Section of Flood Prevention and Watershed Management
R. D. Perry, Assistant Conservationist, Soil Conservation Service, U. S. Department of Agriculture, Syracuse
Colonel Edward Podufaly, Acting Division Engineer, North Atlantic Division, Corps of Engineers, U. S. Army
Harry E. Schwarz, Corps of Engineers, Chief, Comprehensive River Basin Studies Branch
George P. Spinner, Supervisor, U. S. Fish and Wildlife Service, Trenton, New Jersey
Mrs. Julia A. Spinner
Irving B. Stafford, State Conservationist, Soil Conservation Service
John T. Starr, Assistant Chief Engineer for Civil Engineering, Corps of Engineers, U. S. Army, Baltimore
Gilbert L. Varney, Branch Chief, Watershed Management, Forest Service, U. S. Department of Agriculture, Region 7, Upper Darby

COUNCIL OF STATE GOVERNMENTS

William L. Frederick, Director, Eastern Regional Office

PROGRAM

	<i>Page</i>
Honorable George L. Ingalls.....	7
Majority Leader of the New York Assembly	
Honorable John J. Burns.....	7
Mayor of the City of Binghamton	
Dr. Erich F. Bordne.....	8
Associate Professor of Geography, University of Pittsburgh	
Colonel Edward T. Podufaly.....	12
Acting Division Engineer, North Atlantic Division, Corps of Engineers, U. S. Army	
Mr. John T. Starr.....	14
Assistant Chief of Civil Works Engineering, Baltimore District Office, Corps of Engineers, U. S. Army	
Mr. Lester Klashman.....	18
Regional Program Director for Water Supply and Pollution Control, Regions I and II, U. S. Public Health Service	
Mr. Merwin A. Marston.....	19
Chief, Division of Technical Services, Bureau of Sport Fisheries and Wildlife, U. S. Department of the Interior	
Mr. Robert D. Perry.....	21
Assistant State Conservationist, Soil Conservation Service, U. S. Department of Agriculture	
Mr. Gilbert L. Varney.....	23
National Forest Watershed Management, U. S. Department of Agriculture, Eastern Region	
Mr. Alfred W. Buck.....	26
Park Planner, Recreation Resource Surveys Staff, U. S. Department of the Interior, National Park Service	
Mr. E. L. Hendricks.....	27
U. S. Department of the Interior, U. S. Geological Survey	
Honorable Frank Slattery.....	31
Mayor, City of Wilkes-Barre, President, Susquehanna River Basin Association	
Senator Elisha T. Barrett.....	32
Chairman, New York State Joint Legislative Committee on Interstate Cooperation For: Governor Nelson Rockefeller of New York	
Mr. James J. O'Donnell.....	33
Director, Maryland State Planning Department For: Governor J. Millard Tawes of Maryland	
Mr. Francis A. Pitkin.....	36
Executive Director, Pennsylvania State Planning Board For: Governor David L. Lawrence of Pennsylvania	
Commissioner Harold G. Wilm.....	38
New York Department of Conservation; Executive Committee Member, Interstate Conference on Water Problems	

	<i>Page</i>
Honorable Maurice K. Goddard.....	40
Secretary of Forests and Waters, Commonwealth of Pennsylvania	
Chairman, Water and Power Resources Board	
Member, State Sanitary Water Board	
Mr. Albert P. Backhaus.....	43
Director, Maryland State Department of Public Improvements	
Mr. John P. Robin.....	45
Chairman, State Planning Board	
Representative Harris G. Breth.....	47
Chairman, Joint State Government Commission	
General Assembly of the Commonwealth of Pennsylvania	
Articles of Organization.....	48

TRI-STATE CONFERENCE
ON THE SUSQUEHANNA RIVER BASIN
NEW YORK, PENNSYLVANIA AND MARYLAND

Held at the Sheraton Inn
Binghamton, New York
Monday, May 28, 1962

PRESIDING: Senator Elisha T. Barrett, Chairman of the New York Joint
Legislative Committee on Interstate Cooperation

SENATOR BARRETT: I should like, at this time, to call upon an old friend of mine who represents the city of Binghamton and this Assembly District in the New York State Assembly and who is the Majority Leader of the New York State Assembly. I would like, at this time, to call upon Assemblyman George L. Ingalls to ask him to extend a very cordial welcome to all of you from this beautiful city of Binghamton.

ASSEMBLYMAN INGALLS: Senator Barrett, members of the Joint Legislative Committee on Interstate Cooperation, ladies and gentlemen, I am particularly pleased, Senator Barrett, to be asked to extend a word of welcome and greeting to this Tri-State Conference on the Susquehanna River Basin. We are glad to welcome you to the city of Binghamton and this fine new hotel. I know you have had good accommodations and good surroundings for your meeting. Interestingly enough, you are sitting now in a building which adjoins the Chenango River which is out here to the left and which joins the Susquehanna within a stone's throw. It is very appropriate that you are right alongside of the Susquehanna River as you sit here in this meeting today.

I might say that Senator Barrett has been a member of our State Legislative Committee on Interstate Cooperation since 1939, and he has been Chairman of this Committee since 1952, so that he is an old hand at this. Therefore, I won't take any more of your time except to welcome you to the city of Binghamton on the Susquehanna River and to wish you well in this conference. Thank you very much.

SENATOR BARRETT: We have another very distinguished citizen of the City of Binghamton, the mayor of the town. I understand the Mayor is one of those fellows who would agree that, if any of you get into difficulty, if you call him, he will come down and get in with you. Mayor John J. Burns of the City of Binghamton, won't you say a few words?

MAYOR BURNS: Thank you, very much. I would like briefly to welcome all of you to this very important conference. Binghamton has been interested in this subject for some time, and we are delighted to see the interest shown and especially happy to have you meet here in Binghamton. We hope you will enjoy yourselves very much, and, if you get in trouble, call George Ingalls, he will take care of you.

SENATOR BARRETT: This gets the conference off on a non-partisan basis, George being a distinguished Republican, and the Mayor, as I understand it, one on the side that has not yet found salvation.

In opening this conference, I want to make, for the New York Committee on Interstate Cooperation, a very brief statement. I will open this meeting by saying how sincerely happy I am to be here. I would hope that this conference would spark a real effort on the part of the three states, the Commonwealth of Pennsylvania, the Free State of Maryland, and my own State of New York, to initiate intergovernmental coordination in planning the management of the water related resources of the Susquehanna River Basin.

Many years ago, back in the 1930's, as a member of this committee, the New York State Joint Legislative Committee on Interstate Cooperation, I took part in the initial stages of work for the same purpose on the Delaware River Basin. Legislative groups from the four states of that valley created the well known Interstate Commission on the Delaware River Basin. As you all know, progress on the Delaware came very slowly. Following the failure, in 1953, of the acceptance of a compact which failed to be reported by only one House of the four states involved (all of the other states had enacted it) the Governors of the four states created what came to be the Delaware Advisory Committee. This group, through a magnificent effort and working, of course, together with the Interstate Commission on the Delaware River Basin and on the same foundations laid by that body, succeeded, in 1961, in securing a major accomplishment in river basin management, the creation of an Interstate-Federal Compact of the Delaware River Basin Commission.

All basins, of course, vary. I don't know that we will be able to shape the ultimate machinery that will be developed for the management of the Susquehanna on the same basis. One thing appears to me to be clear—whatever we do, we should not take the same time that was required on the Delaware. First, we have had much experience in tackling these problems. For example, we have with us today Francis Pitkin, Director of Planning for the Commonwealth of Pennsylvania and Chairman of the Interstate Commission on the Delaware River Basin; Jack Robin, of Pennsylvania, who was the leader of the great effort of the Delaware's Advisory Committee; Harold Wilm, Conservation Commissioner of New York, also a member of the Governor's Advisory Committee, under whose leadership the New York end of the problem, namely, the New York City water supply issue, was settled. I should also mention that Jim Allen, long-time Executive Secretary of the Interstate Commission on the Delaware, is also with us today. Secondly, beside this rich and broad experience, we do not have as many problems as we had in the more developed Delaware Basin. Third, we intend to move with as much speed as possible. We do not have to wait for the development of the final machinery; we can begin efforts immediately on some of the problems.

In my experience, the creation of interstate machinery has often meant the improvement of intrastate policies and administration. The first problem we tackled on the Dela-

ware was the serious problem of pollution. It is widely recognized that the Interstate Commission on the Delaware River Basin did a very effective job at a very early stage in the drive for pollution abatement. The Interstate Commission on the Delaware, and our work on other interstate waters, led our Interstate Committee to play a major role in the adoption of our New York Pollution Control Law; a law that has been administered on a very practical and workable basis; a law which is now improved and further developed; a law which originally sprang from our activities on the interstate level. Pollution certainly would be, it seems to me, the right place to start on the Susquehanna by coordinating the activities of the three states in this field, even while we are working toward a broader approach to the better utilization of the whole basin.

Of one thing I am certain, and that is that we will succeed for the very simple reason we cannot afford to fail. Further, the people associated with this effort, people who are in this conference room, if you will, are people who have enough "know-how" shall I say, to keep it from failing. Therefore, today I welcome you to this first Tri-State meeting and I extend to you the promise that we, in New York State, will be working closely with you in this important and major endeavor.

As I think I announced, we are going to be pressed for time, pressed in a sense that we can afford no time lost, and at this point I will present one who has driven 380 miles to get here and must, this afternoon, leave to drive 380 miles back home to meet some teaching commitments tomorrow. I am delighted, at this time, to present Dr. Erich F. Bordne, Associate Professor of Geography, University of Pittsburgh, who will pose the problem "The Susquehanna River Basin." Dr. Bordne.

DR. BORDNE: Thank you, Senator Barrett. I have a very complicated slide arrangement, one machine showing two types of slides.

My first reaction to a meeting on the Susquehanna was to think only of the problems of this river basin. It was indeed a surprise to find that this area is larger than West Virginia and Delaware combined, and in my part of the state we hear an awful lot about the size of West Virginia and its problems, and reference made that there is so little development. In addition, I found that the problems here are frightening when you consider the variety of landscapes

found here—from the glaciated north to the unglaciated south, and from the soft coals in the west to the hard coals in the east.

Two early water supply papers give an indication of the kind of problems found in this basin. Water supply paper number 108, dated 1904, entitled, "Quality of Water in the Susquehanna River Drainage Basin," emphasizes problems of sewage, mine wastes and culm. Water supply paper number 109, dated 1905, one year later, entitled, "Hydrography of the Susquehanna Drainage Basin," points out ". . . the Susquehanna River Basin is the largest and most important drainage area commercially in the North Atlantic States, although it is not the most important as regards water power." Now that was in 1905. This same publication further states, ". . . that information in regard to navigation along the Susquehanna and its tributaries is now only of historical interest." Further on we read of difficulties with floods dating back to the Civil War period, and with low summer flow traced back to 1803. The justification for meeting to undertake development in the Susquehanna River Basin is certainly borne out by historical documents.

Those of you here today are all too familiar with the problems of the Susquehanna. As a starting point though, I feel that my time would best be spent by pointing out what I think are three significant points in this drainage basin. The first is that there appears to be a need for a very comprehensive study to guide you in your decision-making. Second, there is a real potential for recreation here. Third, the potential for development due to proximity to Megalopolis.

We will take a look at some slides in a little bit and point out that the behavior of water in the hydrologic cycle is certainly very, very complex. Its study involves many specialists from a number of disciplines. I feel that a comprehensive study of the watershed can, in many ways, be compared with a study in the field of medicine. A physician examines the whole man in order to arrive at his diagnosis. Some of you have no doubt visited a doctor's office complaining of what you think is a simple headache and are surprised at the examination you receive before leaving. So it is with watersheds. One is seldom bothered by too much basic information for use in decision-making; on the contrary, it is usually too little.

Consider with me briefly a study of an adjoining drainage basin, that of the Genesee Valley which, together with the Western Ontario Lake Plain, can be cited as a study of a

problem of too little water. In terms of size, it is only $\frac{1}{8}$ that of your basin. Ironically, the Army Engineers present here will recognize that this is also the site of a sizeable flood control dam at Mt. Morris, N. Y.

Slide #1

The Genesee River, like the Susquehanna, has its origin in the Allegheny Plateau and flows north to Lake Ontario for a distance of 150 miles. Almost from the beginning of settlement, man has complained of insufficient water, particularly along the Lake Plain, the shore between Rochester and Buffalo. Our problem here is to consider first the water budget. This involves the skills of many experts,—climatologists, foresters, soil scientists, geologists and engineers, just to mention a few.

Slide #2

This is a slide of precipitation from South to North in the Genesee. Observe the very low annual rainfall values along the lake shore. This is one of the things that surprises a great number of people. This year was drier than normal, and the 50-year average in the south is 35 inches, while that along the lake is less than 30 inches. This region receives less precipitation than the Susquehanna.

Slide #3

This segment of the hydrologic cycle involving available water storage is in the realm of the forester and the soil scientist, even the geologist. Vegetation may draw upon varying amounts of available soil water from one part of this region to another. This knowledge is vital for later computation of water use by plants. Let me remind you at this point that vegetation has first call upon the water which falls. In a drainage basin like the Susquehanna, where forests cover over 70% of the surface of the land, the role of the forester in a water study is obvious.

Slide #4

Potential evapotranspiration shown here represents the evaporation and transpiration which would occur if there were no moisture deficiency at any time. In other words, this is something that would interest people in irrigation primarily. Potential evapotranspiration values are not only high throughout this area, but are highest in the region where rainfall was the least, along the lake shore. Imagine, therefore, the value of this information to those planning more intensive irrigation agriculture along the Lake Plain. This is just exactly what happened.

Slide #5

The actual evapotranspiration takes into account the fact that moisture is deficient at times. Water use by vegetation, as you see here, was highest on the plateau and decreased gradually towards the Lake Plain. Three other techniques also brought out this same pattern. This again stresses the large amount of water used by the vegetation. This map should be compared mentally with the map of precipitation.

Slide #6

This slide brings in the role of cities and industries. You will remember we had the least water along the plain. You plot on these the daily water uses by man and you see it is very high along the lake front. This is the same area where potential evapotranspiration was highest and precipitation was lowest. It is no wonder, then, that many of the settlements have turned to supplies outside of the watershed. In this case, either Lake Ontario or the Barge Canal.

We have seen that a study of water use in an adjacent watershed has pointed out that need, both by man and vegetation, was highest in the areas where Mother Nature supplied the least precipitation. It would be interesting to speculate where this also holds true of the Susquehanna. A comprehensive study may provide valuable planning information which a more general study, centered upon the problems of pollution and flooding might not emphasize.

Suppose that we are provided with this comprehensive study of the drainage basin. Are there potentials for development that we must consider? Here, I feel that you who are assembled at this meeting have a primary potential—recreation.

I feel that one of the fringe benefits of post-World War II suburbanization appears to be an increased concern for outdoor recreation. Skyrocketing sales of camping equipment, pleasure boats and trailers bear out this fact. Any weekend, drive through and beyond Suburbia and you will see this mass movement towards the Great Outdoors. Many of the technical proposals received by the Area Redevelopment Administration in Washington deal with programs for increased recreational development. It isn't just the well known and established recreational centers spurring this movement; rather, it is the new and as yet undeveloped areas. It might be compared with a domestic Point Four program. The magnitude of this recreational potential is summarized by a 1960 "Resources for the Future" book entitled, "Land for the Future." It is with this book and the chapter, "Land for Recreation" that we are most interested. Let us look at the R. F. F. study.

Slide #7

Looking at the lowest line on the graph, we see that the percentage of consumer expenditures made for recreation increased irregularly over the 1910 to 1952 period. This percentage rose rather rapidly to a peak of nearly 5% in 1930, declining during the depression and war years, and since that time has climbed to over 5%.

Per capita disposable income is shown rising considerably since the 1930's as well as productivity per man hour. The amount of leisure time has risen over the decades, but the direct measures of leisure time are not available. They must be estimated from time spent at work. Notice the drop to 40 hours and remember that many Americans are now talking about a 32- or 35-hour week. Fortune Magazine, in one of its comprehensive studies, has estimated the total paid vacation time per worker. In 1929 this average was .3 week per worker, and in 1956 they estimated this figure had risen to 1.0 week per worker. Still another line on the graph shows that total travel per capita has increased from under 500 in 1900 to over 5000 in 1956. Factors related to outdoor recreation in the future are shown on the next slide.

Slide #8

Notice the projections for 1956, for 1980 and for the year 2000. You have here an indication of the population these people are talking about in these various years. This is always helpful information when other material is listed: expenditures for recreation, paid vacations, per capita travel for recreation, and the various categories of recreation visits. "User-oriented" generally indicates the city, county, or local government parks. "Intermediate" are the state or private parks, and "resource-based" are the national parks and national forests. Outdoor recreation should certainly increase substantially if, as I say, our population and per capita income double. May I take this opportunity to point out that the Susquehanna is essentially an empty area in comparison to the densely populated areas to the west and to the east. It is becoming more accessible each year, and must be traversed on many of our routes from the East Coast to the Midwest.

Slide #9

The present picture of outdoor recreation areas is visible on this slide. This involves the "user-oriented" which you will recall, are municipal parks, the "resource-based" which are the national forests or national parks, and then the "intermediate-based" which are the state parks. Notice especially the large attendance at the state park level, and the

average annual increase in attendance in postwar years. All three types of outdoor recreation areas have gained, not just one.

Slide #10

Total demand for outdoor recreation here measures potential rather than actual anticipated figures. The 1956 data portrayed are the same as on the previous slide. User-oriented potential demand in the year 2000 is based upon the assumption that 250 of the 310 million people will live in cities; that the full two acres per 100 urban population will be available; and that the average urbanite will visit a municipal park 15 or more times a year. In the intermediate type areas, the assumption is also for 15 or more visits. Note the large increase in visits to resource-based areas. In another generation, according to the study, long trips, both in miles and in time, to several relatively distant areas may be as familiar as today's picnic outing.

All of these data, whether viewed in a liberal or a conservative manner, point up the probable increase in recreation in the days to come. The Susquehanna will be an area through which people will have to travel in order to move from one populated sector of the land to another. This will expose the region to increased recreation, if you so desire. The Shortway, Route 80, will bring the Susquehanna within weekend travel distance of the vast market of metropolitan New York.

One of the geographic attributes that man has not changed is that of geographic location. This locational factor in our case becomes an asset to the Susquehanna. I have called this a second potential—the potential due to proximity to Megalopolis. Profound changes have occurred in the territory from southeastern New Hampshire to the Potomac River and as far inland as Lackawanna County in Pennsylvania. This essentially urban and suburban area is known as "Megalopolis." Part of the Susquehanna Basin is already contained within this area. Let us examine Megalopolis in greater detail. Webster's dictionary defines it as "a very large city." No other section of the United States has such a large concentration of population with such a high average density spread over such a large area as does the Northeastern section. Herein has developed a kind of supremacy in politics, economics, cultural activities and even transportation. Flying over this area one notices green spaces, many of which function as a residential or industrial site. Many of the farms are owned and operated by people making a

living in the downtown areas of cities. This interwoven urban and suburban area had, in 1960, a population of 37 million people, all in an area the size of Pennsylvania. For the entire region, we find a population density something like 700 people per square mile. These crowded urbanites are, on the average, the best educated, the richest, the best-housed, and the best-served group of similar size in the world. This region excels in many fields. Its shipping, in terms of volume, is equaled only by northwestern Europe. In terms of our country, it has more well-paid laborers with a higher average income, more white collar workers engaged in more involved manufacturing. It has more than its share of wealthy residents, perhaps as many as $\frac{1}{3}$ of all those in the United States. Its leadership in financial institutions is well known. What is even more important is that Megalopolis has expanded, both by filling in former less populated areas and by moving inland.

Slide #12

Changes from the 1950 census are visible on this slide. Most counties in the drainage basin had a 2 to 20 percent increase in population since the 1950 census. How quickly the spillover from Megalopolis will change the southeastern corner of the watershed has not been stated. It is, however, a spot to watch in the future.

Megalopolis has some outstanding agricultural enterprises as well. With only 0.9% of the nation's agricultural land, it produces 5% of the total value of United States farm products. Lancaster County in Pennsylvania, an average sized American county, ranks 13th in the nation in the value of farm products sold. It is, in fact, the number one county east of the Mississippi River. Not too far east, in southern New Jersey, we find an intensely irrigated area. Each census of agriculture shows greater and greater amounts of irrigated land in this area. These changes are visible on the next slide.

Slide #13

Note the changes in irrigated land in and around Lancaster County. Irrigation often leads to water supply and water rights problems. Irrigation here would no doubt require water during the low stream flow period in August and September, when potential evapotranspiration value, particularly in the southeastern part of Pennsylvania, would be high.

Slide #14

This slide shows the very intense dairy activity in this same general region of intensive irrigation. Here we see not only the New York City milkshed in the Susquehanna, but the Philadelphia and Baltimore milksheds as well. This agricultural activity makes large demands upon available water supplies.

Megalopolis has very heavy traffic flows which could be an indication of things to come as Megalopolis expands outward. This slide not only gives us an indication of movements to and from recreational areas, but from commercial activity as well. One might say that the Susquehanna is lacking in commercial and industrial activity at the present time and that it even lacks certain desirable attributes for industrial greatness. I am reminded of an MA thesis which was done at Yale University in the mid-1950's, where all sorts of reasons were cited as to why new industry had come into the State of Connecticut. The State Development Commission later stated that they were successful in attracting new industries because the managerial class liked to live in Connecticut. I feel that your region, also, has many advantages in this respect, and might well attract new industries for the very same reasons. We have closely allied with this point a map of state parks and forests in Megalopolis.

Slide #15

Notice that the State of Connecticut, which had attracted quite a few people and new industry, has a very high density of facilities. This could very well be the case farther west in years to come.

In summary, I think there are many potentials for the Susquehanna which I have just hinted at. We have heard much about the New Frontier. To me, this New Frontier of the Sixties could begin within 75 miles of Washington in a place called the Susquehanna River Basin. Thank you very much.

SENATOR BARRETT: Thank you very much, Dr. Bordne. I am sure we would agree that this was a very interesting presentation and a very encouraging presentation of the tremendous undeveloped possibilities which are right here before our very eyes. I liked very much the statement made, in the course of the Professor's remarks, about the need for the accumulation of knowledge and history and of facts before we would have before us the information needed to plan for the future. I am not so sure that I am right on my

quote, but I think it was Patrick Henry who said "the path of the future is lighted by the lamp of the past." Now if that wasn't Patrick Henry, I stand corrected, but I think I am right on the quotation. You think about it, and, if we try to project our thinking into the future, I think we would agree we are dealing here today with a subject that has almost unlimited potentialities for the benefit of the people of the area and for the benefit of the people of the entire nation. Water supply and recreation and all of the things that go along with a well planned river basin development are well within the grasp of these three states working in cooperation with agencies of the Federal Government.

Thank you very much, Dr. Bordne, for a fine presentation. I am sure everyone found it extremely interesting.

We will proceed under the subject heading of "Public Works" with a presentation by Colonel Edward T. Podufaly, Acting Division Engineer, North Atlantic Division, Corps of Engineers, U. S. Army.

COLONEL PODUFALY: Senator Barrett, ladies and gentlemen. It is a real pleasure to be here with you today to discuss the Susquehanna River Basin. Our presentation will be in two parts. I will give the general background of water resource problems and the Corps of Engineers' responsibility and previous experience in basin studies. Mr. John T. Starr, of the Baltimore District, will discuss more specifically the Susquehanna River Basin.

As our population continues to expand,—and I have to contradict Professor Bordne,—my notes say it is estimated to double in about 50 years—and our standard of living continues to increase, we are facing an increasing strain on all of our natural resources. Fortunately, in many instances, scientists and industry come up with substitutes, plastics for metal and wood, synthetic rubber for natural, synthetics to substitute for cotton and wool, new fuels, more efficient engines and power plants, and so forth. But we are not going to find a substitute for water as a natural resource to be consumed. Neither are we prepared, I am sure, to forsake in the future all the pleasure we now associate with water recreational areas. Nor can we continue to endure the yearly millions of damage caused by floods, particularly since the press of urbanization exposes expanding developments to flood damage.

In the United States, an average of 560 billion gallons will be required daily by 1980 to meet municipal, agricultural, manufacturing, steam-electric, and mining uses, if

the population and economy expand at only the medium estimated rate. This would be almost double the country's average 300 billion gallons daily requirement for these purposes in 1954. It is also equal to almost half the daily streamflow from all rain and snow that falls on the 48 states. And, as the year 2000 approaches, the problem will be more severe in proportion. Now is the time, and even now is almost too late, to plan for the intelligent and effective use of our water resources by the year 2000.

The one study completed in the North Atlantic Division of the Corps of Engineers for the Delaware River and one soon to be completed for the Potomac are both based on a look 50 years ahead. The Susquehanna, being between the Potomac and Delaware Rivers, must be given the same long look ahead.

Two cogent reasons why a comprehensive, long look ahead survey of our water basins is required were pointed out not long ago in the report by the Senate Select Committee on Natural Water Resources in January 1961.

One conclusion was that "as urbanization and industrial development in the eastern part of the country expand, lack of water may deter growth unless early action is taken to assure a continued supply." Again contradicting Professor Bordne, industry usually has no sentimental attachment to any particular area. It goes where it can produce most efficiently. Modern industry requires water in large volumes and, though better cooling processes are being developed to reduce or even eliminate water as a coolant, there will be an increasing need for water for industry in the foreseeable future.

Another conclusion of the study mentioned is that "major conflicts are sure to arise between land use for water and land use for other purposes." Here is the heart of our local problem. What may look important to an affected individual or group today, may well be insignificant 50 years from now when looked at by later generations. This problem of conflicting land use can only be solved by good will and give-and-take of all concerned. To this end, the Corps of Engineers so conducts our studies that the public is kept informed of the progress and nature of our effort.

The Corps of Engineers has been in the water development business since the 1820's. Though our primary interest in water has been flood control and navigation, we have had

to consider the other aspects of water use in developing our projects,—irrigation, power, recreation, municipal and industrial use, and so forth. At the direction of Congress, we have pioneered in the Delaware River Basin Comprehensive Survey which is in the final stages of review by the Bureau of the Budget before presentation to Congress this session. Already a fact, and I must emphasize what Senator Barrett said, an historical project of major importance, is the New York-New Jersey-Pennsylvania-Delaware-Federal Compact which resulted in the formation of the Delaware River Basin Commission. This same Commission has already appointed a full-time executive director to implement the functions of the Commission.

The Delaware Basin Commission has accepted our comprehensive survey as a basis for its total development of the Delaware River Basin. No one can be so certain of the future as to say the total plan for the Delaware River Basin will be implemented in its entirety without change. The plan can and will be changed, as the future dictates. This plan is a guide based on the best available predictions for the future. The plan is phased over the next 50 years and indicates those starts which must be made now to meet immediate needs or needs of the near future. In fact, it may well be possible that two major first projects of the Basin, Tocks Island and Beltzville, may be implemented during the next one to two years.

Similarly, we are about to finish a comprehensive survey of the Potomac River.

I would like to stress that the Delaware River and Potomac River comprehensive surveys are the result of a vast coordinated effort of all the Federal agencies involved, as well as the involved state and municipal governments. The Corps of Engineers was the coordinator of the comprehensive surveys. For example, in the Delaware study, the Departments of Agriculture, Commerce, Health, Education and Welfare, Interior, Labor, Federal Power Commission, the Commonwealth of Pennsylvania, and the States of Delaware, New Jersey, New York, Cities of New York and Philadelphia, all made substantial contributions to the survey report and all reviewed the report in its entirety. Numerous public hearings were held to obtain the expressions of local desires. Every feasible site for construction was investigated in detail to determine the most economical system for the over-all greatest multiple returns. Actually, 576 reservoir sites were investigated just to give you some idea of the detail and thoroughness of the survey.

We follow four basic considerations in our basin surveys:

- (1) The intent of Congress in authorizing the survey.
- (2) Desires of local interests.
- (3) Adherence to sound engineering judgment and construction principles.
- (4) Lastly, but not least important, development of a plan of improvement which will provide the best means for achieving a balanced program with a maximum excess of benefits over costs.

The serious problem of water shortage and control I spoke of earlier has a variable impact throughout the United States. Some areas are in serious condition now; others still have some time left. In the Susquehanna, there will be serious problems to face in the future, but there is a sufficient supply of water to provide for prospective needs if the resource is used and managed wisely.

The water problems of the Susquehanna are supply and allocation, quality and variability. We are all aware of the problem of variability—too much water one season and not enough the next. For instance, in March 1936, there was a peak flow of 740,000 cubic feet per second at Harrisburg on the lower river, an all-time high, whereas in November 1930, the flow had been only a miserable 1600 cubic feet per second.

In an over-all sense, the water problems of the Susquehanna River Basin have not yet reached a critical stage. Thus there is now an opportunity to plan for the future with maximum effectiveness. In furtherance of this, Congress has requested a review of prior investigations of the Basin with a view to providing "a comprehensive plan for the development of the water and related land resources of the Susquehanna River Basin in the States of New York, Pennsylvania, and Maryland, in the combined interest of flood control, navigation, water supply, recreation, water-quality control, and other beneficial uses." The investigation has been assigned to the Baltimore District of the Corps of Engineers.

I would like now to introduce Mr. John T. Starr, Assistant Chief of Engineering for Civil Works in the Baltimore District, who will have a key role in our comprehensive study of the Susquehanna River Basin. He will discuss the problems that we face in the Basin and the steps we plan to take to solve these problems.

MR. STARR: Thank you, Colonel. Senator Barrett, ladies and gentlemen: There are many problems connected with the development of the water and related land resources of the Susquehanna River Basin. I would like to outline briefly some of these problems that we face and that we must solve in making the comprehensive investigation of the Basin as directed by the Senate Public Works Committee.

The first of these, and one of the most important, is water supply. While requirements for domestic and industrial water supply are being met at the present time without too much difficulty in most of the Susquehanna River Basin, demands for potable water for residential areas and water for industrial use have been increasing at a rapid rate. Water tables are beginning to recede and shortages are being felt in certain parts of the Basin, such as the Tioga River area of Pennsylvania. Lock Haven on the West Branch and Sunbury at the junction of the West and North Branches also felt the pinch during the low-flow period of the past winter. Most of the communities in the Susquehanna River Basin obtain their water supply from impoundments on upland streams and from wells and springs rather than from the river directly. It is probable, though, that future water needs will be such as to require the development of all sources, including the river itself.

Water supply requirements for the major residential-industrial areas will undoubtedly increase markedly, even within the near future, since developments are expanding at an accelerated rate in these areas. We must keep in mind that increased demand for water results not only from an increase in the number of people, but also from more water being required per person for a higher living standard.

Of importance, too, future needs for water rarely coincide with available sources in the immediate area. The common good usually requires adjustment by political agreement. As an example of this, Baltimore will soon come within the service area of the Basin when it receives Susquehanna River water through a 33-mile pipeline. Other communities outside the Basin may also become part of the service area in the future. Wilmington is one that can be mentioned. The water supply investigation will be conducted jointly by the Corps of Engineers, the United States Geological Survey, and the United States Public Health Service, with the cooperation of state and local agencies and planning groups.

Water quality control is also important. It has become a major problem. As reported by the United States Senate Select Committee on Water Resources, about 90% of the stream flows estimated to be required by 1980 in the East will be needed for the dilution of stream pollution even if present levels of waste treatment are doubled. Water quality control is a comparatively new term. It means more than just pollution abatement through treatment of wastes; it presupposes maximum waste treatment, and then goes beyond that by providing an extra quantity of water to further purify the river by natural means.

There are, in the Susquehanna Basin, approximately 300 municipal sewer systems, serving a population approaching two million and discharging into the Susquehanna River and its tributaries. Industrial wastes are discharged into the streams from approximately 500 sources. The streams receive large quantities of acid from coal-mine workings in the North Branch Sub-Basin, the West Branch Sub-Basin, and the Juniata River Sub-Basin. While many communities are under orders to reduce pollution by the construction of sewage treatment plants, and industrial plants have received similar orders, positive action is required to prevent further deterioration of water quality.

Other problems in the field of pollution and pollution control which will require consideration in the future in the Susquehanna River Basin are:

- (1) Heat pollution; that is, water temperature rise from industrial, conventional thermal-electric, and nuclear-electric plants;
- (2) Pollution which may result from the accidental discharge of atomic wastes or chemicals; and
- (3) Pollution associated with the cumulative effects of detergents which are stable compounds and tend ultimately to reappear, causing foaming and other undesirable effects.

With regard to the water-quality problem, the groundwork for cooperative studies has already been established between the Corps of Engineers and the United States Public Health Service. The Public Health Service is undertaking a study of water-supply and water-quality needs for the entire Chesapeake Bay Drainage Area, of which the Susquehanna River is an important part. In recognition of the urgency of the problems of the Susquehanna River Basin, it will receive priority in this study.

Next to pollution, the problem which has most dramatically been brought to the attention of the general public has been flood control. The problem of flood control and measures for alleviating damages in New York and Pennsylvania are well known. In fact, right here in Binghamton, all you have to do is take a walk within less than five minutes from where we are now sitting and we can see some of the flood control works. The Corps of Engineers' activities in this field will continue. As of the present, flood damages in the Susquehanna River Basin would average \$46,000,000 annually if no flood control projects had been built. But, as a result of flood control projects which have been built, these average annual damages have been reduced to \$25,000,000. This means that, whether we have large floods or small floods, we can expect in the Susquehanna River Basin average damages of \$25,000,000 each year. These damages will be reduced as authorized projects are constructed and can be reduced still further by projects, such as the proposed Rays-town Reservoir, which are not yet authorized. But, if all the presently authorized and presently proposed projects are constructed, some flood damages would still remain. We can see, then, that flood control will remain a factor in water resource planning in the Basin.

New residential and industrial developments will not only make additional flood control necessary and economically justifiable, but will require increased attention to the regulation of flood-plain occupancy. In this regard, Section 206 of Public Law 86-645, which is the Flood Control Act of 1960, authorizes the Chief of Engineers to,—I'd like to quote just briefly from the act,—“compile and disseminate information on floods and flood damages, including identification of areas subject to inundation by floods of various magnitudes and frequencies, and present general criteria for guidance in the use of flood-plain areas; and to provide engineering advice to local interests for their use in planning to ameliorate the flood hazard.” The means are thus provided for furnishing state and local governmental agencies a factual basis for reducing future flood damages through carefully considered and well-planned regulations governing the use of the flood plains.

A companion problem to reduction of floods along the main river and major tributaries, is water retardation in the minor sub-basins of the headwaters. Coordinated studies, during the comprehensive review, will be made with the Soil Conservation Service with a view to securing a comprehensive plan for water retardation and soil conservation

throughout the Basin. As an example, let us look at a similar study,—that on the Potomac River,—which is now in its final stage of formulation. We find the topography of the headwaters to be quite similar to that in the headwaters of the Susquehanna. In the Potomac study approximately 2,800 possible sites for small impoundments of the type usually constructed under the Watershed Protection Act were identified. After initial investigation, approximately 800 appeared worthy of more detailed evaluation. Ultimately, 416 sites have been determined to be economically feasible and will appear in the final plan. The development of these sites will solve an estimated 16% of the water needs of the Basin, will partially solve the flash-flood threat in the headwaters areas, and will have a significant effect on the flood threat on tributary streams. They have beneficial effects on the major reservoirs, which will be located on the major tributaries and the main stem of the Potomac, through reduction in siltation and increased flexibility of operation. These small headwater reservoirs can make a significant contribution to any over-all plan of river basin development, and they will be given as careful consideration in our study of the Susquehanna as they were in the Potomac.

As we all know, and as Professor Bordne pointed out, the demand for recreational facilities has been increasing at an accelerated rate and can be expected to increase far into the future. The public demand for water-based recreation areas is always greater than the capacity of sites that can be developed. Consideration will be given, during the course of the study, to providing recreational facilities at not only all future reservoirs but, also, at those reservoirs already in operation so that the Basin's full potential for water-associated recreation may be realized. Recreation needs will be determined in cooperation with the National Park Service and the interested state agencies, and studies will be made to establish plans to meet the needs best. It is interesting to note at this point that public recreational use at civil works projects of the Corps of Engineers has grown from an attendance of 16 million in 1950 to 109 million in 1960. We can confidently expect that it will assume even greater importance and use at our projects in the future.

It is important to note too that the addition of a body of water, with its accompanying recreational opportunities, is an economic asset to a region. The area is more attractive to new investment, land values are increased, and, as a result, the tax base is improved. This has happened, in a most dramatic manner, as a result of the Gifford Pinchot

State Park in Pennsylvania. It has happened, to a greater degree and on a broader scale, in the Arkansas-White-Red River basins as is pointed out in the recent report of the Outdoor Recreation Resources Review Commission. Both instances, and they are only two among many, show that reservoirs and their recreational facilities bring a lot of new money into a region, and the effects of this new money are felt throughout the region's entire economy. In such manner, the development of water resources can play an important part in economically depressed or economically underdeveloped areas in meeting the objectives of the recent Area Redevelopment Act.

Any new water resource development will, of course, be coordinated with the United States Fish and Wildlife Service, the Pennsylvania Fish and Game Commissions, the New York State Department of Conservation, and the Maryland Departments of Game and Inland Fish and of Tidewater Fisheries, so that measures which may be provided will not only preserve but will enhance fish and wildlife values in the Basin.

Hydroelectric power will be considered at those reservoirs which are studied where it is demonstrated that its provision would be economic, and, of course, only at such locations. In this connection, potentialities for pumped storage will also be studied. All hydroelectric studies that are made will be coordinated closely with the Federal Power Commission, the Department of the Interior, and the power companies in the service area.

It is expected too that irrigation, though now only a minor factor in the Susquehanna River Basin, will come increasingly into use in the future, since there are sound economic reasons for supplementing natural rainfall, particularly during dry periods. I think there again Professor Bordne brought that out quite well. Studies of this problem will be made in conjunction with the Department of Agriculture.

In order to relate the water resources to present and future needs, an economic base study will be made. This will be a long-range forecast of the trend of economic factors, such as population, employment, income, industry, agriculture, and commerce, in the Susquehanna River Basin and within the service area outside the Basin. Although designed primarily for consideration of water-related needs, the economic base study would have wide usefulness for many other kinds of long-range planning in the area by both government and private agencies.

Just as Colonel Podufaly has said was done in the Delaware Basin study, the investigation will involve the cooperative efforts of all other Federal departments concerned, as well as the planning and water resource agencies of the States of New York, Pennsylvania, Maryland, and possibly Delaware.

Now, major problems of natural resources development are economic and political as well as technical. A river basin is a water resources unit with close technical relationships among all water-management activities. There are relatively few basins, however, that have political or economic unity. Users of water and agencies attempting control act largely on their own. The gap between the technical unity that we often find in a Basin and the Basin's operational diversity is often wide and is, for example, the chief reason why pollution is a major problem. The cheapest course for an industrial plant or a community is simply to dump its waste into a river with as little treatment as possible or none at all. It may be plain that such pollution imposes a cost, but it will be borne by others down river.

The degree of water-resource management required in any basin is, to a great extent, a function of the adequacy of the available resources to meet needs. Today, in the populated eastern part of our country, such as the Susquehanna River Basin, we are rapidly approaching the time when total management will be required. To be effective, total management must regulate land use for maximum practicable retention and yield of water and retention of soil. Management must also control withdrawals from natural streams and it must regulate the discharge of impurities into the streams. It must assess and collect charges from users who are the direct beneficiaries of capital investments which have been made in order to create more adequate usable resources to meet our needs. Total water-resource management must also control and regulate all impoundment of water for any purpose whatsoever and must preserve reservoir sites for the future. It must regulate the occupancy of the flood plain. And, lastly, it must continually update and adjust the water-resource development plans in order to take account of changing conditions.

The continuing growth of our population without any growth of our available land and of the water that falls on that land, imposes a requirement for improved water-resource development and management. The methods for planning improved water-resource development and for

managing the improved resource are available. The Senate Public Works Committee has charged the Corps of Engineers to make a comprehensive study of "water and related land resources," but the Corps plans, just as was done in the Delaware and Potomac Basins, to utilize all the technical resources of the Federal Government and to enlist the cooperation of the three state governments involved and, also, the local governments involved. With the full cooperation of all concerned, the resulting report will be a basic tool for expanding the economy of this large and important area of the eastern United States.

SENATOR BARRETT: Thank you very much, Mr. Starr. I am sure that was most interesting to all of those here. For a while, when the Colonel was talking, I suspected that there might be a little private war going on between the Army and the college professors. The Colonel took issue with some of the remarks of the college professor who spoke. Nothing serious, I hope. Once in a while a difference of opinion is a very healthy thing.

We will now hear from a series of those representing the agencies of the Federal Government, who will be cooperating with the Army Engineers in the study of this Basin, and the first of those is a representative of the Department of Health, Education and Welfare. While I am not at all anxious to have anybody cut down on the time they want to take, might I point out that there are five or six representatives of separate agencies and as the attorneys would say, "time is of the essence." I would caution them not to be overly brief, but to bear in mind that we do want to get out of here by 12:30 for lunch, in order that we might get back as soon after 1:30 as possible. I know how hard that is going to be because the dining room, with all due respects to the management, is not a cafeteria, and it takes a little time to get fed. While on that subject, might I say, at this time, we hope those who attended the Steering Committee meeting last evening in Room 215 will meet for lunch together in the Sheraton Room right off the ballroom. All those who attended the Steering Committee meeting last night are invited to this luncheon, as well as those legislators from the counties bordering the Susquehanna, either in New York, Pennsylvania or Maryland. I think the legislative members from Maryland are probably very heavily engaged at the moment in a very minor sort of a chore—the matter of reapportionment of the legislative districts. This is something you can come to agreement on in very short order. It is very possible some of them will be here yet today.

I present at this time Mr. Lester Klashman, Regional Program Director for Water Supply and Pollution Control, Regions I and II, U. S. Public Health Service.

MR. KLASHMAN: Thank you, Senator Barrett. Ladies and gentlemen, I would like first to take just a few seconds to introduce Mr. Gerald Ferguson, our Project Director on the Chesapeake Bay-Susquehanna River Basins Water Quality Study. I think I would be amiss if I didn't also introduce a few other gentlemen: Mr. Mark Abelson who represents the Secretary of the Interior in the Northeast, and I think it would be nice if you all met Mr. Schwarz who is the Project Director, Corps of Engineers, Susquehanna River Basin Study, and Mr. Dodge, North Atlantic Director, Corps of Engineers.

I want to thank Mr. Starr for his discussion of pollution. We find it very interesting and will adjust our remarks accordingly, so we won't have any duplication.

The Public Health Service in the Department of Health, Education and Welfare has long recognized the need for a comprehensive water quality study of the Chesapeake Bay-Susquehanna River Drainage Basins. Such a study not only involves the coordinated efforts of the several states and local agencies, but also public and private institutions and industrial and commercial organizations, whose interests are directed to the most efficient development, utilization and management of the Basin's water resources.

Section 2a of Public Law 660, the Federal Water Pollution Control Act that was amended in the last session of the Congress, states that the Secretary ". . . shall, after careful investigation, and in cooperation with other Federal agencies, state water pollution control agencies, interstate agencies, municipalities and industries involved, prepare or develop a comprehensive program for eliminating or reducing the pollution of these interstate waters and the tributaries thereof and improving the sanitary condition of the water." The act goes on to state ". . . in such studies, due regard will be given for improvements which are necessary to preserve such waters for public water supply, industrial water supply, propagation of fish and wildlife, recreational services, industrial, and other legitimate purposes." This project, in which we are participating, is a series of regional projects designed to develop comprehensive plans for water quality control which will alleviate pollution problems and meet requirements of future years.

We, in our department, are currently involved in similar studies on the Columbia River, the Colorado River, the Illinois River as part of the Chicago diversion case on the Great Lakes, the Arkansas-Red-White River, and lastly on the Delaware estuary.

The purpose of this project will be to acquire complete knowledge of the Basin and, based upon this knowledge, to develop recommendations to protect and preserve the quality of surface, ground and coastal waters for all beneficial uses for the next 50 years. The project will be concerned with present and projected water requirements for domestic, municipal and industrial purposes and with the management of the quality of water resources for public health, community growth and industrial development, recreation, fish, wildlife and agriculture. The project seeks the active cooperation of Federal, state and local agencies and envisions the utilization of all available data which will contribute to the study. The project will involve correlative and cooperative studies with state governmental agencies having an interest in water resource development and also studies will be made in cooperation with the Federal agencies such as the Corps of Engineers, the Department of the Army, Department of the Interior and the Department of Agriculture, as discussed by both the Colonel and Mr. Starr.

In addition, public and private institutions will be consulted in order to utilize all the available sources of information. The resulting report will complement and supplement other available reports of the study of the Corps of Engineers, the Department of Agriculture and others. I should like to emphasize that as far as we Federal agencies are concerned, we will not be duplicating our efforts, but plan, as the Colonel and Mr. Starr have explained, to work cooperatively.

Water resources development is the planning and providing for the optimum utilization of water for all services. Water supply and water quality management is one of the several important facets of water resource development. Lacking a basin-wide authority or guide, the project envisions the need for careful coordination of the efforts of many agencies in the most efficient way possible to produce a comprehensive plan to guide and control the management of water supply and water quality and guide construction agencies to plan facilities that will insure required and reliable flows.

There are indications that the water supply requirements in future years will be so great that they can be met only by the most efficient use of all available sources including the reclamation of used water.

Water quality management involves two major activities: (1) control of polluting wastes, and (2) stream flow regulations. The latter should be a supplement to, not a substitute for, waste treatment in water quality control. The primary emphasis, we feel, must be on waste treatment. The difficulty of maintaining or restoring water quality is continually increasing because of the growing quantity of pollutants affecting our water. New technological developments are contributing new kinds of wastes which will have an impact on the basin's water resources. Although present knowledge will provide the solutions to many situations, there is a need to develop new knowledge to solve the problems associated with these basins. The evaluation of research requirements will be considered in the project. There are five major elements to a project. These are:

(1) A determination of water quantity, including an inventory of all available resources and predictions of future water needs;

(2) A determination of water quality, including studies to establish present quality and predictions of future quality needs;

(3) A determination of the adequacy of quantity and quality, including the pattern of future quantity and quality predicted needs;

(4) Development of a water management plan with recommendations to meet quantity needs and to protect and control quality; and

(5) Identification for research needs with special emphasis on special problems where adequate knowledge is now lacking.

A comprehensive water quality plan will be prepared based on the information obtained through the analysis of the economic projections, water resource inventory and special field investigations. The factors involved will include predictions of future water resource capabilities to satisfy these projected needs. Comprehensive water quality planning is a dynamic process. Continual cooperative coordination is vital to the preparation of this plan. Ever-changing conditions must be reflected in each element of the project. Effective communications must be established and

maintained in order that adjusted requirements may be reflected in the final recommendations of this water quality plan for the basin. Thank you very much.

SENATOR BARRETT: Thank you very much, Mr. Klashman. I am going to take just a half minute to ask that those who did not register do so. We would like to have a record of all those here. Another request that comes from the secretariat: Would those who have prepared statements, see to it that copies are given to the stenotypist.

The next speaker is from the Fish and Wildlife Service of the U. S. Department of the Interior, and I am a little confused at the moment as to whether Mr. Spinner is to speak or someone in his place. Mr. Marston will speak in place of Mr. Spinner.

MR. MARSTON: Senator Barrett, ladies and gentlemen. We in the Bureau of Sport Fisheries and Wildlife appreciate this opportunity to appear before this group to discuss fish and wildlife resources in connection with comprehensive planning in the Susquehanna Basin.

We are highly optimistic about the possibilities for developing fish and wildlife resources in this Basin. There are several reasons for this. First of all, conservation and development of fish and wildlife resources is one of the stated primary purposes in developing a comprehensive plan for the Basin.

Secondly, a recent agreement between the Department of the Interior and the Department of the Army in regard to land acquisition at Federal reservoirs provides for purchase of lands for fish and wildlife and outdoor recreation as well as for full control of all lands below the maximum flow line. This is a long step toward full realization by the public of the recreational and fish and wildlife potentials of each reservoir.

There is a third major reason for our optimism in regard to the Susquehanna Basin. I refer now to the spirit of good will and mutual cooperation between all groups, private, state and Federal, local or basin-wide, who have an interest in developing the Basin. This is evident in this meeting today and has been demonstrated in the past. I believe this is due to the realization by all concerned that we have in the Susquehanna Basin, not only problems to solve but also a golden opportunity to make a major contribution to the well-being of the people of the Basin and, in a larger sense, to the Nation as a whole.

I don't believe anyone doubts the recreational attraction exerted by fish and wildlife resources and the impact this has on business within a given area. The numbers of sportsmen in the field on opening day of either the fishing or hunting seasons demonstrate the interest in, and need for, this form of recreation.

Needs of the people for hunting and fishing opportunity are reflected in two nationwide surveys, one made in 1955 and the other in 1960 by this bureau. These surveys show that in the five years the numbers of hunters and fishermen in the nation increased from about 25 million to over 30 million, and they increased their expenditures from 2.9 to 3.9 billion dollars. These surveys also showed that one man in every four went fishing as did one of ten women. One of five men hunted in 1960 as did one in every 69 women. What is even more important are the projections of these recreational pursuits. If present indications are correct, by the year 1975, we will need to provide space for 45,000,000 sportsmen, an increase of about 50% in less than 15 years. The major purpose of our work in this Basin will be to do our best to meet these real needs of the future.

Fish and wildlife problems arise when the supply is not able to meet present or foreseeable future demands. Sometimes water development programs cause losses which create such problems, but it appears that wildlife resources will not be significantly damaged by project development in the Susquehanna Basin.

The one exception may be the effect of altered flows on the extremely important waterfowl habitat in upper Chesapeake Bay, particularly in the area known as Susquehanna Flats. Upper Chesapeake Bay is one of the major concentration points for waterfowl on the North American continent. Peak fall populations have been estimated at over two million.

There is, of course, opportunity for increasing wildlife populations and hence hunting opportunities in the Susquehanna Basin. The possibilities are greatest in the case of waterfowl and fur animals and least for the big-game and upland-game species.

The fisheries of the Basin will be our major problem. Although some fishery habitat is of excellent quality, the productivity and the recreational use of much of it are kept far below their potential because of several adverse factors.

The major factor is, of course, pollution of many hundreds of miles of streams by acid mine wastes and, to a lesser extent, by other pollutants. Solution of this one problem of water quality should be, and I am sure will be, a major item in the comprehensive plan.

The second most important factor is extreme fluctuation in the flows of many streams, with accompanying extremes of temperature variation.

A third major factor is lack of sufficient access to prime fishing areas, particularly in the more urbanized areas.

The problem of insufficient fishery resources to meet present and future needs can be solved only to the extent that the limiting effects of these factors can be eliminated or reduced. Present shortage is due mainly to lack of quality, not quantity, of habitat.

Our studies in the Basin will be made in cooperation with the state fish and game agencies. Our studies will be directed toward solution of the problems I have mentioned and, in cooperation with the other planning agencies, we will attempt to work out a mutually advantageous plan to derive maximum benefits from fish and wildlife resources. We plan to undertake the following studies:

- (1) We will appraise, in terms of habitat value and recreational use, the fishery resources that would be available without further development of water-use and control facilities.

- (2) We will determine the design and operational measures which will promote the greatest natural production of fish in the reservoirs.

- (3) We will study other means of improving reservoir fishery conditions, such as watershed protection above reservoir sites and pollution control.

- (4) We will determine the volume and pattern of stream flow which will assure optimum habitat conditions and maximum fishing use in the reaches downstream from the several dams.

- (5) We will locate concentrations of rough fish in the watershed and determine need and means for control to prevent adverse effects on reservoir fisheries.

- (6) We will cooperate with project planning engineers and hydrologists to work out feasible operation procedures which will permit conservation and development of areas suitable for waterfowl and other wildlife habitat.

There is no doubt that the Susquehanna Basin is on the threshold of tremendous improvements in its economic status and its attractiveness as a place to live and prosper. The present effort upon which we have all embarked will hasten and assure these improvements, through proper planning for the best use of all its resources. One of the Basin's greatest assets is its potential for recreational use, especially the out-of-door enjoyment of fish and wildlife. There is a public need for the fullest possible realization of this potential in our comprehensive plan. I thank you.

SENATOR BARRETT: Thank you very much, Mr. Marston. The next of those representing one of the main Federal agencies is Mr. Robert D. Perry, Assistant Conservationist of the Soil Conservation Service.

MR. PERRY: Senator Barrett, ladies and gentlemen.

The theme of this conference was announced as "Problems and Potential of the Susquehanna River Basin."

There will be many problems and possible solutions discussed here today. But I will touch on only two, and they involve principally the upstream portion of the Basin. Short titles for the two problems might be "People" and "Upstream Watersheds."

First, and to establish the important premise that basin planning requires coordinated planning of both upstream and downstream areas, let me quote from a report prepared by the Land and Water Policy Committee of the Department of Agriculture:

"Comprehensive river basin planning provides framework plans for coordinated works of improvement for the conservation and development of water and related land resources in both the upstream and downstream areas in river basins."

And quoting again from the same report:

"The development of comprehensive river basin plans will require participation by all of the concerned Federal, state and local agencies."

Now about the problem I have called "People." There are millions of people in the Basin. They can be broadly grouped as rural and urban. A vast majority of both groups must be in favor of any basin program before it can be carried to completion.

The urban or city people have special wants such as: flood protection, adequate good water for municipal and industrial use and for seemingly ever-increasing recreational opportunities. The principal concern of the urban people will be, "How long before this program will be in effect?" I do not believe it will be difficult to get their cooperation.

The major problem will be to work with rural landowners and get their active cooperation in a coordinated Basin program. To have a successful upstream program, many of these landowners will need to accelerate the soil and water conservation practices on their land. Without this cooperation, even the best engineered system of channels, levees and dams could never achieve the potentials of the Basin. Why? Because, without adequate management and preservation of the farms and other private land in the watershed, water runoff will be fast and muddy. By fast runoff I mean the opposite to the clear water you expect from springs, brooks and seeps that make a stream a thing of delight and a source of good water. Muddy water indicates that maintenance and operation cost of the project will be high. Also, muddy water indicates poor recreational facilities.

Some of you may be thinking the real problem is to protect the watershed. We will agree with you. But, be realistic. Probably 75% of the land in the Basin is privately-owned rural land. Ownership of these private lands will vary from a few acres into hundreds. These rural people don't have the same motivation for a complete basin program as the urban people. Generally, they have an ample good water supply and plenty of room to satisfy their recreation needs. I am sure all of you see the necessity of finding a way to get the cooperation of the rural people if the full potential of the Basin is to be realized.

Twenty years ago it might have taken twenty years to solve this "People" problem. But, some twenty years ago, local people started organizing soil conservation districts. Today, there are over 50 soil conservation districts serving just about all the rural area in the Basin. Each soil conservation district is a local unit of state government. Local people initiate and direct their own programs through their districts.

Each of these soil conservation districts has a memorandum of understanding with the Secretary of Agriculture that, among other things, provides for the furnishing of assistance to the individual farmers in the district. The Soil

Conservation Service technician interprets the soil survey and resources inventory in terms of feasible alternative physical and economic systems of land use and treatment. The needs and desires of the farmer get full consideration in the resulting plan, for it is, in fact, his own plan. This plan is called a Conservation Farm Plan. It provides for the maximum long range economic returns desired by the farmer and includes all needed conservation practices for his land. This approach provides a means for working with rural people, through their soil conservation districts, to obtain their cooperation in getting a coordinated approach and thereby developing the full potential of the Susquehanna River Basin.

"Upstream Watersheds" was mentioned as the second problem. Why? Because the whole of anything is the sum of all of its parts. Therefore, all of the benefits must be obtained if the full potential of the Basin is to be realized. Each upstream watershed must be planned and developed to its full potential. It involves fitting together the management of crop, range, and forest lands, and the treatment of water courses to minimize flood damages and sediment yields, in order to facilitate the movement of water into the soil for plant use, and to improve the quality and dependability of water supplies for urban as well as agricultural users.

The public needs to recognize that past river basin development has brought about two very divergent philosophies, one might almost say ideologies. The philosophy of controlling water by large dams on the main rivers must be squared with the philosophy of controlling runoff where it originates in the watershed.

To either philosophy let me say, top technical specialists of the Soil Conservation Service have consistently refused to support views of big dam opponents that the upstream watershed program within the constraints and limitations of Public Law 566 could be a substitute for big dams. It should be noted here, however, that the potentialities of a system of many small and intermediate size reservoirs involving total river basin needs from the farm to the river's mouth has never been really tested.

Up to this time, upstream watershed developments have been almost entirely supplementary to main river develop-

ments. In the jargon of planners, watershed improvements have been added increments justified by the remaining benefits after decisions were made on the number, size and location of major reservoirs and related downstream improvements. Watershed improvements may have been coordinated to an extent, but they have seldom been integrated as parts of river basin plans. Now, our scientific knowledge, including programming techniques of electronic data processing, is becoming sufficient to formulate and test many alternative systems of river basin development. With this information, the planners can determine how the surface water resources of a river basin should be retarded, stored and regulated, with due consideration to available ground water supplies and the need for related improvements such as channels, levees, watershed protection, and so forth, to achieve most nearly a predetermined set of objectives including the control of floods, provisions of water supply for municipal and industrial use, for irrigation, for streamflow regulation in the interest of pollution abatement, for fish and wildlife development, for recreation, for hydroelectric power and for navigation. In short, develop the full potential of the basin to meet the needs of the basin.

Each river basin and its tributary watersheds has its own combination of problems. Solutions must be tailored to fit these problems within sound technical standards and criteria. This is comprehensive planning. In many ways it is similar to soil and water conservation planning for individual farms and ranches where each plan is custom-made to solve that farm's problems of land use, land damage, and water management.

The opportunities for complementary use of land and water are recognized in the well-established principle of multiple use. This principle is followed in the objectives of the Watershed Protection and Flood Prevention Act, Public Law 566, which are stated as ". . . furthering the conservation, development, utilization and disposal of water and thereby preserving and protecting the Nation's land and water resources."

Further, the Outdoor Recreation Resources Review Commission's report to the President says:

"The broad scope of the small watershed program places it in a particularly favorable position to contribute to public recreational opportunities. Most of the Nation's small water-

sheds, including many adjacent to metropolitan areas, are eligible for treatment. The program has already brought opportunities for water-based recreation to many 'water scarce' areas"

As we face the increasingly complex land and water use and management problems, it becomes more apparent that there should be greater cooperation between the Federal and state and local agencies. The states possess enormous powers and accompanying responsibilities in the direction and control of land and water resources. A way needs to be found to utilize these powers and responsibilities in resource management programs together with the extensive specialized technical skill and financial resources of the Federal Government.

I hope we have established the fact that to help solve the "People" problem, the soil conservation districts—a local unit of state government—can be used. Also, to help solve the "Small Watershed" problem, the Public Law 566 approach integrated with a system of downstream controls can be used.

Certainly Public Law 566 projects are not new to this group. New York has 21 applications and 5 projects have been approved for construction. Pennsylvania has 32 applications and 10 projects approved for construction. Maryland has received 16 applications, of which 5 are approved for construction.

It may be a coincidence that you are in Broome County, New York, today. It is a hotbed for Public Law 566. One Broome County watershed project plan is on its way to Congress. Another is in the planning stage and two more are waiting their turn.

In summary let me state: the Soil Conservation Service believes there is a need for the coordinated and comprehensive development of the land and water resources of the Susquehanna River Basin. If comprehensive planning is undertaken in the basin, we would look forward to participation with all concerned Federal, state and local agencies. As an indication of the Federal Government's recognition of the desirability of this approach, let me quote from President Kennedy's Special Message on Natural Resources:

"This Administration accepts the goal urged by the Senate Select Committee to develop comprehensive river basin plans by 1970, in cooperation with the individual states."

SENATOR BARRETT: Thank you very much, Mr. Perry. I am sure we found that very interesting. Might I say to the folks here from Broome County, if you have a flood and can find a way to divert it down to Long Island, we could use about two inches of it. We haven't had any rain down there in so long that everything is pretty well dried up.

The next speaker will be Mr. Gilbert L. Varney, in charge of National Forest Watershed Management of the U. S. Department of Agriculture in the Eastern Region.

MR. VARNEY: Senator Barrett, ladies and gentlemen. It is a real pleasure for me to represent the Forest Service at this Tri-State Conference on the Problems and Potentials of the Susquehanna River Basin. Preliminary meetings such as these lay a firm foundation for a comprehensive study of development of the watershed and your invitation to participate in it is greatly appreciated.

The Forest Service is the technical agency in the Department of Agriculture assigned Federal responsibility for forestry programs. While a major responsibility is that of administering the national forests, it is also charged with overall leadership in forest and range conservation and for soil and water conservation applicable to lands used for forestry purposes. A further responsibility occurs in connection with the cooperative programs in the field of state and private forest land management. Since the Susquehanna Basin contains no national forest land, Forest Service responsibilities here are limited to the soil and water programs and cooperative protection and management programs on state and private land. The responsibility for forest research is also assigned to the Forest Service. Basic and applied research in forest influences and watershed management is currently being carried out through the Northeastern Forest Experiment Station and cooperating agencies. Information gained from these research activities will enable land managers to improve management practices and permit and encourage multiple use management of forest lands while protecting watershed values.

As many of you know, we work through the several state foresters organizations in carrying out these cooperative programs. The Forest Service does not operate as a Federal agency coming into a state and actually carrying out a program. We work on a cooperative basis with the state organization doing the job and the Service providing technical and financial assistance. In the Susquehanna Valley we work with the Division of Land and Forests in New York; in

Pennsylvania, the Department of Forests and Waters; and the Division of Forests and Parks in Maryland. You can readily see from the foregoing that the Forest Service has a considerable interest in the Susquehanna Basin and, through its cooperative programs, is already doing some of the things that need to be done.

Why does the Forest Service feel that the forest lands of the basin are important in considering the problems and potentials of the watershed? I have to join the Army now and disagree a little bit with the Professor. I'd like to agree with him, but he said that 70% of the Susquehanna was forest and we can only find about 53% of the area in forest lands. It is growing, however, in spite of the Megalopolis. We find that since the forest survey was made ten years ago, it has increased in forest area about 2% and the national inventory of soil and water conservation indicates that by 1975 it will increase another 2% in forest area, so that it is a growing potential. At the present time we estimate that there are 9,265,000 acres, or nearly 53% of the land surface in forests. About 20% of this is owned by state, municipal and county agencies—it is in public ownership. The remaining 80% or 7½ million acres is owned by private individuals. These forests occupy the critical upper slopes and ridges of the headwaters area where topographic and orographic conditions are such that you get a greater volume of rainfall and also your high intensity rainfall. They are very important from the standpoint of watershed protection. Lastly, forest cover is susceptible to long-term management and, by application of proper practices, can be brought to an optimum condition for the infiltration and storage of precipitation in the soil profile.

The first and best place to begin control and management of the water that falls on the basin is on the land on which it falls. Since forests occupy more than half of the basin's land surface and more precipitation falls on it, they offer the land manager the best opportunity to control both the quality and quantity of water moving off the land to stream channels. Once in the channel, it becomes the problem of the engineers and not land management.

What has been done by the Forest Service in the past to meet its obligations and responsibilities in the fields of forest management and protection? As indicated previously, we have been a silent partner in the protection and management of watershed forest lands for over 60 years. Technical assistance was provided to private forest-land owners as early as 1898, at the time when the Forest Service was

transferred to the Department of Agriculture from the Department of the Interior. In 1911, the Weeks Law authorized the establishment of national forests in the East and authorized further and more systematic cooperation with the states in the protection of the forests in the headwaters of navigable streams.

The Clarke-McNary Act of 1924 greatly widened the scope of cooperation in fire control. It also provided for Federal cooperation with the states in forest extension work and in the production of planting stock to reforest cut-over and burned-over watershed lands. New York, Pennsylvania, and Maryland, the states represented here, all signed a cooperative agreement with the Forest Service under the Clarke-McNary Law in 1925 and have continued their cooperation up to the present time. We look forward to many more years of effective cooperation with these states.

Federal cooperation with the states for providing "on the ground" aid to farm woodland owners was initiated with the Norris-Dovey Cooperative Act of 1937. Efforts in this field were materially broadened by the Cooperative Forest Management Act of 1950, which authorized Forest Service cooperation with the state forestry agencies in providing technical advice and assistance to private forest-land owners and processors of primary forest products.

Since 1954, additional technical and financial assistance has been provided under Public Law 566, the Small Watershed Protection and Flood Protection Act. Forestry activities under this act are aimed at rehabilitating disturbed forest areas and improving forest management practices on forest lands in approved project areas. At present, there are seven such projects in the Susquehanna Basin.

What is the present condition of the 9,265,000 acres of forest as watershed protection cover? Frankly, it's not so good. We have a long way to go in developing the full potential of the basin's forests for watershed protection. About the only samples we have of forest hydrologic condition, or the relative ability of a forest cover and soil complex to absorb and retain precipitation, are on the seven Public Law 566 watersheds that have been studied and planned. These are the ones already authorized in the Susquehanna Basin. They are not comparable to the total number in the states which Mr. Perry mentioned. These watersheds, four in Pennsylvania, two in New York, and one in Maryland, contain a total of 297 forest hydrologic condition plots. Of this total, 21 percent were rated very poor; 39 percent poor; 29

percent fair; 10 percent good; and 1 percent very good. In other words, only 11 percent of the forest provides satisfactory watershed protection cover and 60 percent of it is in bad condition. Such figures should be reversed if we are to realize the optimum potential of our forest lands for watershed protection purposes.

What should be done to improve the 90 percent of our forest land that is not in good hydrologic condition? We've got to do just about what Bob Perry talked about. We've got to get to some 173,000 different landowners on practically 7 million acres of land. The variation in management is very wide; different owners own it for different purposes. Some of them have no real purpose in ownership, it was left to them, and there is practically no management. Some holdings grow wild without any conscious attempt at management, while others suffer complete liquidation of one resource—timber—as often as merchantable values develop.

Since most of our problems of poor watershed management are on private land, any success in solving these problems will have to depend upon changing private-land owner attitudes.

In addition to developing changes in landowner attitude, we must provide these landowners with technical assistance to aid them in determining what to do with their land. Assistance is needed in preparing periodic management plans, in designating needed harvesting and cultural operations to improve stands from both a hydrological and timber production standpoint. Assistance is needed in locating, designing, and constructing the necessary transportation system to remove the forest products grown on the land. Poorly-located and poorly-constructed logging roads can foul up more water supplies than any other forest operation.

In addition to the technical assistance, we need a stronger program of forest and watershed research.

What can the Forest Service and its cooperators do to help develop a comprehensive plan for effective use and control of the water resources of the Susquehanna? A more accurate picture of the present hydrologic condition of forest lands can be developed as a basis for decision on the steps needed to improve forest hydrologic conditions in order to realize optimum watershed protection benefits from the forest lands of the basin. The extent and cost of necessary rehabilitation measures can be determined. An inventory can be prepared of all of the forest land resources,—timber,

water, recreation,—and guidelines developed to encourage better multiple use management of the privately-owned forest land of the basin.

In summary, the Forest Service is carrying on cooperative programs in forest land protection and management in the Susquehanna Basin. Current research programs of the Forest Service and cooperating agencies are pointing the way to more effective management of the multiple-use resources of forest land.

While present forest hydrologic conditions must be rated as highly unsatisfactory, they can be improved rapidly by applying improved management practices on the privately-owned forest land of the Basin.

Forests constitute the most important cover complex in the basin and receive a major portion of the precipitation. Any comprehensive plan for the water resources of the basin must consider the effect of forest cover on the water runoff. The Forest Service will be glad to contribute to the development of such a comprehensive plan. Thank you.

SENATOR BARRETT: Thank you very much, Mr. Varney. The speakers this morning, and there is at least one to go and possibly two, have mentioned, in almost every instance, the fact that there is need for public support for anything we do here. I don't believe that can be overemphasized because, however meritorious is a plan for development of the Susquehanna River Basin, it cannot, based upon my experience, get very far without a tremendous amount of public support. Fortunately, very fortunately, we have such an association which is working in this direction, and we have Mayor Slattery with us today. I am not going to call upon him for a speech at the moment, but I do hope he will stay around until after lunch because I want him to tell something of the objectives and the work that is being done by the Susquehanna River Basin Association, which is the outfit that we must depend upon to bring to us the public support that will be needed in anything that we can do both at the Federal level and the state level, to carry out a well coordinated program. We are willing, Mayor Slattery, to carry the ball, and we will be expecting from your organization a long forward pass of public opinion that is so vital if anything is to be done. This afternoon we will call upon you, if you will, to tell us something about the organization, something about the need for the expansion of it in terms of membership to carry it into areas of the Basin where perhaps it is not now represented.

The next speaker will be Mr. Alfred W. Buck, Park Planner, Recreation Resource Surveys Staff of the U. S. Department of the Interior, National Park Service.

MR. BUCK: Senator Barrett, ladies and gentlemen. Dr. Bordne, Mr. Starr and Mr. Marston have covered the recreation aspects of the Susquehanna in some limited degree. We all realize, of course, the monstrous boom in recreation activities, particularly the water-associated type. I will limit my remarks, which will not come anywhere near ten minutes, I hope.

How the Park Service gets into the picture, what we do and how we do it, or how we attempt to do it,—let us put it this way: Most of you are familiar, I am sure, with the National Park Service as it is related to the administration of national parks, monuments, historic sites, et cetera, such as Yellowstone, Grand Canyon, the Great Smokies and other areas. You are also familiar with the Stetson, similar to the Mountie in Canada. Therefore, you might wonder why I am here without a uniform, a hat and so forth. I am one of the nonuniformed members in the Park Service and we are engaged in one facet of our work with which you may not be familiar. This is in connection with our cooperative activity program in which we assist other Federal, state and local agencies in their respective recreation programs. It is in this phase of our work that we furnish recreation planning assistance to the Corps of Engineers in their basin and individual reservoir site studies.

The authority for our participation in this type of activity is based on a time-worn and shop-worn act which goes back to 1936. That authority is the Park, Parkway and Recreation Area Study Act of 1936, which directs this Service, meaning the Park Service, to cooperate with the various Federal, state and local agencies in the development of their respective park and recreation area programs. I would like to emphasize that we enter the picture only at the agency's request, although on occasion we do needle some of the agencies to put forth a little more effort in their recreation program.

The Regional Office from which I come is located in Philadelphia, Region V. Actually there are four other regional offices, plus a new regional office set up in the District of Columbia for administration of the national park areas. Our office covers 16 states extending to Wisconsin out along the Great Lakes and up into New England, and the

southern boundary is Indiana, Ohio, Pennsylvania, Maryland and Delaware. I would like to emphasize that in connection with our work with the Corps of Engineers, we receive requests for reservoir evaluations and basin studies from 12 of the district offices and/or five division offices of the Corps of Engineers, so that you can see that we are spread pretty thin, although we do endeavor to do the best we can.

Concerning reservoir studies that we have completed,—the Colonel and Mr. Starr and others have mentioned the Delaware River Basin study. As a result of that study, we recommended that the Tocks Island Reservoir project be developed and administered as a national recreation area. That will be the first one of its kind in the East if the project is authorized and money is made available. Other national recreation areas involving water-controlled projects include Lake Mead in Arizona-Nevada, Coulee Dam in Washington and Shadow Mountain in Colorado, adjoining the Rocky Mountains National Park.

As another result of the Delaware Basin Study, we recommended recreation development at seven other reservoirs in which the Federal Government would be a partial sponsor and at nine other reservoirs which will be built by the state or other appropriate authorities. Additional basin studies that we have participated in are the Scioto River Basin in Ohio and the Potomac River Basin in Maryland, Virginia and West Virginia, which was handled primarily by our Region I Office in Richmond. We are just now getting organized to undertake an Ohio River Basin study which will be a four year project and we are just now establishing a field office in Lebanon, in suburban Cincinnati, which will be opened on June 1 to undertake that project. The Corps of Engineers has requested that we participate in the Susquehanna River Basin study, if and when authorized. We will be pleased to participate, if requested. We do, however, recommend that the Basin study be comprehensive.

Regarding study procedures, in our basin approach we evaluate the over-all recreation resources of the basin, both present and potential, and also analyze the recreation potential of the proposed individual reservoir sites and the development costs and benefits that would accrue to the respective projects.

One of our primary recommendations is the acquisition of adequate land in order to accommodate the expected visitation and to realize the maximum benefits from the reser-

voir projects. This recommendation includes complete control of the reservoir shoreline. The purpose of this strip, of course, is to provide public access to the reservoir at all points on the reservoir and, at the same time, to protect the recreation and natural resources of the project. The Corps of Engineers is currently considering, and may have put into effect, a more liberal land acquisition policy regarding lands for general recreation and other purposes. Just recently,—Mr. Starr, I believe,—mentioned the Interior Department and Army Department have come out with a joint land acquisition policy which will probably provide more land for recreation, which will include land for fish and wildlife use.

Dr. Bordne mentioned quite extensively the R. F. F. report. If any of you are interested in another report which has just come off the press and which was touched on recently, it is the report of the Outdoor Recreational Review Commission which published a summary report and I believe there are 27 appendices to that. It covers all facets of recreation in the United States. Thank you very much.

SENATOR BARRETT: Thank you very much, Mr. Buck. With the consent of Mr. Hendricks, who is the next gentleman on the program, and to say pull a fast one on the restaurant next door, we are going to put Mr. Hendricks over, with his consent, so we can jump the gun on the restaurant and reconvene about 1:30.

This Conference is now recessed until 1:30 p. m.

(AFTERNOON SESSION)

SENATOR BARRETT: This afternoon's session will start with a talk by Mr. E. L. Hendricks on the subject of "Floods and Flood Plain Zoning." Mr. Hendricks is associated with the U. S. Geological Survey of the U. S. Department of the Interior.

MR. HENDRICKS: Senator Barrett, fellow participants in the conference, I think perhaps we will have a change of pace in two ways. One, we've all had lunch and are now ready to take our usual afternoon siesta, and second, perhaps the topic of discussion assigned to me will be slightly different from what you are accustomed to hearing. I am not sure but what this is the first of this kind of conference I've attended in which there has been a discussion of flood plain zoning.

The word "flood plain zoning" has a distasteful connotation to many people. If you find yourself in that class, you substitute some other word,—land use adjustment or land use regulation or whatever term suits you best,—and we all know what we are talking about. Perhaps a little background quickly on why we find ourselves where we are in considering this alternative measure to reduce the damage from disastrous floods. We seem to be now, and I am sure there would be some slight dispute on this point, at least following a trend in the direction of facing a paradoxical situation: whereas nationwide we are increasing our spending for flood protection and flood control works, we find ourselves, on the other hand, facing an increasing flood damage potential in many places. This is simply because, of course, relying on the protection of flood control works, people have moved unwisely, in many cases, into flood plain areas so that now the potential damage is perhaps greater than sometimes it had been before.

Dependence on protective works, as I've said, actually encourages people to move into flood plain areas. Now perhaps the greatest single cause here is the cause which was mentioned so prominently this morning, and this is the explosive growth of the urban areas, and, because land is at such a premium at our urban areas, we have found increasing numbers of businesses and industries and even homes moving into flood hazard areas.

Now these facts which I have briefly run across here, I think, add to what is, in effect, a new dimension to the flood

problem. We have to adjust our thinking about what constitutes the total of the flood control effort that is required of us. We have to readjust our thinking about the kind of flood control efforts that we face. In the decades that have gone before, probably very rightly, we have depended almost completely on flood protective works, levees, dams and what have you.

In this decade, however, we have been turning toward other means of alleviating flood damage. Two principal things have been considered. The first of these is flood insurance. We got a Federal Flood Insurance Act passed in 1956, turning this question over to the Federal Housing and Finance Agency. They spent a year studying the problem and devising plans and came back to Congress with a plan which Congress found unacceptable. I am not sure just exactly who was responsible for the unacceptability of the insurance plan, but it fell down completely because perhaps the actuarial influence convinced the home finance agency that it was desirable just to spread the risk totally upon all policyholders, so that the man living on high ground paid a premium for flood insurance equal to the premium paid by the man on the flood plain. Well, of course, this defeated the purpose of flood insurance, which originally was to keep people from risking life and limb and property in flood plains. It actually would have encouraged them to do so because it would have subsidized them through the payment of insurance premiums by those who ran no risk. It is easy to see, therefore, that the flood insurance program to date has not at all gotten off the ground. There seems to be little evidence that it will ever get seriously off the ground.

Now the other method of flood damage alleviation which is presently being considered and adopted in many places is, as I mentioned, flood plain zoning, or the regulation of flood plain land use. Now both of these two alternative measures, both the insurance and the flood plain zoning feature, attempt to keep man away from the flood waters, whereas protective works attempt to keep the flood waters away from man, or one way to state it is that the flood protective works attempt to control floods, whereas these other two attempt to control men. Clearly, and I would lay down the thesis quickly lest I be misunderstood, that in fact both approaches are really correct and needful. The real problem that faces many of us, of course, in decision-making positions is what combination of these things is most advantageous in the particular case at hand. I think we see dimly perhaps, I am not quite sure, but I believe it can be said that we are seeing now the shadowy form at least, of a

Federal policy on this question. It seems to be Federal policy now to encourage the regulation of flood plain use as a supplement to other methods for reducing flood damage. For example, the Senate Select Committee, whose report was referred to here several times this morning, recommended that the Federal Government cooperate with the states in seeking measures to encourage this alternative. It also recommended that the delineation of flood hazard areas be incorporated in our nationwide program for flood data. Another evidence that this is true is the Flood Control Act of 1960, also referred to, which authorizes the Corps of Engineers to publish flood information reports upon request and in cooperation with local agencies. The Geological Survey, which I represent, even prior to that time, under its existing authorization, had begun several such limited studies in cooperation with cities and municipalities in analyzing the flood hazard which they faced in critical areas.

Now there are two principal merits to the flood zoning approach and I want to cross these quickly. First, it prevents flood damage by keeping susceptible works away from the flood hazard area; second, it makes future protection by engineering works possible without excessive costs. Many reservoir sites examined by Federal or other agencies in times past and adjudged then to be feasible are not now feasible simply because encroachment of the flood plain lands has made acquisition costs prohibitive. Flood zoning, if properly applied, would accomplish both of these merits which I have quickly mentioned.

Now let me mention briefly also the four principal steps in implementing the flood zone approach. I am not qualified to discuss all of these, but merely to call them to your attention.

The four principal steps in implementing the flood zoning approach:

- (1) Evaluate the flood hazards. This is largely a technical matter. This is where we engineers get in on the act.
- (2) Inform the public and public officials of these flood hazards, particularly those officials who must make the all-important decisions.
- (3) Interpret these hazards and the technical data on these hazards. Sometimes those of us in the technical fields forget that the jargon we put in our reports is really unintelligible to a great many people. It requires interpretation.
- (4) Translate the information and knowledge into action.

I suggest four kinds of interpretation that it requires. One is technical, which is the field in which many of us, the engineers, operate; the other is economical. There are economics involved in this question of interpretation of hazards and adjusting occupancy to the degree of risk. There are social questions to be answered, so that flood data and all of the related facts must be interpreted socially. Someone must help the populace to understand the choices that it has before it, and I contend, for one, that the public has a right to make a choice, if you please, for something which it wants rather than for the thing that necessarily may seem to be the most economic in the particular case. Someone needs to evaluate, from the social point of view, the alternatives which the public faces.

There is also need for political interpretation. Most of us who operate in the water resources field know for sure that you get no place either in discussing plans, as we are doing here, or in implementing plans, as you propose to do in the future, unless someone is skillful in working with the various factions and elements that must cooperate to get this job done. Call this political, if you please, there is a big job to be done in interpreting the information that might be available on the question of flood zoning.

Now, let's look at these very quickly, one at a time. First, evaluation of the flood hazards. This merely, in my view, involves the question of looking at the land, determining how frequently it is flooded, what the odds or probability is that a particular plot of ground in a flood plain will be flooded and then allow individuals to make their choice. You go to the race course and you pick up your two bucks and you go to the window and you assess the odds and put down the money on a horse that is 20 to 1, 12 to 1, or, as I usually do, 30 to 1, and you lose it. We understand this when we play the odds. As a matter of fact, there is little that any of us do in this life or any aspect of our life that doesn't involve an element of risk. The occupancy of flood plains is no exception to, let us say, this rule of life.

The evaluation, as I said, of flood hazards is largely a technical matter. The earliest effort, I think, that we can point to in the assistance to municipalities in evaluating flood hazard efforts perhaps goes back to the TVA. TVA started a program in 1952, as a matter of fact, ten years ago, to give specific assistance to communities by making flood hazard reports for them. The recent act authorizing the Corps of Engineers to get in this field in a big way is, I think, the

opening move in a large scale effort in this country to provide, wherever it is needed, the technical data and information required as a base for flood plain zoning.

Now the public may be informed in several different ways, not all of which I will be able to mention. Let me mention two ways by which the public may be informed. My own agency, I think, pioneered the first one I wanted to mention, and this is simply the publication of the flood hazard areas, and we have done it by publishing maps showing the areas inundated by current floods. We started, back in 1958, to put out a pilot map of the Topeka, Kansas, area and many of you may be familiar with it; it was the first of its kind. We took a standard topographic map of the Topeka area; we delineated the area that was flooded during the 1951 flood, which was an exceptional flood, and we overprinted this standard topographic map with an area in blue showing the area that was inundated by that flood. Some very interesting results have come out of the publication of that map, but I believe that it does signal another milestone in publicizing flood hazards in this country. Since that time, we have expanded our programs so that it is now our national policy that wherever it is possible, we use flood inundation maps as one of the methods of standard reporting on current floods. This is in addition to the normal series of reports which we publish on floods.

The second major way I want to mention of informing the public about flood hazards is, of course, the flood information report, which is the type that the Corps of Engineers will make under its present authorization and the Tennessee Valley Authority makes and the Geological Survey may, on occasion, make. There are many other ways, but these are the two that I want to mention in passing.

This information, as I said, must be interpreted, and I mentioned four ways in which it must be interpreted. I will not review those, but merely at this moment say that this really is the big problem. We can solve the technical problems. I speak confidently as an engineer in the field. I believe we can solve the technical problems. I am not so sure that the other problems can be so easily solved. I think the big problem is going to be in the matter of interpretation of the data that are available for those people who must take that fourth step, which I may not have mentioned in passing, in implementing flood zoning measures, which is to translate the information and knowledge into action. This is purely a function of the local agencies. They are the ones that pass the flood zoning ordinances or the building code

revisions that are required to get flood proofing or whatever else may be the measures. This is really the big problem—translation and interpretation, to the public and translation of these things into action.

Quickly in closing I would say any plan for study of the Susquehanna River Basin must provide for all four of these primary steps which I have mentioned. It is perhaps basically my function here to point out to you that all of the work on flood plain zoning, all the social, political or economic work that might be done, is really of no avail and certainly extremely unintelligible unless it is based on an adequate knowledge of the technical facts in the case.

We have a great deal of flood information on the Susquehanna Basin. We have generalized this flood information in a number of reports. My agency has covered every part of the Susquehanna with generalized flood frequency reports. But flood plain zoning is, after all, a local question, and all the generalized information must, in some fashion, be made specific in relation to the site under study. A general study of floods and of flood plain zoning, *per se*, in the Susquehanna River Basin will not be enough. Any plan must, of necessity, lay a foundation for an adequate base of observed data on floods and the physical characteristics of the flood channels and flood plains and all the related technical information on flood frequency, flood profiles, flood hydrographs, areas inundated, water depth, water velocity and what have you. Perhaps I should just close by saying that if I would have done nothing in these few minutes except to cause you to consider all of the dimensions of the flood problem, my time might have been well spent.

SENATOR BARRETT: Let me assure you, Mr. Hendricks, that your time was well spent in pointing out this problem and the need for some reasonable type of flood plain zoning. I've heard about flood plain zoning for a long time. As Mr. Hendricks talked, I thought of the famous remark of Mark Twain who said that everybody talks about the weather, but nobody does anything about it. A lot of people talk about flood plain zoning, but little is done about it.

Recently out on Long Island, as Commissioner Wilm knows and as Senator Mackell also knows, we suffered very severe damage in the March storm. We created, in the legislature, a temporary Commission on the Atlantic Shoreline to take a quick look at this thing to see what we might come up with in terms of some type of permanent protection for our barrier beach. We had an inspection trip the

other day with members of the Commission, using two of the dual egg beater helicopters of the New York Airways. I want you, if any of you have in mind reducing, to forget about Metracal and go for a ride in one of these egg beaters. Believe me, it will shake some of that soft off of you. The thing that impressed me, in riding over the outer beach, the Great South Beach, down towards Hampton particularly, was that people are building back on an even more fabulous basis than previously, replacing a house that had just fallen off the dunes into the ocean with a more fabulous institution even closer to the ocean. These places cannot be insured for flood damage or for water damage because no one will write the insurance. Even lawyers have gotten out of the picture, and, even when lawyers were in it, the premium was 25 percent of the full value of the property per year. So that, if you owned a \$20,000 house, your annual premium for water damage insurance was \$5,000 a year. Here we are confronted now with people building right back on the brink of the dunes, if you will, \$25,000, \$35,000 and \$60,000 houses. It's a great economy we are living under, believe me, when people can afford to run those risks.

When I suggested, at the first meeting of the Commission, that the towns and villages on the beach adopt some very rigid ordinances that would withhold a building permit until such time as the Commission at least had an opportunity to make recommendations, you have no idea of the resistance on the part of the public that I was confronted with. They wanted to go right back again where the ocean was. It need only be mad for about an hour, you know, to wreck everything in front of it. But you can take from that some of the difficulties you have in trying to get the public to accept flood plain zoning. I think this is true of river basins generally. It certainly is true of the localities that have been destroyed by earthquakes. Santa Barbara built back bigger and better than ever, after the bad earthquake there. People seem to want to take these risks, and then when they do, they look to government always to bail them out of their difficulties. After the government bails them out, they want to put up a sign "private, no trespassing."

I have a brief memorandum here from the delightful lady sitting over at the registration desk who represents the Pennsylvania League of Women Voters. She calls my attention to a pamphlet that was distributed last night. This pamphlet is a study of the river basin prepared and published by the League of Women Voters of Pennsylvania—A Study of the Susquehanna Basin. Might I say that now

that the gals have become interested in the Susquehanna River, the success of this enterprise is assured. If any of you are interested in having a complete file on what the League has done in their study, the booklets are available at 75 cents apiece.

I was going to say we would turn to page two, but better it seems to me that this would be a nice time to hear a few words from Mayor Slattery of Wilkes-Barre. I hope the Mayor will tell us something of the organization, something of the ambition, and something of the work that is being done by the public support group that we need so badly if we hope to get anything done. Ladies and Gentlemen, Mayor Slattery of Wilkes-Barre.

MAYOR SLATTERY: Senator Barrett, distinguished members of our legislatures of the three states involved, ladies and gentlemen. I am the brand new President of a brand new corporation, known as the Susquehanna River Basin Association. We certainly pay our deep respects and express our humble thanks to you distinguished legislators who have, in fact, jumped the gun over what has been done in some of the other major river basins. With respect to the Delaware you are here seven years in advance of what the legislatures of the four states involved there did.

Every word that we have heard here today is sweet music; every note is sweet to many millions of people. I have asked some 18 or 20 members of our association, who are here from the three states, what they thought about these expressions of what can be done, as made by these representatives of Federal agencies, and they have used the words "splendid" and "terrific." We are off to a very, very good start.

One gentleman noted the fact that there are three million of us who live in this Basin in urban complexes. Never forget that. With the vast agricultural land, there is approximately another million of New Yorkers, Pennsylvanians and Marylanders who live in our Basin. But more importantly, we believe that we speak for 15 million American voices, because Baltimore City and that tremendous industrial area there, as has been intimated by the Colonel from the U. S. Corps of Engineers, and Wilmington, Delaware—and we also know the complete Delmarva peninsula—have greedy eyes upon the water of the Susquehanna.

Now, of course, you want to know in a word or so, what is the meaning of the Susquehanna River Basin Association?

As I have expressed to the other officers and the members of the Board of Directors, we are a dignified, but, I hope, an intelligent lobbying association. But more important than that, we don't intend only to get on the backs of the legislators; we don't intend only to harass them to get things done, because we are well underway here with high purpose and intelligence as shown; but we are a propaganda agency too for educational purposes, and this is the very core of our being. We will spread the gospel so that these legislatures and those who are in Congress will be able to do what should be done.

We have been many years neglectful of what should be done for the final comprehensive survey and development of the Susquehanna River Watershed—the entire Basin. We have been parochial as we have approached this in the past. Those days, we hope, are gone forever. Now we hope that Congress and the three states and the citizens who live in our Basin will paint the whole picture.

If public opinion is a tool, then we want you to know, Senator Barrett and Representative Breth of Pennsylvania, that we will help to fabricate the tools so you can use them well and, we trust, expeditiously. We are going to talk to all of the service organizations throughout the Basin; we are going to talk to libraries, to women's organizations, all of the nonprofit but dedicated people in their various groups and associations in order to get into a fever of enthusiasm of public opinion in the three states, into every area of the 27,500 square miles that composes our river basin.

When we do this, we are not going to do it as the preacher in one of the southern churches did, when on a Sunday he told his congregation, "I have reviewed some of the Ten Commandments with you, and next Sunday I'm going to talk about that commandment that deals with veracity." He said, "I want everyone of you here to read the 27th Chapter of Romans and come back here next Sunday." The next Sunday, the congregation came back and the preacher said, "now I'm going to talk about veracity. Which of you people have read the 27th Chapter of Romans?" Sporadically, all around the congregation, the hands started to go up. He said, "you is exactly the people I want to talk to, because there just ain't no 27th Chapter of Romans." But there is a book—the Senator has told you about this book. This is a tremendous book written by the League of Women Voters of Pennsylvania, under the editorship of Mrs. Dusenberre from Wellsboro, Pennsylvania.

It is well worth your while and the 75 cents. I understand it is on sale here, and I get no commission. Thank you very much.

SENATOR BARRETT: Mayor Slattery, let me say if there are any states here, any political leaders, any senate districts, any assembly districts, any political leaders of any of the cities looking for a candidate for anything, here is your boy.

We tried, as I think everyone in the room knows, to induce the chief executives of the three states to be here at this conference. We ran into all sorts of previously made commitments, some of which the chief executives were able to cancel and some they were not. Governor Tawes of Maryland, of course, could not be here because of the non-controversial bill that is pending in a Special Session of the Maryland Legislature. Governor Lawrence and Governor Rockefeller, as everyone knows, are extremely busy people, and both of them simply were unable to be here. What we have done is to ask someone from each of the states to say about what we felt the governors of these three states would say. Harold Wilm was to represent the Governor, but, because he is on the program a little bit later, he asked me if I would not present what I believe to be the Governor's views in connection with this conference.

Today's meeting marks the start of a major project on the part of three states—Pennsylvania, Maryland and New York—working in conjunction with the Federal Government. Here in the Susquehanna, we have a tremendous river basin. It has been said that it is the longest river with the largest drainage area of any stream in the North Atlantic drainage, south of the St. Lawrence. When you realize the St. Lawrence drains the Great Lakes, you begin to put the Susquehanna into perspective. The Susquehanna covers nearly one-half of the territory of our neighbor, the Commonwealth of Pennsylvania; a large area in southern New York, embodying one of the important urban regions; a smaller area in Maryland, but of vital importance to the Free State. Some idea of the magnitude of the watershed can be gained from the fact that it embraces 27,500 square miles of territory in the states. Size, of course, is only one criterion of the importance of the Basin. The welfare of major urban and industrial areas within the Basin, such as the one in which we are now meeting, is dependent upon the effective utilization of the water resources of the Susquehanna drainage area. But despite its size, despite its importance, despite its potential, it has been said of the Susquehanna that it is the largest undeveloped river in the

East. Certainly if we are to have regard for the future of this area, if we have regard for the future of our three states, we cannot let it remain undeveloped.

The problem which we seek to solve is the problem of underdevelopment. This problem is underlined by the need for utilizing and developing water resources, and the major factor is the maximum of recreational and economic growth of the area of the Basin. The problem of underdevelopment is paralleled by problems of abuse, pollution, erosion, floods, et cetera. The general problems of improper utilization of water and related land resources are characteristic of many of our river basins. We need to plan and to program; we need a comprehensive water plan for the development of the water related resources of the Basin in Pennsylvania, in Maryland and in New York, including flood control, water supply, recreation, water quality control, irrigation and all of the other uses that should be included in any comprehensive plan.

Our basic need then is also a major opportunity. An opportunity that is the greater in that the water problems of the Susquehanna have not yet reached a critical stage. This makes planning of maximum effectiveness possible. We do not have the many restrictions the states of New York and Pennsylvania had to contend with in the Delaware, where previous development had already established a framework that could not be wisely displaced. Work has already begun. Congress has enacted legislation setting up beginnings of the Susquehanna River Watershed Development Program. A sum has been included in the Federal budget for preliminary planning. We are happy to hear of the action taken by Pennsylvania, paralleling the Federal action. Dams are being built; sites for reservoirs are being described; but we need to take further steps. We must secure governmental coordination among the three states and the Federal Government. We must avoid the delays and the obstacles that have characterized other river development programs. The Delaware River Basin Commission, created by Interstate-Federal Compact, bringing the four states of the Basin and the Federal Government into a single partnership was, to my mind, a major accomplishment of the old familiar problem that has plagued the whole question of comprehensive river basin planning, namely, the interjurisdictional problems among our various jurisdictions and the interagency problems among these various administrative agencies dealing with water resources.

Obviously at this stage it is too early to proceed immediately with the creation of some similar mechanism for the Susquehanna River Basin. Even if we agreed that this is the most desirable mechanism, in that it successfully bridges the interjurisdictional conflicts within the Basin, which have caused such trouble in the past, we are not as yet prepared to spell out the particular details that would be most appropriate for the Susquehanna Basin. Each river basin must be considered in terms of its own particular problems. A blueprint for the Delaware cannot be carboncopied for the Susquehanna. However, I think we have much to learn from the long efforts of the four states of the Delaware Basin.

I am suggesting that we need to take time. I am not suggesting that we need to take the time the Delaware took where, since the 1920's, we had three compact drafts before one ultimately succeeded and two Supreme Court decisions, both of them, might I add parenthetically, extremely costly to the City of New York, the State of New York and to the Commonwealth of Pennsylvania, and in my judgment, needless, had we had the machinery to bring about the type of thing we are trying to create here.

It seems to me we can telescope the steps we took there in a much shorter period of time. In other words, I hope what will happen here is that—as in the Delaware—we will set up some coordinating machinery of a more or less informal character so that the legislatures and the executives of the three states will be working together towards one end, and that this body will serve to coordinate the efforts of all three of these states. Among other things, it will try to prepare such designs as may ultimately appear necessary for permanent intergovernmental machinery for comprehensive planning of the Susquehanna Basin. So far as I can see, we have no alternative. We must join in this important effort and we have before us a successful example of how it was done. Accordingly, I suggest our maxim should be “let us make no small plans.”

Last evening I was handed a letter from Governor Tawes of Maryland and I should like, at this time, to read it before I present the representative of Governor Tawes.

Dear Senator Barrett:

I am pleased to designate Mr. James J. O'Donnell, Director of the Planning Department of the State of Maryland to represent me at the Tri-State Susquehanna Conference, which you have scheduled on Monday, May 28, 1962, in Binghamton, N. Y.

Mr. O'Donnell is one of four representatives which I designated in correspondence with Governor David L. Lawrence of Pennsylvania in February of this year to meet with representatives of the States of Pennsylvania and New York to discuss a comprehensive study of the Susquehanna River Basin.

Although only the lower 15 miles of the Susquehanna are in Maryland the depositing of water from the entire Susquehanna River Basin into the upper Chesapeake Bay is, of course, of vital concern to the State of Maryland.

As I had previously indicated to Governor Lawrence, I feel it both necessary and timely that New York and Maryland join in taking a comprehensive look at the Susquehanna River, and I am most pleased to indicate my approval of the activities that will foster the prompt development of the resources of the Susquehanna Basin.

I look forward, with great pleasure and interest, to the progress of these deliberations and contemplated studies.

Sincerely yours,

J. MILLARD TAWES,
Governor of the State of Maryland

And now might I present Governor Tawes' representative, Mr. James J. O'Donnell, Director of the Maryland State Planning Department.

MR. O'DONNELL: Mister Chairman, Commissioner Wilm of New York, Director Pitkin of Pennsylvania, legislators, other public officials, ladies and gentlemen. First of all I would like to commend Senator Barrett of New York, Representative Breth of Pennsylvania, Director Pitkin of Pennsylvania and the others who have assumed the initiative in calling this meeting and who have done so well in setting up its inception, handled with such enthusiasm and, I might add, much efficiency and dispatch.

In looking at our agenda on page two, I see that the representatives of the various states are addressing themselves to “Action on the Susquehanna.” I couldn't help but feel this would have been a splendid title for a novel by Mark Twain reminiscent of river pirates on the Mississippi or something similar, but let's translate our locale back to Pennsylvania and not the Wild West, and consider that we have before us some action on the Susquehanna that will be starring three states as well as perhaps some dirty, tired, old water.

I was very interested in the statistician's report this morning concerning the recreation aspects of this picture, particularly interested in the statistics that showed the number of men and women hunting. He didn't say whether they were hunting one another. Someone at my table volunteered that perhaps they were "deer" hunting.

After hearing all these comments about water quality and pollution, I am going to get a little bit skeptical of some of these ads I read about the breweries in the western part of my state and in Pennsylvania too, about the beer being made from pure mountain water.

As Senator Barrett has quoted to you, Governor Tawes has expressed his sincere interest in this program and we hope to be in full accord and work in full cooperation with you in both states of Pennsylvania and New York toward the ultimate end of a good water-controlled, flood-controlled Susquehanna River. I would like briefly to comment on some facets of present conditions so far as Maryland is concerned on the Susquehanna and comment also a bit on some plans that we are currently involved in and some of our hopes for the future.

As you know, only about 15 miles of the Susquehanna River are in Maryland, and perhaps less than 300 square miles of the entire drainage basin, which has been previously cited as including some 27,500 square miles. Nonetheless, we feel a very vital stake and a vital interest in the Susquehanna River. In Maryland we have only three small tributaries to the Susquehanna. Happily, the principal one of those three, Deer Creek, is perhaps one of the purest and cleanest streams on the whole Eastern Seaboard. It drains the upper reaches of Harford County over into Baltimore County and it tails off just barely over the Pennsylvania line above Baltimore County.

The Susquehanna River, running for some 450 miles through parts of New York and the entire width of Pennsylvania, deposits vast quantities of water into the upper Chesapeake Bay. With the depository of this water, we have the accompanying problems of pollution, acid mine wastes, and siltation. The control of the water quality of the Susquehanna in relation to these particular items, through a comprehensive development program of the Susquehanna, can play a very important role in many significant factors of the economic life of Maryland. I think it goes without saying that the water quality of the Susquehanna River is of great importance to us in the fisheries and in the produc-

tion of crabs and oysters of the upper bay and in the wild-life in the Susquehanna Flats, which have been previously mentioned.

In Maryland, in close proximity to the mouth of the Susquehanna River, at a distance of perhaps only five to seven miles, is the main channel that leads to the Chesapeake and Delaware Canal, which is one of the principal ship arteries travelled between the Port of Baltimore, and the Port of Philadelphia and to the whole Maryland-Eastern Pennsylvania-Delaware complex.

Also significant to our interest in the Chesapeake Bay end of the Susquehanna River is a system of state parks and recreation areas that we are developing. We have recently completed, in conjunction with the Department of Forests and Parks, represented here today by Mr. Joseph Kaylor, Director of that department in Maryland, a master plan for state parks and recreation areas.

I am sure it would be of interest to all of you, too, to note that on the Harford County side of the Chesapeake Bay, just beyond the mouth of the Susquehanna River, the Federal Government owns and operates extensive acreage for use of the Aberdeen Proving Ground and the Army Chemical Center at Edgewood. In addition, on the east side of the Susquehanna River in Cecil County, is located the Bainbridge Naval Training Station, a vast facility used not only for recruit training, but for highly specialized training of Navy personnel. Bainbridge draws at least part of its water supply from the Susquehanna.

In Maryland, the Susquehanna River is bordered to the West by Harford County, whose present population is in excess of 77,000; to the East by Cecil County, whose population is 49,000. The growth of each of these counties in the past ten years has averaged about 46½ percent, or some 14 percent higher than the growth of the state as a whole during the same period. Both Harford and Cecil Counties lie directly in the corridor of high population growth and urbanization that reaches all the way from Richmond to Boston and about which we have read so much in recent years. We have every reason to believe that the population in both of these counties will continue, certainly in the near future, at a rate not inconsistent with the growth of the last ten years. Both Harford and Cecil Counties have active planning commissions, and are embarked on programs involving intensive study and development of local

community plans. Harford County is one of the jurisdictional members of the Baltimore Regional Planning Council and is included in the Baltimore standard metropolitan area, as defined by the Bureau of the Census.

One very significant development in recent years, which has been mentioned previously here today, which is naturally of great concern to the people in Maryland, and specifically in Baltimore, is the tapping of the Susquehanna River by a large 108-inch pipeline, which will help to supplement the water supply of Baltimore City. I would certainly feel then, as indicated from these considerations, that Maryland's interest in the development of the water quality of the Susquehanna River is significant. Beyond these considerations, we, in the State Planning Department in Maryland, have recently completed a study recommending revisions and modifications in certain of our state agencies operating in the field of water resources management. We are continuing our interest and activities in this area by embarking on an extensive inventory of water resources and uses for the entire state, including economic projections related to population growth and development.

In this same area, we have worked very closely with the U. S. Public Health Service in their contemplated water quality study of the entire Chesapeake Bay Basin, and for a period of I suppose almost two years now, we have served to coordinate the Public Health Service's interests with the various departments of our state that have some degree of responsibility in these specific areas. I recently appeared before a special subcommittee of the U. S. Senate, considering appropriations for the Department of Health, Education and Welfare, recommending inclusion in the budget of that department funds adequate to initiate a water quality study of the Chesapeake Bay this year, including studies of the Susquehanna River area designed to coordinate with proposed studies of the entire Susquehanna Drainage Basin area by the Corps of Engineers. We hope to continue positive steps directed toward a thorough evaluation of our water resources and development of guidelines and principles to help improve our water resources in the years ahead. Certainly the flow of the Susquehanna River into the Chesapeake Bay is of paramount importance to any effort on our part, or on the part of the Federal Government, to investigate and improve the quality and availability of our water resources.

In the programs we are discussing and trying hopefully to initiate here today, I think there are certain facets of

paramount importance. I think the studies we embark upon must be comprehensive studies in their nature and must realize the full potential of every facet of the characteristics of the Susquehanna Basin. I think there must be complete cooperation at an interstate level and also between the states and Federal agencies. We must understand one another; we must cooperate in our studies and in our endeavors.

I think as important as recreation is—it has been mentioned here a number of times today—I think our prime objective must be to look at water quality control to get the best possible water we can out of the Susquehanna for the benefit of the people of New York, Maryland and Pennsylvania. If we get that water quality control, the recreational facets and features will take care of themselves. People will be aware of that and will want to take advantage of it. I think we must never cease from triggering our representatives in the Congress of the United States to the importance and need of this very significant study, and we must get them to work with us in lending every possible support for implementation through proper funding at the Federal Government level.

I think for as long as this study is going on—and I hope it isn't of any great duration—but as long as it must go on, I think none of us must cease to encourage and try to see that our individual states and individual subdivisions do not lack zoning and health controls. I think it is important that, irrespective of the progress of this study, we continue at our own level to see that everything possible is done in our installations that are going into our respective areas.

Perhaps just as vital as any of these considerations is the question of public support which has been so often mentioned here today. Public support comes from public education and understanding, and we all, I am sure, realize fully and well that we have an obligation to see that the story is told and that the education is fully accomplished, so that the end result can be achieved successfully and satisfactorily. We must do everything that is necessary to accomplish these ends. There is no alternative.

The story was once told of old Senator Theodore Green of Rhode Island who was observing his 90th birthday. One of his friends came up to him and shook hands with him and said, "Senator, now that you are 90, how does it feel to be that old?" He said, "Wonderful, when you consider the alternative." I think this applies here. When we consider

the alternative of doing nothing, we have to get to work and see that something is done in the Susquehanna Basin.

SENATOR BARRETT: Thank you very much, Director O'Donnell. I hope you will take back to Governor Tawes a word of appreciation from all of us for sending you here to take his place. And tell him, if you will, we missed him. We would have liked very much to have had him with us, but we understand why he couldn't be here. We certainly appreciate this very friendly delegation from the Free State, in view of your reapportionment difficulties down there. I assumed that all of you would be on the floor of the House, lobbying one way or the other.

Now we will listen to an old friend of ours who has been, for many, many years, the guiding genius of the Interstate Commission on the Delaware Basin, who is the Executive Director of the Pennsylvania State Planning Board, Francis Pitkin, who will represent his Excellency, David L. Lawrence of Pennsylvania.

MR. PITKIN: Senator Barrett, ladies and gentlemen. As I think you all know, Governor Lawrence has already demonstrated, at least in the case of the Delaware Basin, his understanding of the need for cooperation in the development of these great natural resources of ours. That is equally true in the Susquehanna Basin. I cannot overstress the importance which the Governor attaches to a comprehensive basin development program on this river. This magnificent stream drains 48 percent of our state. We are interested in it, not only because of that size factor, but we are particularly interested in this Basin, since within it are some of the most economically distressed counties of Pennsylvania.

Despite the painful economic adjustments now taking place, we believe this great region stands today on the threshold of a new era. The interstate highways which will soon cross the Basin from east to west and from north to south provide us with a number of economic opportunities which hitherto did not exist. Millions of acres in this Basin—many of them State-owned forest land—can soon become a new American vacationland on the "short route" from Chicago to New York City.

The interchanges of these new freeways will offer many opportunities for new investment and growth in such fields as warehousing and distribution, manufacturing, research and development, and in recreational and tourist development. In a word, the upper Susquehanna Basin in Penn-

sylvania has suddenly become—or will soon become—highly accessible to the greatest concentration of people in America.

The Susquehanna region must become more accessible, however, if we are to realize our promise in full measure. We must assure ourselves that the Susquehanna Basin becomes a desirable place for modern industry and commerce. We can only do this by harnessing the rich water resources of the Basin for the purposes of man.

This means we must have flood control to protect heavy industrial investment. We must have water supply to sustain new growth. We must have low flow augmentation to keep the wheels of industry turning. We must control pollution in order to provide high quality water to water-consuming industry. We must protect the fish and wildlife resources of the Basin because of the great economic return which they can mean to the area and because they are an essential element in the general livability of the Basin. We must provide the recreation sites necessary to serve the population which lives in the Basin as well as the many, many tourists which we can attract to what, by all odds, is some of the most beautiful countryside in the United States.

In other words, the Susquehanna River Basin plan is more than simply a plan to protect and develop our water resources. It is the framework for a great economic development program for northern and central Pennsylvania, as well as portions of our sister states. Pennsylvania sees the Susquehanna River as a framework upon which a great new "Plan for Prosperity" can be predicated. The large impoundments in the Basin which a river basin program will provide will create unparalleled opportunities for developing the tourist potential of our mountain forests in the Basin. This will make many communities currently suffering from economic distress far more desirable as locations for new, space age growth.

For all these reasons, the Army Engineers and the other Federal agencies which will participate in this study must, along with the states, adopt a philosophy different from that applied in developing the Delaware River Plan. On the Delaware it was known that the population of the service area is going to double in the next 40 years. We know that growth on the Delaware is inevitable and that it is essential for us to provide for this expansion.

In much of the Susquehanna Basin, however, the opposite is true. The lack of growth, particularly in economic op-

portunities, is our problem in much of the upper Basin, especially if we look at the past. But we must not look at the past in developing this river. We must look at the possibilities of the future and build a plan based not upon historic trends, but upon potential. We need a river basin plan which will stimulate new development, new growth, new traffic, new investment in the Basin. It is our intention in Pennsylvania to knit together with a water resources development effort all of our future plans for highways, education, recreational development, welfare, industrial development, community renewal and a host of other State programs and develop a concerted attack upon our economic ills. In effect, the Commonwealth is striving for a plan which utilizes all of the great resources of the State Government in building a new future for the Susquehanna Basin and the rest of Pennsylvania. It is this exciting challenge which faces the coming years of our State Government. The success or failure of the Commonwealth Government in winning the future through such an all-out effort will become the measure of coming administrations at our State Capitol.

Governor Lawrence welcomes the early legislative participation in preparing the plans for the Susquehanna which this meeting represents. Only by close legislative and executive relationships can we fully exploit the possibilities of this region. The legislatures must understand, as well as each Governor, what must be done here. We visualize this meeting today as the first step toward the preparation of legislation necessary to establish properly a governmental structure to administer the development on the Susquehanna River.

Taking a leaf from what we have learned on the Delaware, it is the present thinking of Pennsylvania that three levels of organization will be required during the next few years while the Susquehanna study proceeds.

First, we visualize the full and active participation of a citizens' organization in educating the people of the Basin on the need for this program. This organization, as you know, has been established and is called the Susquehanna River Basin Association. We're happy that Mayor Frank Slattery of Wilkes-Barre was instrumental in its formation.

A second level of organization is needed which brings together representatives of the legislative and executive branches of each state government. This would be an advisory commission charged with preparing the legislation

necessary to create an eventual river basin commission. It would utilize advisory representatives from the general citizenry in each state. It would consult closely with the technicians preparing the river basin plan and would be the organization instrumental in securing passage of the necessary interstate compact.

Finally, there would be a study commission of specialists in resource development from the Federal and state governments which would actually conduct the study over the next few years. This study committee would have the full and active participation of each of the states and would be responsible for developing a truly comprehensive water resource program for the Susquehanna.

The Susquehanna River discharges more water at its mouth than the Potomac and the Delaware Rivers combined. It is, as was mentioned earlier, the largest undeveloped river in the eastern United States, and yet it lies in the heart of one of the most heavily populated and industrialized regions of the country. It can be said that one of the reasons so much of central Pennsylvania is suffering from economic difficulty is that the true promise of the Susquehanna has never been realized.

We propose to change that. And so we are making history. For this reason the members of the three legislatures which called this meeting today can be proud, for the generations who follow us will owe them a great debt.

SENATOR BARRETT: Thank you very much, Pit. I hope you will convey to Governor Lawrence our deep appreciation to him for sending you here to represent him and certainly to all of those of Pennsylvania who are here today and who helped us in making this conference what I hope will be, before the day is out, a very, very successful conference and a good beginning on a very important river basin development.

By arrangement, or at least with the consent of Dr. Goddard of Pennsylvania and Mr. Backhaus of Maryland, due to an appointment that Commissioner Wilm has back in Albany, we will rearrange the agenda and ask Commissioner Wilm to go on first, with the consent of the other two.

This, ladies and gentlemen is Commissioner Harold G. Wilm, Conservation Department, Executive Committee Member, Interstate Conference on Water Problems, and so forth, with more other titles than I could enumerate.

COMMISSIONER WILM: Thanks a lot Senator, gentlemen at the head table—I have been interested in listening to the presentations that have occurred up to now—and friends out on the floor. For the sake of our very attractive and efficient stenotypist, I regret very much I do not have a prepared statement because I have seen her relax reading these manuscripts. But I found a number of years ago, when a person shows up about 3 o'clock in the afternoon or later, there isn't much advantage in preparing a speech. By the time the moment arrives when you have the tremendous honor of getting up to the microphone, someone else has always used up your speech. The excellent presentations that have occurred up to this point already have covered the various subjects which I might have covered. On the other hand, I don't know what effect it may have on the audience or how you may react to it or what pleasure you may get out of it, but it makes things more interesting to sit and make notes during a session because you obtain a privilege as a compensation for a penalty. Although you may have lost your subject because of previous speakers, you have the privilege of taking notes on what they said and perhaps then the audience will be tolerant while you take a few cracks at them.

My purpose is to make a few comments first and then to express my own views, if you will forgive me, on the ways in which this wonderful and comprehensive study of the Susquehanna may best be handled. Two of my comments—there are four in number—the first two are rather unconnected with the conclusions and are just fun.

The first has to do with what was referred to this morning as a feud with professors, referring to my disciple, Dr. Bordne. I suppose he has left now. He worked at Syracuse University on his doctor's dissertation and I had a lot of fun discussing at great length with him the water problems of evaporation and transpiration and things like that. Both he and Colonel Podufaly—who is still here, I believe—talked about population increases, which has become quite a fetish with me. I don't mean a personal contribution on my part. This question of population explosions and things like that is a characteristic feature of population since they don't explode; they have cyclic fluctuations. Even in the United States, with the kind of disease control and so forth that we have, recently our population explosion has been characterized by sign curves flattening off at intervals. In 1936 the National Resources Planning Board predicted that by 1960 the population would be completely stabilized. Births

would probably be no greater than deaths and there probably would be need for considerably fewer schools. Since World War II we have been exploding. The young families that have been coming along have been growing pretty fast. I notice, however, that there is such a thing as birth control pills coming into popularity recently in the last few years. Medical people say they are a wonderful thing. I don't say anything for or against them, but it leads to the possible thought that maybe the population may stabilize itself.

The second is the question of water consumption. We talk a great deal of the tremendous amounts of water which are used by civilization. In the West, this is a very real thing because in the West the climates are arid and water use is largely a consumptive use. Consumptive use means, of course, use of water which evaporates. It doesn't come back to the earth again. When we talk about the Northeast, including the Susquehanna, I must say most of our use is not consumptive—it returns to the stream after it is used in one way or another. It may be dirtier; it may be warmer because it comes through all types of factories, but it comes back. So actually, I think we greatly overestimate the problems of water shortages in the future in the Northeast. Our great problem is going to be one of control of rate, so that you hold it back when you have too much for the time when you have too little; and distribution, so that you move it from the place of shortage to the place of abundance, plus, of course, the problem of cleaning it up and cooling it down. That is our big problem in the Northeast.

One other comment I will make and this is a very pointed one. It is a flattering one. You can criticize earlier speakers, but you also have the privilege of complimenting them. And, of course, when a person makes this kind of comment as I am doing now, you have to think you have a few friends following you too so you hope they won't be too unkind to you. Maurice Goddard, another forester like me said, "wait." The subject of flood plain zoning was dealt with very effectively by Mr. Hendricks. This is tremendously important and it ties in very definitely with the question of flood insurance. He spoke of the Flood Insurance Act of 1956 which was not very effective, and I agree. It not only combined the pork barrel aspects, if I may use that phrase, of subsidized insurance—subsidized by the government—but also a level, as he pointed out, a level use of premiums so that it actually favored the development of civilization dream homes and things like that in the flood plain and penalized the people in the uplands.

Recently there was a conference called at Atlantic City, the subject of which was the hurricane damage and flood damage of March to New Jersey and New York. The purpose of this meeting was obviously to obtain passage of four resolutions which were equally obviously sponsored by the Federal Government—the present Administration. There were five governors and the Speaker of our Assembly as official spokesmen for the people of the Atlantic Seaboard. Each of the four resolutions was in the fashion of “We, the States of the Atlantic Seaboard . . . and it is hereby Resolved.” And yet, there were only five governors and one speaker present. One of the resolutions called for a restudy of the Flood Insurance Act of 1956 broadening its provisions to protect shorelines and again, as in the case of the Flood Insurance Act of 1956, no reference was made, no mention was made, of the need for zoning. This is extremely important and we must never permit any revised law to pass through the Federal Congress under the subject of flood insurance unless it makes adequate provisions for zoning.

Point number three. When we talk about flood studies, river basin studies, including the Susquehanna, the setting is almost invariably that of flood control on a large scale in the main river channels which means, of course, the Corps of Engineers. This is quite appropriate. The Corps of Engineers has taken leadership in flood prevention and flood control over many, many years in the large streams in the country. They are a fine bunch of people. I have very close friends in the Corps at all levels, including Harry Schwarz who sits here, people in the Chief of Engineers’ office—General Weber, who is the top division engineer of the Corps of Engineers is a very close friend of mine. But I simply want to make this point. In a river basin like the Susquehanna, a comprehensive river basin study has to be far more than the kind of comprehensive study which was undertaken and completed in the Delaware River Basin. That was very definitely a comprehensive study of the main stem channels, with any accessory information on fish and wildlife benefits, recreation benefits and other programs which would be tied into the main stem program, with any additions to that in the sense of a comprehensive study of the whole basin only contributed by the individual agencies of their own volition and as appendices to the Corps of Engineers’ report.

In the Susquehanna River, over half of the drainage basin is covered by forests. Most of it is forest or agricultural land. A great part of the river basin problem is land management,

watershed management of the forest land and agricultural land, plus quality control of the water supply, plus regulation of the distribution of the water supply, with flood control and flood prevention only one phase of a very large program. Incidentally, if I may be forgiven for one more little comment on a speaker, I have to correct Colonel Podufaly a little bit on his comment on the Delaware River Basin Comprehensive Report of the Corps of Engineers. At this point, it has not been accepted by the Delaware River Basin Commission, of which I am a member. We have simply adopted the eight major structures which have been recommended to Congress by the Board of Rivers and Harbors for approval and authorization. Beyond that, the Delaware River Basin Commission has approved several other projects which are not included in the Corps’ report and our comprehensive plan, at this point, is a very restricted, very limited document which gives no further approval, actual or otherwise, to the various aspects of the Corps’ report.

These comments really—not the first couple which were just for fun—but the last two particularly, the comparative importance of management as compared to the direct engineering flood control, and second, the question of a comprehensive study of the river basin, lead to the conclusions I would like to draw for the Susquehanna River—that here we need a true, joint, interstate—Federal study—a river basin study of the whole Susquehanna River Basin in which all agencies, both state and Federal will participate in a responsible degree. This means actually separate and quite thorough studies by state agencies in cooperation with Federal agencies and separately financed, semi-independent, but coordinated, studies by the various Federal agencies—not simply as accessories to a Corps of Engineers’ study.

It means studies of hydrology, economy, base maps, available waters, ground water geology, water quality, threats of pollution, land use trends, water uses and needs, industrial potentials in the Susquehanna—this is very important since it is an undeveloped basin—rural water uses, recreation, existing and in need of development, not just by Federal agencies but by the states and municipalities as well, the total water requirements of all kinds of water uses, the study of forestry, erosion, tributary stream flood control—which means the Soil Conservation Service—flood control in the main stems—which means the Corps of Engineers—drainage, land treatment, agricultural land improvement, and the comprehensive, very detailed study of future realistic predictions. This listing, while perhaps rather

detailed and exhausting, indicates the tremendous variety of studies that have to be considered in a comprehensive study like this and the variety of agencies that must participate.

On our side, in New York State, we plan to participate and we have an active organization set up already within the State Government in order to participate, and we are looking forward to working with the Susquehanna River Basin Association and the other side of the coin, you might say, as compared to the Executive Branch of the New York State Government. Our mechanism is the Water Resources Commission which is composed of the heads of the Departments of Public Works, Health, Conservation, Agriculture and Markets, Commerce and Law, plus four lay members representative of various aspects of citizen interests. This Water Resources Commission, functioning through me as Chairman, is responsible for all the administrative aspects of water resources works. This is the agency which will work directly with the other states of the Susquehanna River Basin in participating and preparing the comprehensive study plan.

Aside from our participation, which would be conducted through a single person, the Chairman of the Water Resources Commission, it is interesting to conjecture on ways the formative organization might be used to provide this truly comprehensive study for which I am making such a strong plea. It might eventually lead to a compact like that of the Delaware River Basin. That is a very powerful mechanism; a very fine mechanism; we believe in it very strongly. The path to that end, if it should occur, or to some other end, could be either through the work of independent state agencies in cooperation with citizens' groups and with the legislatures of the three states involved. It could be done through such a proposal as Francis Pitkin has just made; that sounds wonderful to me. Or, it could be done, quite conceivably, through what are called properly, titles to commissions under the present Water Resources Act, Senate 2246 of 1961, which is again before Congress.

Once again I have to make a comment on Federal legislation and Federal proposals. As originally proposed, Senate Bill 2246 was not a good bill from the viewpoint of the states. The Interstate Conference on Water Problems, representing all 50 states, almost unanimously opposed the bill in its original form, primarily because it set up a basis for Federal, even Presidential, domination of river basin planning in interstate areas. Since the original bill was

proposed, the Interstate Conference appeared at a Senate hearing this year and the bill stopped completely in the Senate Interior Committee under Senator Anderson. The original bill will not come out. I can say that with strong authority. The Interstate Conference has proposed a revised bill which is pretty strong on behalf of the states. At present we have been discussing, and we are very close to, a compromise which I think will be acceptable to the states and the Federal Government. In that event, if it should work out that way, it is not at all impossible that the most effective mechanism for achieving this comprehensive planning and coordination of the river basin planning in the Susquehanna might be a commission composed of representatives of each of the three states and representatives of the Federal Government working jointly around the same table. That would be nice. In any event, I think we all agree on the need for a joint, comprehensive, coordinated study and planning for the Susquehanna River Basin leading to wise administration of the river basin eventually of the sort we hope we will be able to achieve under the Delaware River Compact. Thank you very much.

SENATOR BARRETT: Thank you very much, Harold, for your comments. It seems to me this strikes a rather healthy note. There is always the risk in a matter of this kind that you get to harmonizing and if you're not careful, you're harmonizing too well, and I think it is healthy to have projected into this type of conference, some alternative views that will save us some trouble in the time to come.

The next speaker is one who has long been associated with water resources as a member of the Pennsylvania delegation to the Interstate Commission on the Delaware Basin. He is Secretary of the Department of Forests and Waters in the State of Pennsylvania, Chairman of the Water and Power Resources Board, Member of the State Sanitary Water Board, and I suspect in his case also, I could go on and on and on. The gentleman who is about to speak to you is Dr. Maurice K. Goddard, some of whose titles I have just described, representing the State of Pennsylvania.

DR. GODDARD: Thank you, Senator Barrett, members of the various State Committees on Interstate Cooperation and ladies and gentlemen. After you have to follow a man like Dr. Wilm and you have a man like Mr. Robin following you, it is exceedingly difficult to know what to say. I have a prepared document—I don't propose to read it—it will be available on the table as you leave and is available for the record.

Now first, Dr. Wilm has told you about the various agencies in his own state that deal with water resources. You were exposed, I think, to seven different agencies of the Federal Government this morning that deal with water resources. My document runs through some of those in our own state dealing with water resources like the State Planning Board, my own department and its administrative arm, the Water and Power Resources Board, the Department of Health and its administrative arm, the Sanitary Water Board. We have the Department of Agriculture, the State Soil Conservation Commission, which Mr. Unger represents, Mines and Mineral Industries, Department of Highways, Commerce, Game and Fish, and on it goes. I merely repeat this to show that if we are going to have any success in developing this river, that it all lies in a tremendous effort of cooperation and coordination which Dr. Wilm mentioned. I don't think there is any question about this. If the three states and all the agencies in these three states and all the agencies in the Federal Government cannot get together and we each give and take a little bit, we'd better go home today and forget about it. I think we can work together. I think the emphasis on the Delaware River—and it is true that we can improve—I agree with Dr. Wilm that maybe some parts of it we could have improved upon—I think the Potomac and the cooperation of Maryland is an improvement over the Delaware because we learned a lot of things in the Delaware. Because of this, we can improve in the case of the Susquehanna. There is no question that we can do better. As an example, what happened over in the Lackawaxen? You say you've got all these different agencies—you have state, you have Federal agencies—and that you cannot cooperate together. This is not true. The Corps, for example, built the Jadwin and Prompton dams; the Soil Conservation Service built six out of seven reservoirs in the Lackawaxen under Public Law 566, one on Lollipop Creek; my department built local channel jobs and harbors predicated on the Corps' dams, and we built a project in White Mills predicated on the SCS dam. I think it is one of the best examples in the eastern United States of the effort of three different agencies of government coordinating their efforts to have complete flood control in tributary streams. Therefore, I think we can state here, and the record will prove it, that we can work together in all these various departments and various echelons of government.

One other point I would like to make in my paper is that I think we have an advantage in the Susquehanna River Basin. We don't have all of the problems that perhaps the Delaware or the Ohio River had. People have pointed out

today that it is a relatively undeveloped basin in terms of population density for the whole area. We do have here a real opportunity. We have referred to it in our state as a "water reserve area"—an area where we have a lot of water and maybe can divert water to the Delaware—we already are, of course, in several places, West Chester in the Susquehanna—but it wouldn't be very difficult to divert water from the Susquehanna system into the whole Delaware River system. We have a real opportunity here before it is too late.

Nevertheless, we do have some serious problems and I agree with Dr. Wilm that perhaps the most important problem is the pollution abatement program. You don't have to walk very far from here to see one of the places where we've got to start. The river here at Binghamton has raw sewage in it. You can smell it. You don't have to be a sanitary engineer to know it is there. We have lots of places in the river where we have to clean up the pollution. We have worked at this, doing the first things first in the Basin, but I would agree that we have not a quantity problem so much as perhaps we do a quality problem, but that nevertheless does not rule out the problem of having enough water in the future.

We do need a comprehensive plan for the river, coordinating the efforts of soil and water and wildlife and mineral conservation in our total work and total efforts. I think we must work on this pollution abatement—not just the sewage—but the acid mine drainage program problem which is a serious one in this Basin. The League of Women Voters in their booklet point this out to you. There is a map in there which indicated the acid-contaminated streams and if you relate the economic problems of the basin to the acid-contaminated streams—Mr. Voight, the ex-Director of the Fish Commission—pointed out that they almost exactly coincide. I've said over and over again they are going to stay that way forever until we clean up the water in those rivers. How can you get industry into a community if it has to treat its water first to use it and then treat it before it is discharged. It just isn't economically possible for an industry to come into that kind of a community. This is why those areas are depressed; they are going to remain depressed. We might as well make up our minds to that. You're trying to force pollution abatement into these areas and you think you're doing them a great harm, a great hardship. This is the best thing you can do for these communities. It is the only way they are going to survive in the economic growth.

We have coming up a very important symposium in Pittsburgh, a National Symposium on the Control of Coal Mine Drainage. We hope that many people can participate. We have about 57 agencies or more participating, people from 16 states coming on June 12th to 14th. The material we find there will be applicable to the Susquehanna River Basin. We do have serious, serious problems in this Basin and they must be corrected, and they are not going to be corrected unless we put a tremendous amount of energy and effort to it.

I think my paper can be summarized pretty much as follows: The waters of the Susquehanna must be controlled and regulated to provide maximum flood control and adequate supplies of good water the year round to meet the demands of our present and future needs.

Each reservoir and each reservoir site is a valuable resource in its own right. Consequently, the Commonwealth strongly advocates that all future reservoir projects, large and small, be studied from the standpoint of including all possible uses. I think if there is any one point I want to drive across here this afternoon, this is it. The day is gone, ladies and gentlemen, when you talk about a water supply reservoir; the day is gone when you talk about a flood control reservoir; the day is gone when you talk about a hydro reservoir; the day is gone when you talk about a low flow augmentation reservoir; this is ridiculous. All these factors can be combined in one reservoir and the reservoir is a more economical reservoir when you do it. When these health people tell me you can't swim in water you drink, they're crazy. If you can drink the water of the Allegheny River and you can drink the water of the Schuylkill River or you can drink the water of the Monongahela River, we can swim in it and clean it up and use it for recreation. Let's make up our minds to that. I don't want to pick on them as individuals; they're doing a wonderful job. The same thing applies to all the other efforts in water resource development. These waters belong to all of us, remember that. These reservoirs must be multi-purpose reservoirs. Good reservoir sites are rapidly disappearing and sites needed for future uses should be reserved while still available.

Of considerable importance to the over-all development of the Susquehanna River Basin is the fact that we have been involved in two prior comprehensive river basin studies as previously mentioned, the Delaware and the Potomac. Our sister states of New York and Maryland have each taken part in these studies. Accordingly, we believe that we

are all familiar with the processes involved and the type of cooperation and coordination required. Further, we believe that we have all profited from our experience with the other studies and know some of the pitfalls and mistakes that must be avoided. We are sure, therefore, that when the task is completed, the Susquehanna will have the best planned and best developed river basin in the country.

Finally, there will be required, in addition to the wholehearted cooperation and coordination of the many agencies and organizations involved, the understanding and cooperation of the administrators and legislators of all the several jurisdictions.

A plan on paper is worth nothing. I think we have too many plans in this United States that are on paper. These plans must be implemented. Today's conference represents a major step in this direction.

In closing, I wish to emphasize one more point. To provide multiple-purpose development, we find it necessary to strike a balance between what often seems conflicting uses. This goes back to these multipurpose reservoirs. They say you can't use a reservoir for recreation that has a fluctuating water surface. This again is ridiculous. Certainly it isn't as good as a reservoir with a constant water surface, I'll admit that. But the Crooked Creek Reservoir in the Allegheny goes up and down—I forget what it is, some 70 or 75 feet—and they had over 600,000 people in that reservoir last year. We know and you know that our lowest flows and our greatest water demands in this part of the United States are usually in September, October and November. This is after our heaviest recreational use. You can draw the reservoirs heavy again. There are dozens and dozens of things you can do to have multiple use in a reservoir. In fact, it is even an advantage in many instances in reservoirs to draw them down. Let the carp deposit their eggs and then pull the water out three feet and let the devils die. This is good technique. We can do this all the way through if we use our heads. It's good for ducks to fluctuate the level of the reservoir. It's poor duck management to have a reservoir at constant level. There are advantages to these things if you want to work with them. Over in the Allegheny Reservoir we hope to make some impoundments of some of the arms of the reservoir. These impoundments will be used for swimming areas. Let the main pool go up and down 70, 80 or 100 feet, it's still good for fishing and good for boating. It's not harmful to swimming because you've got some impoundments for the swimming areas. So let's get over

this attitude that you can't have different uses in different reservoirs.

Engineeringly, we find that it is quite possible to do this. On the same plane, where we have conflicts of interests between states and jurisdictions, we have found through experience that we can resolve such problems by close cooperation and coordination. As Dr. Wilm told you, I think the whole key here is a cooperative effort, a coordinated effort, and if we do this we can succeed. We are a long way from a document or something on paper. I'm of a little firmer opinion than Dr. Wilm is that the Corps can coordinate this study. I think maybe we will put more strings on them than we did on the Delaware. I don't think Pennsylvania can raise all the money for a master plan. We look to the Federal Government for this. I don't know what it is going to cost to make a master plan for the basin—I think we spent \$2 million on the Delaware—certainly it ought to cost more here. It would be very difficult for our department to raise. I have no quarrel with the Corps doing this as long as we coordinate our efforts, cooperate a little bit better perhaps than we did before. But it can be done. The western fellows have made great strides in development of rivers. If we don't develop a plan for our river and if we don't fight for money for these reservoirs, I assure you that your dollars will be spent in Idaho or Montana or California or Nevada and they will be dammed glad to take it. Gifford Pinchot started the Bureau of Reclamation, rest his soul, and those western states have bled us dry ever since. Let's get together here as we have on the Delaware, put on a united front and not have New York fighting Pennsylvania and Pennsylvania fighting New York and vice versa. Let's get into a conference like this and argue out our differences and I think we can succeed.

We know and you know that we control the greatest amount of population and, as documents pointed out this morning, control the most personal wealth of America. Why in the world don't we get together and develop water resources where we have the people and the wealth first before we go out and develop water resources where we have deserts and no people. I think this is our whole attack on this problem. We've had plenty of water; we have been satisfied with conditions; but no longer can we do this. I pledge to this organization the wholehearted support of my department and, insofar as I can, the support of all the other State agencies in Pennsylvania. I am sure they will support this effort wholeheartedly and we can do a masterful job of planning and developing the Susquehanna River. Thank you very much.

SENATOR BARRETT: Thank you very much, Dr. Goddard. Commissioner Wilm requests two minutes.

COMMISSIONER WILM: I just hate to be in the position of coming before my friends—I mean ahead of them—I am before my friends now. Just a couple of comments. One, I don't want to leave any mistaken impression that I don't think the Federal agencies have the right of a large role in this planning business, because they do. But I think the states need to lift up our role so we can exert our full responsibilities.

Second, I come from Colorado. Out there the viewpoint is you people stole our gold for about a hundred years and we're trying to get a little back.

Finally, in connection with the Senate Water Resources Planning Bill, 2246, I have worked, of course, with people of the western states and the southern states and one very distinguished representative in Congress—not our representative, but a Congressman from the deep South—and he put quite a pitch in and we finally yielded to the idea we should take out one word from the whole bill which we did. I notice that word hasn't been used once today—we are talking about "coordinated," but never "integrated."

SENATOR BARRETT: You know for a long time I had a notion that I could make a million dollars quick if I could invent a no-cal pizza. I've changed my mind now. To make a million dollars fast, I am going to consult with my counsel, Senator Mackell on this, and we are going to arrange for a debate between Harold Ickes (phonetic), Bob Moses (phonetic), Maurice Goddard and Harold Wilm at Madison Square Garden and I assure you it will be a sell-out. I don't know that I disagree with anything either one of them said.

It is my pleasure now to present Mr. Albert P. Backhaus, Director of the Department of Public Improvements of the Free State of Maryland.

MR. BACKHAUS: Thank you Senator Barrett, members of the legislatures of New York and Pennsylvania, distinguished officials and ladies and gentlemen. I have been very much impressed with the meeting here yesterday and today, the spirit of cooperation and the fellowship that prevailed. I noted no differences with the exception of the last few minutes perhaps. I feel that the cooperation that has been sought will be forthcoming. I am sorry that the legislators of Maryland can't be with you today, but our battle of reapportionment must go on. The legislators were represented today by Miss Doris Smith who had to leave. Plane

connections from Baltimore to Binghamton, being as they are, required her to leave a little early. Another member of the Maryland delegation is here, Joseph Kaylor, our Director of the Department of Forests and Parks. After the lovely lunch we had today, Senator, I am sure you will find me in your camp recommending that Maryland cooperate to the utmost.

The Susquehanna River, in my opinion, and I believe in the opinion of most Marylanders, is second to none in our great state. We have problems on our rivers, of course, and many state agencies have been mentioned here today. We, in Maryland, have a comparable number all working cooperatively to bring about the desired result which we all strive for. As you know, the Susquehanna was explored back in 1608 by John Smith. If you ever have the opportunity to read about the history of that particular period and his escapades and explorations of the Chesapeake and the Susquehanna I think you will find it very interesting.

We, in Maryland, today find the Susquehanna an interesting area although in Maryland it is only 15 miles long and, as mentioned before, covers a basin area of 300 square miles. We feel that we have a most desirable potential area for our people. We have made progress in the fields of conservation and water pollution control within that small area. However, we are thinking in far greater terms. We are looking forward to this cooperative venture with Pennsylvania and New York, for it is the action that is taken by those two states that determines what we have in Maryland.

I would like to cite just a little bit about the actions that have been taken by our progressive agencies. First, in addition to the activities of some of the other agencies that I mentioned, the Health Department has been very active in water pollution control. As you know, the town of Havre de Grace is on the southern end of the Susquehanna—the stream ends on the West Bank. Two miles east we have Stump Point, which forms the other end boundary of the Susquehanna. In this area we have about 80 square miles which represents the Susquehanna Flats. This is a vital recreation area for the people of Maryland and Pennsylvania and others who will travel a distance to come, for it is a wildlife refuge area. The Health Department—I mentioned the town of Havre de Grace—has been putting on a determined drive to clean up pollution. It is requiring the town of Havre de Grace to construct a sewage treatment plant. Additionally, Baltimore City, which was mentioned a while ago, is taking water from the Susquehanna River. Baltimore

will take 250 million gallons a day to assure its water needs to the year 2000. I might add that the assets of the Susquehanna have also been recognized by our power companies because of the Conowingo Dam. Plans and programs are under way there and it was noted just briefly a while ago, in the publication of the League of Women Voters, 25 billion gallons of water daily pass over the dam, quite a lot of water. We have an asset in the Susquehanna in Maryland and we want to keep it that way. We are now embarking on a program of recreation wherein the Department of Forests and Parks is acquiring property for the Susquehanna State Park on both banks of the Susquehanna River in the Harford County area and in the Cecil County area. We are also concerned, as my good friend Jim O'Donnell mentioned, with the silt that passes down the Susquehanna River because of its deposits and what it does to our navigation and what it requires us to do and the Corps of Engineers to do in keeping our channels open.

I know from the evidence that was displayed here yesterday and today that there will be cooperation between Pennsylvania and New York. We're happy to see it and I know that Maryland will participate in it. We have enjoyed this cooperative spirit in the past in attacking the mine acid wastes that were dumped in the Susquehanna, much to the dislike of the State of Maryland. By cooperation between the two states, this matter was remedied a few years ago. But with these problems in mind, I know we can look forward to this most vital and most essential cooperation. It has been a pleasure being here with you. I have thoroughly enjoyed listening to everything everyone has said today and I know, Mr. Chairman, there will be cooperation. Thank you.

SENATOR BARRETT: Thank you very much, Mr. Backhaus. Now we will hear from the spark plug of the Delaware River Basin Advisory Committee, one whose advisory committee I think was most responsible, in the final analysis, in bringing about the attitude on the part of the people, on the part of the legislatures of the four states, and the Federal Government in putting over this "odd-ball" as I think the Secretary of the Interior called it—the first efforts upon the part of the states and the Federal Government to join jointly in a compact for the development of a river basin.

It is a pleasure at this time to call on Mr. John P. Robin, Chairman, Delaware River Basin Advisory Committee, who will speak under the general heading of "Organization."

MR. ROBIN: Senator Barrett and distinguished ladies and gentlemen. I think I can be happy in reporting to you first today that the title listed for me on the program is now obsolete. The Delaware River Basin Advisory Committee no longer exists. Perhaps for the first time in governmental history a political organization, a governmental organization, has dissolved with its task accomplished. And wonder of wonders, we are even returning a small, but tidy unspent balance of funds to the four states and two cities who supported us. Senator Barrett said it is unconstitutional and won't take the money.

The reason we have been able to dissolve is, of course, because a successor agency has been created and our task as an advisory committee is accomplished. The result of our advice is this innocent looking little red book here, 51 pages, which calls itself "The Delaware River Basin Compact." It bears some august signatures—John F. Kennedy, Nelson Rockefeller, David L. Lawrence, Albert Carvel, Robert B. Meyner. And in those signatures, the four states and the Federal Government have bound themselves to work more closely together in the development of the water resources of an American river and its tributaries than has ever before been done in this country.

What I would like to talk to you about today, very briefly, divides itself from much of what we have heard today. We've heard Harold Wilm and Maurice Goddard and the very able people from the Federal establishments and the gentlemen from Maryland talk about many aspects of the physical planning of the Susquehanna. Those things such as flood control, water quality, recreation, fish and wildlife, soil conservation, all vital and wonderful things. But essentially, to accomplish all these things, somewhere, we believe, we must find a framework of political organization, of governmental organization, which will make a program become possible. What I would like to separate in your minds, if I may, is the framework of governmental organization from the framework of the Susquehanna River plan and the development of the river. In other words, those things are properly separable, and, it would seem to me if our history on the Delaware is any guide, that we can do both concurrently. It's a question of which will come first according to your good luck and chronology, but, nevertheless, we ought not let the one hang upon the other. In other words, if Harold Wilm wants to take the respiratory pulse of every hemlock tree in Pennsylvania and New York, we have perhaps under the Delaware Compact a hundred years to do it. But I think we are most anxious, most of us,

to come to grips with the total problem and then trust the agency which is created to work out the scientific data, the planning data, the methodology of getting it done.

Now in the Delaware experience, for what it is worth, this is substantially what happened. Some years ago, Joe Clark, who was then Mayor of Philadelphia, approached George Leader, who was then Governor of Pennsylvania, and said to him that perhaps the four governors of the four basin states, Maryland, New Jersey, New York, Pennsylvania, possibly the mayors of Philadelphia and New York City, ought to take a look at Delaware Basin planning and see what could be accomplished. Of course, they knew that Incodel had been in existence; they knew Incodel had done a fine job; they knew the plans had not succeeded in their entirety; but they had done a very fine job in pollution and other related problems. They felt the time had come to take a new and fresh look. They decided to do it on a very small personalized type of executive action. By correspondence with the other governors and with Mayor Wagner of New York, the Delaware Advisory Committee, just one person for each state, one person for each of the great cities, was put together. And that committee, through an evolutionary process which changed a good deal over a period of five or six years, gradually learned to work very closely together. Finally, during all this time that the Corps' report for the great reservoirs and dams and the other things on the Delaware was being prepared, all this time, we were, as it turned out, heading toward a governmental organization for the Delaware River Basin. Just two years ago we were directed by the four governors and the two mayors to see what we could do about writing a compact which would bring the four states and the Federal Government into a form of organized, legally enforceable, well set forth organization. That took some time and it took some doing, but, when we were done, it happened almost with the speed of lightning. On February 1 in 1961, the four governors—there had been some changes by that time, Governor Harri-man had been succeeded by Governor Rockefeller, Governor Leader, succeeded by Governor Lawrence, Governor Boggs, by Governor Carvel, Bob Meyner had a very good longevity, he was still with us—Mayor Dilworth and Mayor Wagner met in Philadelphia and they officially accepted the compact agreement which we had painfully hammered out between us from the four states and the two cities in the advisory committee. The program was made public and each governor said he would recommend its adoption to the legislature in each state. You gentlemen are largely from the legislative bodies and you know what happened. Very

quickly New York ratified; New Jersey ratified; Delaware ratified; Pennsylvania ratified; the Congress of the United States ratified; and on the second day of November, which is the date of these signatures, this compact between the states and the Federal Government was in full effect. In other words, it took less than a year after the instrument was drafted and accepted to pass through the legislative bodies.

What the compact will produce is another problem and another question. But what it does is create the mechanism to guide in the development of this river for at least one hundred years and likely through the perpetuities of our civilization because a compact, I may stress to you, is a very serious undertaking. It has all the heavy responsibilities and the heavy duties of a constitution or a treaty between sovereign powers. The four states involved in this compact are irrevocably committed to its provisions for 100 years. The Federal Government, for constitutional reasons, is not so committed, but it has joined voluntarily in the compact, and, with some reservations, accepts all the responsibilities of these four states. So that we do have now functioning an instrument of intergovernmental cooperation which brings together all the water agencies in the Federal Government into one person, Secretary Udall, the Federal representative; all the responsibilities in the Pennsylvania structure into one person, Governor Lawrence and his alternate, Secretary Goddard; the same in New York; and the same in Delaware; the same in New Jersey. But actually, a compact commission of five powerful executives, each the head of his respective organization, channels in all the work of many, many agencies to produce an accomplishment which otherwise tends to diffuse and very often tends to delay and very often tends to dissolve into controversy and very often tends not to be done at all.

As to whether this compact fits the Susquehanna, I can't pretend to say; we don't know. I think it would be a useful thing and I hope the result of this conference will be that the three states will actually appoint a relatively small group to determine that and to determine what type of governmental organization should be recommended for the Susquehanna. I do think the group will have a great deal of benefit from what has been done because we have cleared away a lot of constitutional ground; we've cleared a lot of mechanical ground; the legislatures are familiar with this now; the Congress is familiar with it; the Federal establishment, which had grave doubts when the compact was originally presented, is familiar with it. A good draftsman

like Fred Zimmermann or Bill Miller, who wrote the draft of this compact, could probably go through it and by striking out the names of New Jersey and Delaware and by substituting the name of the Free State of Maryland could probably have an instrument for your consideration today. I don't think that would be the way to do it, however, because it is a different basin and there are different conditions. But, by the same token, I think there is groundwork here which will make the task of a new advisory committee much easier and its responses much more rapid than we were able to do in planning for the Delaware Basin.

Again, I want to leave this point with you very strongly, however. The governmental organization is a means of carrying out a plan. It is not "the plan." And the plans to be developed by the Corps; the plans developed by the several states; the plans to be developed by a score of agencies or whatever—in order to effect it, in order to execute it, some new governmental organization in all likelihood is not a necessity, but is a tremendous expeditor and a tremendous source of true accomplishment.

In the Delaware Compact, to refresh your memory just a little bit, we have something much more than a planning commission. We have a planning commission with teeth. In other words, each state and under certain reservations the Federal Government and the constituent bodies in each state, including private individuals, are committed to prohibit any work which affects the water resources of this river basin unless it is in accordance with the master plan adopted by the Delaware Basin Commission. In other words, if a reservoir has been marked out for development in 1966, the Pennsylvania Department of Highways is not going in there and build a road; it stops. Or a major industry is not going to locate right in the middle of a reservoir site and thus block you from doing it. Accordingly, therefore, by this type of planning, you can envision a long course of action and protect the necessary sites, protect the proper land uses so that the plan can be accomplished over a relatively long period of time.

In addition, there are strong pollution controls. Each state is bound not only to enforce its own controls, but to enforce and provide for the Commission itself to enforce a high standard covering the entire basin. There are strong provisions for the development of the resources of the basin. One problem in the Susquehanna, and other speakers have commented upon this, will not exist, which was very difficult of solution in the Delaware Basin Compact was the

long dispute between New York on the one side and Pennsylvania on the other side, or New York City and Philadelphia, as to diversion of Delaware water out of the basin into the water supply system of New York. I would say we probably had more difficulty resolving that than any other thing. And since this is not an issue in the Susquehanna Basin, I think it would not be difficult, from my judgment, for people of determined purpose and basic good will to come together to draft an instrument which would find ready acceptability in the three states and in the Federal establishment.

As to the Federal establishment, I would like to say this: We who work for the state have a tendency to think we are very good and the Federal people very naturally have a tendency to think they are very good, and we both would be very bad if we didn't think so. But the important thing to remember is that we have a great common task to do, and the states, by coming together, are not creating a phalanx to oppose the Federal Government, or the Federal Government, by doing planning, is not creating an octopus to embrace and devour the states. Quite the contrary. What we have to do is regard each other as partners in a joint enterprise. I hope you will agree with me that these great Federal institutions,—because that's what they are,—these great service institutions, the Corps of Engineers, the Public Health Service, the Park Service, the Forest Service, the Soil Conservation Service, Fish and Wildlife Service, the Geologic Survey,—are instruments of service to the people of America. They are not hostile bodies plotting in Washington or plotting in some regional office to invade our rights. On the contrary, we in Pennsylvania, we in Maryland, we in New York have developed very high standards of public service ourselves. We are interested in conservation; we are as interested in fish and wildlife as any division of the Federal Government may be. There is no place here for discord and no place for lining up on either side of the barricade. Instead, there is a place here for one of the greatest cooperative efforts that can possibly be made. We broke down the barrier of suspicion and hostility when we negotiated the Delaware River Basin Compact. As a result of that, it will be much easier to do it in the Susquehanna. I would say to you, if we all go to work, we can have an instrument for consideration in the legislatures of these three states in the 1963 session if you wish, and for the 1965 session with most certainty. Thank you.

SENATOR BARRETT: Thank you very much, Jack. I haven't any special fear that the Federal Government or any of the

agencies of the Federal Government will begin to tread a little bit too heavily upon the toes of the states. I would like to remind them we have a recourse. We can "whereas" them. And you know something, there is nothing in the world worse than being "whereased."

Last evening we had a group representing each state that we named, for want of a better name, the Steering Committee. I think you will all agree you can't draft a bill in Madison Square Garden. You have to get some people of good will in a room with their coats off and their sleeves rolled up, and this is the way you get down to cases. It would be almost impossible for us to try, in a conference as big as this, to hammer out on the anvil of debate, if you will, any type of formal or informal organization to get this show on the road and to get it off the ground.

At this time, I should like to call on my good friend, Representative Harris G. Breth, Chairman of the Joint State Government Commission of the General Assembly of the Commonwealth of Pennsylvania,—and that is quite a mouthful. Harris, will you give the report of the Steering Committee?

REPRESENTATIVE BRETH: Thank you very much. Senator Barrett, ladies and gentlemen: I would like to preface my remarks by saying this is a very happy day for me and I believe a happy day for all of us here, and I believe a very, very happy day for all the people in Maryland, Pennsylvania and New York. I would like to include in the record something about this conference. I believe by now we all know why we are here, but I don't think we all know how this conference was created and came to realization.

Last year, 1961, following many years of discussion in Maryland, New York and Pennsylvania, the Pennsylvania General Assembly passed a resolution directing the Joint State Government Commission,—which is the research agency of the General Assembly,—to make a full and complete study of the potentials of the Susquehanna River Watershed Development Program. We took it under consideration and appointed Representative William B. Curwood, of Luzerne County, as the chairman of that committee. We proceeded to hold, first of all, meetings in Harrisburg with the various state agencies and then it seemed indicated that we should hold a few public hearings. We held the first public hearing in Wilkes-Barre and another in Huntingdon. The upshot of that program was that perhaps the three states are a great deal behind the public, because

the public interest was immediate; it was intense; it was enthusiastic; and I am very happy to say that Mayor Slattery was part of that and generated considerable enthusiasm for progress at both of our public hearings.

Following that I happened to be in Chicago to attend a meeting of the Council of State Governments Committee on Federal-State Relations. My good friend, Fred Zimmermann, was there and we started discussing the Susquehanna River. We agreed on the importance of it to the three states. He came back to New York and called it to the attention of Senator Barrett and we got together in a series of meetings, including the contact with Senator George Della of Maryland. I am very happy to say that the State of New York assumed the sponsorship of this particular conference and I want, at this time, to render to them my actual, undying gratitude for this assemblage today, and I think we

should all immediately now recognize the State of New York and Senator Barrett.

I do hope, since the title of this conference is the First Tri-State Conference, that it will be followed, as soon as possible, with other conferences in the other two states or perhaps again in New York.

I am very happy to have the honor and privilege of giving you the report of the combined Steering Committee from the three states. The Steering Committee was composed of legislators, representatives of the executive departments, and state agencies concerned. These articles were unanimously adopted. I hope you will bear with me forthwith, while I read them to you because I think many parts of them are vital. I believe copies will be available at the desk.

THE INTERSTATE ADVISORY COMMITTEE ON THE SUSQUEHANNA RIVER BASIN

ARTICLES OF ORGANIZATION

I. Purpose

The Susquehanna River, the longest river with the largest drainage area of any stream in the North Atlantic drainage south of the St. Lawrence, includes in its basin of 27,500 square miles large areas in Pennsylvania, New York and Maryland. It can no longer remain the largest undeveloped river in the East. Continued growth and prosperity in this area is contingent upon its development to the fullest extent. Management which will assure such effective utilization of the magnificent resources of this great valley is vital to all three jurisdictions and can be assured only by intergovernmental coordination among the several states and the Federal Government. Accordingly, it is the objective of the representatives of the three states to establish through these articles of organization a tri-state committee, the Interstate Advisory Committee on the Susquehanna River Basin, to foster the proper development of the resources of the Susquehanna Basin and to develop any necessary permanent machinery for intergovernmental coordination.

The functions of the Interstate Advisory Committee on the Susquehanna River Basin shall be to:

A. Promote, coordinate, cooperate in and where necessary undertake studies of the Basin and its problems.

B. Assist in the formulation and implementation of plans for the development and proper management and use of the water and related resources of the Susquehanna River Basin.

C. Seek to coordinate the activities of the appropriate state and Federal agencies in such planning and the implementation thereof including, but not limited to, the abatement of pollution, flood control and zoning, the general use and control of the waters of the Susquehanna River Basin, the development of recreational areas, the encouragement of agricultural and economic development in appropriate areas, and the conservation and wise utilization of the forests and other natural resources of the Basin.

D. Encourage appropriate policies in the three states and the enactment of state laws for their effectuation.

E. Study and recommend legislation for the creation of a permanent intergovernmental agency for the proper

management and effective utilization of the resources of the Susquehanna River Basin.

II. Organization

A. Membership

The members of this organization shall be representatives of the states of Maryland, New York and Pennsylvania.

The Interstate Advisory Committee on the Susquehanna River Basin shall be comprised of four members from each state; two designated from the state legislature, one of whom shall be a member of the lower house designated by the Speaker and one of the upper house designated by the President Pro Tem; and two from the executive branch designated by the Governor, one an appropriate administrative official and the other that official or officer named as the Governor's representative. The members of the committee shall serve without compensation.

B. Advisory Members

The Chairman of the Interstate Advisory Committee on the Susquehanna River Basin may, upon recommendation of the state delegations, appoint such consulting members to such consulting and other committees as the Interstate Advisory Committee may from time to time create. Consulting members may include state, local and federal officials and representatives of civic and other organizations concerned with the development of the Basin.

C. Term of Office

Each of the members of this interstate committee shall serve until his successor is appointed, provided that termination of the service of any member with the agency or office he was selected to represent shall automatically terminate his service with the committee.

III. Officers and Staff

A. The Interstate Committee shall annually select a Chairman from among its members and two Vice Chairmen, one to be selected from each of the states other than the state from which the Chairman is selected, who shall serve until their successors are elected.

B. There shall be an executive committee composed of the Chairman and two Vice Chairmen. The executive committee shall have such powers and shall perform

such duties as shall from time to time be assigned to it by the interstate committee.

C. The interstate committee shall also elect a Treasurer* who shall be subject at all times to the regulations imposed upon that officer by such authorizations and limitations as are, or may be, prescribed by the interstate committee.

D. All employees of the interstate committee shall be appointed and discharged by that committee, upon the recommendation of the executive committee.

E. The Chairman of the interstate committee is hereby authorized to designate which of the two Vice Chairmen shall act in his absence, or in the event of the disability of the Chairman to so act, then the interstate committee shall designate one of the two Vice Chairmen to act as Chairman.

IV. Funds

A. Upon assurance of the amounts to be appropriated by the state governments or otherwise made available towards its work, the interstate committee shall draw up and approve a budget for the ensuing fiscal year.

B. Since it is the established practice of some states to require receipted bills to accompany applications before payment of state appropriations, or to limit the amount of advances granted to legislative boards and commissions, a reserve fund shall be included in every budget in order to enable the interstate committee to begin operations in the new fiscal year pending the accumulation of receipts.

C. Applications to the states for the payment of appropriations, or installments thereof, shall be made by the Chairman and/or Treasurer.*

D. All funds made available to the interstate committee shall be delivered to a depository selected by that committee for deposit in a bank account or bank accounts to be carried in its name.

E. Disbursements from bank accounts shall be made upon and according to the check, draft, note or order of the interstate committee when properly signed by such officer or officers of the committee as it may designate and

* Changed to Secretary-Treasurer.

authorize. The depository bank is authorized to receive the same when so signed for the credit of, or in payment from, the payee or any other holder without inquiry as to the circumstances of their issue or the disposition of their proceeds, whether drawn to the individual order, or tendered in payment, of individual obligations of the officers above named or other officers of this interstate committee or otherwise.

F. Expenditures in an amount of less than fifty dollars (\$50.00) may be incurred by the Treasurer with or without approval by the Chairman or the Vice Chairmen; expenditures in excess of fifty dollars (\$50.00) shall be made by the Treasurer with the approval of the Chairman or the Vice Chairmen.

G. All statements rendered to the interstate committee shall be submitted as current and payable obligations, for presentation to the committee and approval at each regular meeting, or at such other meeting as is feasible, except that this provision may be waived in cases where the committee meetings fall at longer intervals than four-week periods. In such cases, nevertheless, complete statements of all accounts paid during the interim periods shall be presented to the committee for approval at their next scheduled meeting.

V. Meetings—Quorum—Committees

A. Meetings shall be held upon the call of the Chairman at any time and place designated by him, or upon the written request of any state delegation.

B. Seven members, representing at least three states, shall constitute a quorum at any meeting.

C. There shall be such committees, standing, consulting and special, as the interstate committee shall from time to time create.

VI. Amendments

The Interstate Advisory Committee on the Susquehanna River Basin may at any time amend these Articles of Organization, by a majority vote of the membership of each state on the committee provided that at least ten days' written notice shall be given to each member of the committee of the proposed amendment.

VII. Federal Cooperation

The Interstate Advisory Committee on the Susquehanna River Basin requests the cooperation of the Federal Government, through the appropriate agencies, to the fullest possible extent.

Those are your Articles of Organization. I do believe that with the proper support from all of those who attended this conference, with the marshalling of public opinion, with the dedicated efforts of members of the legislatures and administrative agencies,—I truly believe that years can be cut from any other river basin development program and we can avoid the pitfalls and delays that have occurred elsewhere. Thank you very much.

SENATOR BARRETT: Thank you very much, Harris. I might bring to the attention of the conference that these Articles of Organization were gone over very carefully last night by a full representation of all three states and were unanimously adopted. This is, as you know, a rather informal arrangement,—it has not the blessing of Clergy, so to speak,—in that there isn't any statutory authorization for it. This follows the pattern that we followed when the Interstate Commission on the Delaware River Basin was first conceived some years ago.

Ladies and gentlemen, this concludes our conference. We have completed our agenda, and I note it is now 12 minutes after four. I think all of you must realize that to assemble a conference of this size so far away from the scene of our activity, which is the Barr Building in the City of New York, perhaps a little show of applause might be due the staff of this committee, because to get a thing of this kind together, to make the hotel reservations, to arrange for all the wonderful speakers, to arrange transportation and all the details that follow,—this was done by a very small staff,—Mrs. Jean Storey, Mrs. Adeline Badala, and Mrs. Frances Young, working under the direction of Fred Zimmermann, who had to leave awhile ago to get a train back to New York. I thought you ought to know who did all the work. We want to express a word of thanks to this lady on my left with her stenograph machine taking and recording the conference from early this morning. A little hand for Thelma Mariano might be in order.

A word of thanks to all the speakers and for your dedicated attention to this problem. I think we have a good program underway.

Thank you so much, and good day.

(CONFERENCE ADJOURNED)

ORGANIZATION MEETING OF
INTERSTATE ADVISORY COMMITTEE
ON THE
SUSQUEHANNA RIVER BASIN
HARRISBURG, PENNSYLVANIA

ORGANIZATION MEETING OF
INTERSTATE ADVISORY COMMITTEE ON THE SUSQUEHANNA RIVER BASIN
HARRISBURG, PENNSYLVANIA
MONDAY, AUGUST 13, 1962
ATTENDANCE

PENNSYLVANIA

Hiram G. Andrews, Speaker, House of Representatives;
Executive Committee, Joint State Government Commission

Rep. Adam T. Bower, Task Force on Conservation, Joint
State Government Commission

Rep. Harris G. Breth, Chairman, Joint State Government
Commission

Guy W. Davis, Counsel and Director, Joint State Govern-
ment Commission

James J. Dougherty, Majority Whip, House of Representa-
tives; Executive Committee, Joint State Government Com-
mission

Dr. Maurice K. Goddard, Secretary of Forests and Waters

Stephen McCann, Majority Leader, House of Representa-
tives; Executive Committee, Joint State Government Com-
mission

Rep. Martin L. Murray, Task Force on Conservation, Joint
State Government Commission

Anthony J. Petrosky, Majority Caucus Chairman, House of
Representatives; Executive Committee, Joint State Gov-
ernment Commission

Francis A. Pitkin, Executive Director, State Planning Board

Rep. Fred J. Shupnik, Task Force on Conservation, Joint
State Government Commission

Rep. Orville E. Snare, Task Force on Conservation, Joint
State Government Commission

Senator George B. Stevenson, Vice Chairman, Task Force
on Conservation, Joint State Government Commission

Rep. Paige Varner, Task Force on Conservation, Joint State
Government Commission

Ralph R. Widner, Assistant Director, State Planning Board

Rep. Elisabeth S. Wynd, Task Force on Conservation, Joint
State Government Commission

MARYLAND

Carl N. Everstine, Director, Department of Legislative
Reference

Hon. Thomas J. Hatem

Senator William S. James

Delegate Harry J. McGuirk

James J. O'Donnell, Director, State Planning Department

Doris G. Smith, Research Analyst, Department of Legisla-
tive Reference

NEW YORK

Cecil E. Heacox, Secretary, Department of Conservation

Assemblyman Leo A. Lawrence

F. W. Montanari, Assistant Commissioner for Water Re-
sources, Department of Conservation

Frederick L. Zimmermann, Research Director, Joint Legisla-
tive Committee on Interstate Cooperation; Professor of
Political Science, Hunter College

PROGRAM

	<i>Page</i>
Temporary Chairman, Honorable Harris G. Breth..... Chairman, Joint State Government Commission	54
Election of Permanent Chairman.....	55
Permanent Chairman takes the Chair.....	55
Election of Two Vice Chairmen.....	56
Election of Treasurer.....	57
Amendment to Articles of Organization.....	57
Address by His Excellency, David L. Lawrence..... Governor of Pennsylvania	58
Address by James J. O'Donnell, Director..... Maryland State Planning Department	60
Address by Cecil B. Heacox, Secretary..... New York Department of Conservation	62
Address by Francis A. Pitkin, Executive Director..... Pennsylvania State Planning Board	64
Adoption of Resolution.....	66
Financial Participation.....	66
Time and Place of Next Meeting.....	67

ORGANIZATION MEETING
OF THE
INTERSTATE ADVISORY COMMITTEE
ON THE
SUSQUEHANNA RIVER BASIN
NEW YORK, PENNSYLVANIA AND MARYLAND

Held in the New House Caucus Room, Main Capitol Building
Harrisburg, Pennsylvania
Monday, August 13, 1962

MR. BRETH: Good morning, ladies and gentlemen. On behalf of the Commonwealth of Pennsylvania, I want to welcome the representatives from Maryland, New York and Pennsylvania participating in the second Tri-State Conference on the Susquehanna River Basin Development Program. This program got underway very auspiciously early this year. The first tri-state conference was held in Binghamton, May 27th and 28th, with New York hosting the tri-state meeting.

At that particular conference, Articles of Organization of the Interstate Advisory Committee on the Susquehanna River Basin were unanimously adopted to promote coordination and cooperation in necessary studies of the Basin and its problems, and to formulate and implement plans for the proper management of the use of the water and related resources of the Susquehanna River Basin.

Article II of those Articles of Organization states that the members of this Interstate Advisory Committee on the Susquehanna River Basin shall be representatives of the states of Maryland, New York and Pennsylvania, and that the committee is to be comprised of four members from each state; two designated by the state legislature, one of whom shall be a member of the House designated by the Speaker and one of whom shall be a member of the Senate appointed by the President Pro Tem; and two from the executive branches of each of the three states designated by the Governors thereof. I have here a list of the representatives of the various states and I would like to call the roll officially for this particular meeting.

From Maryland:

James J. O'Donnell, Director of the State Planning Department
Honorable Thomas J. Hatem
Senator William S. James
Delegate Harry J. McGuirk (representing Delegate Marvin Mandel)

From New York:

Assemblyman Leo A. Lawrence
Cecil E. Heacox, Secretary, New York Department of Conservation (representing Harold G. Wilm, Commissioner of Conservation)
F. W. Montanari, Assistant Commissioner for Water Resources, New York Department of Conservation
Frederick L. Zimmermann, Research Director, New York Joint Legislative Committee on Interstate Cooperation (representing Senator Elisha T. Barrett, Chairman of that committee)

From Pennsylvania:

Maurice K. Goddard, Secretary of Forests and Waters
Senator George B. Stevenson
Francis A. Pitkin, Executive Director, State Planning Board (representing Mr. John P. Robin, Chairman, State Planning Board)
Representative Harris G. Breth, Chairman, Joint State Government Commission

Since the representatives of the various states are here present, it is my pleasure and my duty, as temporary chairman, to call for the election of a permanent chairman for this Interstate Advisory Committee.

The Chair recognizes the gentleman from New York, Assemblyman Lawrence.

ASSEMBLYMAN LAWRENCE: As temporary Vice Chairman of the New York delegation, and after due consideration with my colleagues, in view of the fact that the Commonwealth of Pennsylvania has a very great percentage of the 27,500 square miles of drainage basin in the Susquehanna River, it is the feeling of the New York group that Pennsylvania should have the honor of having the permanent chairman of this group.

Therefore, I offer for nomination for that office the name of the Honorable Maurice K. Goddard, Secretary of Forests and Waters of the State of Pennsylvania.

MR. BRETH: The Chair recognizes the gentleman from Maryland, Senator James.

SENATOR JAMES: The Maryland group has authorized me to second this nomination. We concur in all that has been said, and we feel that the Honorable Maurice Goddard is highly qualified for this post.

MR. BRETH: The Chair recognizes the gentleman from Pennsylvania, Senator Stevenson.

SENATOR STEVENSON: Mr. Chairman, I move the nomination be closed.

MR. BRETH: On the question, those in favor signify by saying aye.

It was unanimously agreed.

I wish to announce officially that the Honorable Maurice K. Goddard, Secretary of Forests and Waters of the Commonwealth of Pennsylvania, is hereby named permanent Chairman of the Interstate Advisory Committee on the Susquehanna River Basin. I would ask Dr. Goddard to step up and take over his duties.

DR. GODDARD: Thank you, Representative Breth. Ladies and gentlemen, nominees and delegates to this group, members of the Joint State Government Commission. It is a real

pleasure for me to accept this responsibility. I wish to assure you that I consider it a tremendous responsibility.

Of all the posts I hold because of my position in state government, I think perhaps one of the most important has been my membership on the Sanitary Water Board, which most of you in our own state know has tremendous impact and influence on the state.

Many of us have discussed water resources management, and I think perhaps water quality control is the most important role we face. Obviously, in the management and use of the river basin, this must be considered as one of our primary goals.

There are so many distinguished members of the legislatures in the audience that I would be presumptuous to try to make an appropriate speech. Nevertheless, I think it is appropriate to point out that the Susquehanna, as we all know, is the most important river drainage area in Pennsylvania. Well over half of our state is in this Basin. It is also a very complicated river because, as all of us know, some of our tributary streams are grossly polluted with coal silt, raw sewage and acid mine drainage. On the other hand, we go to rivers like the First Fork of the Sinnemahoning and Bald Eagle Creek where you have some of the finest waters in the Eastern United States,—high in alkalinity, high in dissolved oxygen,—other extremes. Then we have some counties that are practically 80 to 90 percent wooded, and you come to a county like Lancaster which I think last year was the thirteenth ranking county in the United States in agricultural productivity, so that the river basin is a tremendous cross-section of contrast. Because of this, the task of developing a comprehensive plan for this river is going to be very, very complicated; it is going to be very important to the future welfare of these three states. Perhaps the proper development of this river is the most important thing we can do in these three states.

We know what is happening in other parts of the United States with the development of river systems,—the Tennessee Valley and how this has changed the entire economic life of that part of America,—the Columbia in the Pacific Northwest. I do not think we can accept any of these as a guide to what we want to accomplish on the Susquehanna. Every basin is different economically, socially, politically; hydraulics are different. I have no preconceived notion as to what we should do with this river. I would like to make that a point of record,—if I make any one point at all here

this morning,—to approach with an open mind how we should proceed to develop the Susquehanna River Basin. We think we have a pretty fine arrangement in the Delaware. As we study the Susquehanna, we might find this is not appropriate at all to the interests of the Susquehanna Basin.

All I can say to you, ladies and gentlemen, is that I accept this responsibility with a great deal of honor. I know it is going to be tremendously complicated and difficult. I only hope that I have the time and energy to do it properly.

The next order of business under Article IV of our agenda is the election of two vice chairmen from the participating states. The vice chairmen are to be selected from states other than the state that is represented by the Chairman.

I would like to call first on Senator James of Maryland as to the wishes of that state with regard to the vice chairmen.

SENATOR JAMES: Maryland recognizes that, although it has a small portion of this river within its area geographically, nevertheless, the river is tremendously important to us because it is a great source of water supply to the State of Maryland. It not only feeds the great Chesapeake Bay, but also it will be used in the near future as an important source of water supply for the City of Baltimore and the entire metropolitan area. Consequently, we are very much interested in this program, and we would like to nominate a man highly qualified to fulfill the duties which this group has tackled. We would like to place in nomination the name of James J. O'Donnell, Director of our State Planning Department, to serve as Vice Chairman of the Interstate Advisory Committee on the Susquehanna.

DR. GODDARD: The Chair recognizes Assemblyman Lawrence of New York.

ASSEMBLYMAN LAWRENCE: Mr. Chairman, I would like to second that nomination.

DR. GODDARD: The Chair recognizes Senator Stevenson.

SENATOR STEVENSON: Mr. Chairman, I move the nominations be closed.

DR. GODDARD: On the question, those in favor signify by saying aye.

It was unanimously agreed.

We welcome Mr. O'Donnell as Vice Chairman to this committee. Mr. O'Donnell, would you care to come up here and be seated. I think it would be appropriate to have the vice chairmen up here. If things become too hot to handle, I will refer it to one of these vice chairmen.

We have to elect a second vice chairman, and we would like to call on Assemblyman Lawrence from the State of New York as to their selection of a vice chairman.

ASSEMBLYMAN LAWRENCE: Mr. Chairman, on behalf of the New York delegation, it gives me great pleasure to place in nomination for this important office of Vice Chairman the name of Harold G. Wilm, Conservation Commissioner of the State of New York and presently the Chairman of the New York State Water Resources Commission. New York State, as you know, is the source of this great river, and we, like the other participating states, have a great interest in the success of its development through this organization. It gives me great pleasure to offer the name of Commissioner Wilm.

DR. GODDARD: The Chair recognizes Senator James of Maryland.

SENATOR JAMES: Maryland concurs in the nomination.

DR. GODDARD: The Chair recognizes Senator Stevenson.

SENATOR STEVENSON: Mr. Chairman, I move the nominations be closed.

DR. GODDARD: On the question, those in favor signify by saying aye.

It was unanimously agreed.

We welcome Dr. Wilm as Vice Chairman of this group. In view of the fact that Dr. Wilm has a serious ear infection today and could not be with us, we will ask Cecil Heacox, who is representing him, if he will come up and take the other chair as Vice Chairman.

Our Articles of Organization, Section III, Item C, indicate that we should elect a treasurer. Perhaps this is the most important assignment so far this morning.

We would like to call on Assemblyman Lawrence of New York for the nomination for treasurer.

ASSEMBLYMAN LAWRENCE: Mr. Chairman, after due deliberation with the delegates from New York, as well as the representatives from the State of Maryland, it was concluded that the office of Treasurer—subsequently perhaps to be Secretary-Treasurer—has a rather confidential relationship with that of the Chairman. It was decided, in view of that fact, that the name of Representative Harris G. Breth of Pennsylvania should be offered as Treasurer of this organization and I make that nomination.

DR. GODDARD: The Chair recognizes Senator Stevenson.

SENATOR STEVENSON: Mr. Chairman, I take pleasure in seconding the nomination of our "wheelhorse," Representative Breth.

DR. GODDARD: The Chair recognizes Senator James.

SENATOR JAMES: I would like to concur in the nomination.

DR. GODDARD: The Chair recognizes Mr. McGuiirk.

MR. MCGUIRK: Mr. Chairman, I move the nominations be closed.

DR. GODDARD: On the question, those in favor signify by saying aye.

It was unanimously agreed.

We welcome Representative Breth as Treasurer of this group.

Before we proceed with the address from the Governor, perhaps it would be appropriate to talk to the point that we would like to change our by-laws from "Treasurer" to read "Secretary-Treasurer." Assemblyman Lawrence, would you like to talk to this point for the record?

ASSEMBLYMAN LAWRENCE: I offer a resolution to amend the by-laws to read "the office of Secretary-Treasurer" instead of "the office of Treasurer" as is now indicated on the agenda. I offer that as a motion.

DR. GODDARD: The Chair recognizes Senator James.

SENATOR JAMES: I second the motion.

DR. GODDARD: I would like to explain to those not familiar with our Articles of Organization that Section VI, Amendments, states:

"The Interstate Advisory Committee on the Susquehanna River Basin may at any time amend these Articles of Organization, by a majority vote of the membership of each state on the committee provided that at least ten days' written notice shall be given to each member of the committee of the proposed amendment."

Actually what we are saying today, therefore, is that we are directing the Chair to send a resolution to the members indicating that we would like to change the term "Treasurer" to "Secretary-Treasurer," and, if we vote favorably on this motion, the Chair will do so.

On the question, those in favor signify by saying aye.

It was unanimously agreed.

I believe we are now at the point where we would like to have the address by the Governor.

MR. BRETH: I have checked with the Governor's office. We are a little ahead of time. We have notified the Governor, and he will be with us forthwith. I think perhaps we could be at ease until the Governor comes down.

DR. GODDARD: Representative Breth, I would like to have you present the Governor. You are the Chairman of the Joint State Government Commission and you have been the "sparkplug" that has carried us to this point. I think it would be a very fine gesture if you would do this for our committee.

MR. BRETH: I would be very happy to accept the assignment, and, if the Chair would be willing, I will escort the Governor.

DR. GODDARD: I do not want to direct the legislature to do something, but these are my wishes.

MR. BRETH: Speaking of the legislature, I would like to take a moment to introduce to everyone present the Speaker of our House—a gentleman who has had a long hard fight on behalf of all legislatures, particularly the one in Pennsylvania. What a man—our Speaker, Hiram G. Andrews.

SPEAKER ANDREWS: I want to say it is a privilege to be here because I now know better how to manipulate a thorough-going steamroller.

MR. BRETH: With that, the steamroller will proceed to get up steam.

SPEAKER ANDREWS: I want to say, Mr. Secretary, that we have been struggling for 20 years with the problems that this group faces, and we expect to go right along with you for the next 20 years.

DR. GODDARD: Thank you very much. There is one point I should have made and while we are waiting I think I can make it. Most of you people in the room know we had an advisory committee on the Delaware Basin—actually appointed by the Governors—and the Mayor of New York and the Mayor of Philadelphia participated, but we did not, as such, technically have a legislative liaison too well established. Here you will note, we have as many legislative members as we do executive and technical members. I think it is a tremendous improvement in the accomplishment of coordination on the Susquehanna River Basin. We must have legislative support to do anything. One of the great goals of this new group is to have complete liaison with the legislatures. I think this is going to be one of the big improvements perhaps of our efforts in the river basin administration, and we welcome your words very much, Mr. Speaker.

MR. BRETH: Ladies and gentlemen, it is a great honor and a great pleasure to present to you a man of Pennsylvania who has the great interests of the Commonwealth at heart, and also the great interests of the land drained by the Susquehanna River. He has been a great Governor and I know that his interest in this program will be fully explained to you.

I now present to you the Governor of the Commonwealth of Pennsylvania, His Excellency David L. Lawrence.

GOVERNOR LAWRENCE: Thank you very much. First of all, I want to welcome you here and to say how happy I am to see this program get underway here at Harrisburg.

The people of the three states involved owe the members of this committee a great debt. You are cutting years off the time we need to realize a great new future in the Basin of the Susquehanna. You are demonstrating with great effectiveness that there is no substitute for leadership—leadership in the Legislative as well as in the Executive Branch of the Government. In many respects the record you are making is a far cry from the sorry epic of the Delaware River—an epic nearly 25 years in the writing.

As far back as 1936, New York, New Jersey, Pennsylvania and Delaware had awakened to the crying need for more and better water in the Delaware River. But for 20 years, political myopia and selfish interference by special interests conspired to prevent 22 million people from meeting their urgent water needs. I do not mind admitting that Pennsylvania must accept a major share of the responsibility for that sorry story.

Then, in 1955, things began to happen on the Delaware. A preliminary plan was devised. A pioneering interstate-federal compact was forged. Today the new Delaware River Basin Commission has set to work and has already placed eight projects before Congress for authorization.

All of us in this room are determined that the story on the Susquehanna will not be a repetition of that on the Delaware. The governors of all three states and our representatives in Washington are seeing to that. It was, after all, only two years ago that the three states first began serious consideration of the comprehensive development of the Susquehanna. In that short time, Congressman Dan Flood, of Wilkes-Barre, and Senator Joe Clark were able to secure the necessary Federal authorization for a survey on the Susquehanna. Immediately President Kennedy followed this up by requesting in this budget \$300,000 to begin the task.

Today, the Public Health Service and the Army Engineers are already making the necessary arrangements to start the Federal studies. This committee, which will serve as the voice of the states in the planning and development of the Susquehanna, is in business. It will help shape the form of the ultimate plan to be devised for this river and it has the heavy responsibility for hammering out a compact which will govern the future development of the river.

The Legislatures of New York, Maryland and Pennsylvania, in particular, deserve credit for their role in assembling this committee. Too often in the past the legislatures found themselves in the rather unpleasant position of dealing with proposals in which they had little or no part. In matters so vital as the development of a major river for flood control, water supply, pollution abatement, low flow improvement, fish and wildlife, and recreation, this is intolerable. In developing the Susquehanna, the legislatures and the governors are firmly together from the very start, and we shall stay that way because we are determined to succeed.

That determination is the solid foundation upon which the programs and policies of Pennsylvania's State Government are now being reared. This Administration believes that its greatest obligation is to prepare the plans for the future which Pennsylvania needs if she is to prosper in the age of space.

Only in a static and unchanging world is there no need for plans. It is when the world is in a state of flux and turmoil that we must have the foresight to anticipate change and prepare for it.

Our world is indeed changing. New technology has drastically altered the terms of economic life. It has also imposed new social conditions.

Because of this, Pennsylvania's cities and industry—most of which grew up in the late 19th and early 20th centuries—must readapt to the new era in which we live. Pennsylvania cannot succeed with an educational system, a transportation system, an industrial establishment, or a government designed to work in the age of the steam engine. We live in an era of automation, atomic power, and jet-propelled flight.

For this reason, this Administration leaves to its successors a blueprint for Pennsylvania education which meets the space age on its own terms. It leaves to its successors new plans in the fields of health and welfare which provide for new social problems and new patterns of human behavior and settlement. It leaves to its successors a highway program adapted to a world of high speed travel. It also leaves to its successors a great plan for Pennsylvania's outdoor resources—the so-called Project 70.

And it also leaves to its successors the beginnings of three great plans for our river basins. We are already well under way on the Delaware. We are getting started on the Susquehanna. And the Army Engineers have initiated the first studies in the Ohio Basin. Those are the three great river basins.

The development of our river basins ranks in importance, in my opinion, with our plans in all the other fields of activity in state government, for water is the essential ingredient for progress and expansion. We must provide for our own water needs or face decline and stagnation.

We have on the Susquehanna a great opportunity, for we can design a river basin plan which does more than simply

provide for the expected needs of the future. We can, by proper planning, devise a scheme which will revitalize the economies of broad regions throughout the Basin, opening up new industrial opportunities, new business opportunities, new commercial opportunities, new vacation lands which will revolutionize the future along much of the Susquehanna River.

The Susquehanna River drains nearly half of the State of Pennsylvania. It is, therefore, of crucial importance to our state that we succeed in our endeavor.

This is the task which you have taken upon yourselves. I pledge you my support and wish you well. Your recommendations, your discussions and decisions will have a dramatic effect upon the future of all three of the states involved in this study. I know that you have faith in that future. And I am equally confident that the future will prove that faith was justified.

I can think, ladies and gentlemen, of nothing that is more important than this question of water. I think anybody who is a student of government, a student of world affairs, a student of history, can see what is happening in the evolution of things. I know of nothing that gave me more satisfaction than the day we definitely organized the Delaware River Commission up at Princeton. I think it was a day that generations to come will look upon and bless everyone that had anything whatever to do with it; the same with this problem here.

I think we have been very neglectful in many respects. God has been very good to us in giving us many natural resources here in Pennsylvania. We came in and defiled the air, polluted the waters and all of those things, not thinking at all about the future. We have the same thing in strip mining and things of that kind. We are just ignoring the natural things that were given to us, that we are blessed with. I think now, this generation, at least in the past few years, is very rightfully thinking in the right direction.

I take a great deal of satisfaction out of being a part of the program out in Pittsburgh to help clean up the streams around there and to help clean up the air. I was raised in downtown Pittsburgh along the rivers—played there—and I remember very distinctly as a youngster the rivers every once in a while would freeze across because in those days we did not have the acids and so forth in them that we have had in recent years. It is very gratifying now to go down

along the Allegheny River to see youngsters fishing in the river. As Mayor of Pittsburgh—I guess the order may still be in effect—I stopped all swimming in the rivers around Pittsburgh because the pollution endangered the health of people.

As I say, I know of nothing that gives me more of a thrill that I will look back upon when I have long since left this Capitol than the activities in this particular field of purifying the waters of the state and preserving the waters for the future, for the multiplying population alone, for the needs of individuals, for the amounts of water that will be needed in the years to come.

I congratulate you for being part of this, and I predict that every one of you will look back upon this when you get up to my age bracket with a keen sense of satisfaction that you were a part of this great program. I thank you.

MR. BRETH: I want to thank you, Governor Lawrence, for those very inspirational words on behalf of the Interstate Advisory Committee on the Susquehanna River Basin.

Maurice, I will turn the chair back to you.

DR. GODDARD: At this point we would like to call on the representatives of the three states to present comments. It is my privilege to call upon, first, Mr. James J. O'Donnel, Director of the Maryland State Planning Department, who was just elected as one of the Vice Chairmen.

MR. O'DONNELL: Thank you, Mr. Chairman. Members of the Interstate Advisory Committee on the Susquehanna River Basin, staff representatives of the participating states, ladies and gentlemen. We from Maryland, are pleased to meet again with our colleagues and associates from Pennsylvania and New York in the pursuit of the common interest that brings us together in the problems of the Susquehanna River Basin.

Before proceeding, I would like to comment on the representation that Maryland has here at this conference, since the temporary Chairman, Mr. Breth, introduced them to you. I think it is very fitting that the people representing Maryland are those who are most closely associated to the particular problem. Senator James and Mr. Hatem are both from Harford County, which borders the Susquehanna River. Mr. McGuirk is from Baltimore City which, of course, has a great interest in the waters of the Susquehanna

River as a focal point of commerce in the State of Maryland. I would like, too, to give recognition to the staff representatives of our Department of Legislative Reference, Dr. Carl Everstine, the Director, and Doris Smith, Research Analyst, who are here with us participating in this conference today.

At the outset, I would like to reiterate for the record the stated interests of Governor Tawes of Maryland in the objectives of this interstate committee. Governor Tawes, in correspondence to the sponsors of this organization, prior to the initial meeting at Binghamton in May said this:

Although only the lower 15 miles of the Susquehanna are in Maryland, the depositing of waters from the entire Susquehanna River Basin into the upper Chesapeake Bay is, of course, of vital concern to the State of Maryland.

As I have previously indicated in correspondence to Governor Lawrence, I feel it both necessary and timely that New York and Maryland join with Pennsylvania in taking a comprehensive look at the Susquehanna River, and I am most pleased to indicate my approval of the activities that will foster the prompt development of the resources of the Susquehanna River Basin.

I look forward with a great deal of interest and pleasure to the progress of these deliberations and contemplated studies.

J. MILLARD TAWES
Governor of Maryland

I think this organization is most fortunate to have had the fine and basic foundation and initiation that it did, and I refer particularly to the record of the meeting of the initial conference held in Binghamton on May 28th, where were discussed not only the proposed organization of the interstate committee, but where all of us heard excellent statements and analyses of the problems of the Susquehanna propounded by experts and laymen alike, all with one objective in mind—the proper development of the Susquehanna River Basin. I think we will find in the volume of the minutes that has been produced a very excellent reference book, a very basic foundation to the objectives we seek to gain through this interstate committee.

Through our history the course of the Susquehanna has been the course and story of some of the greatness of this country. It was the turnpike for Indians in pre-Colonial

days, and it knew the voyaging of the earliest explorers. Captain John Smith came to the Susquehanna from the south, from the Chesapeake Bay as early as 1608, and Brulé, the emissary of Champlain, traveled the river from the north as early as 1616. There is even some strong evidence that the Spaniards had been to the river before then.

As history moved along, the Susquehanna area became the active frontier of Colonial days and progressively developed from then down to modern days as a resource area, as the heartland of the progress of our great Nation, giving us the lifeblood of our great industry—coal, lumber, iron ore, and hundreds of other products. And yet with all that the Susquehanna River Basin area has given to our civilization, the river itself has remained relatively undeveloped, but certainly not unchanged, for the growth of industry, the increase in population, the disposal of wastes, and the erosion of the land have all contributed to the lessening of the character and quality of the waters of the Susquehanna River. And this at a time when the lessening of our natural resources in abundance and a great growth in our population demand the best possible treatment and handling of all the vital resources that God has given to this country.

While we in Maryland share only 300 square miles of the Susquehanna River Basin, which has a total mentioned here before of 27,500 square miles, and some 15 miles in length, while the total length of the river is about 450 miles; we nonetheless have a vital interest in what the Susquehanna River brings to the shores of the Chesapeake Bay.

According to the record, the average spring flow of the Susquehanna in Maryland at Conowingo is 25 billion gallons per day, and with it comes pollution and silt and acid mine drainage and all the other characteristics that 450 miles of water can pick up and carry through a populated drainage area. We look to the improvement of the quality and character of the water of the Susquehanna as a direct benefit to Chesapeake Bay and the economy of our people in Maryland.

I hope that the objectives and aims we all seek in common in this interstate committee can be realized. Happily, the activities of this committee dovetail very fortunately with the water resources inventory study that we have undertaken recently in Maryland and will continue over the next several years. I think the results of our studies in Maryland and the dovetailing of them with the activities of this committee and the studies of the Army Corps of Engineers will

be a very fortunate blessing to the total question of water resources in our common river basin.

Maryland's region of the reaches of the Susquehanna is a busy and growing region and can use the help that the development of the Susquehanna can give it. While the population of our state as a whole grew 32 percent in the last decade, the population of Harford and Cecil Counties, which border the Susquehanna on either side, grew 46½ percent in the same period.

Improvement in water quality that would go with an organized program on the Susquehanna could do much to revitalize fisheries and crabbing and oystering in the upper reaches of the Chesapeake Bay.

Our state parks are in the process of developing substantial recreation areas on both sides of the river. The entrance to the Chesapeake and Delaware Canal, which leads commerce to and from the Delaware Bay, is in close proximity to the mouth of the Susquehanna. And there are great establishments of the Federal Government at the Aberdeen Proving Ground, Edgewood Arsenal, and Bainbridge Naval Training Center, either on or in close proximity to the Susquehanna.

Significantly, Baltimore City is completing in the next few months a 108-inch raw water line running from the Susquehanna to supplement the water supply of Baltimore City. This item alone would be of vast concern and interest to the economy and health of the State of Maryland. Harford and Cecil Counties, on either side of the Susquehanna River, have active planning commissions and development programs, all of which tie in very significantly with the considerations of the improvement to the Susquehanna.

While hopefully looking forward to the improved conditions of the water quality on the Susquehanna, I would say that we, as a functioning organization, have many goals and objectives to which we can specifically direct our attention in the pursuit of our aims. It seems to me we need to define and delineate the broad comprehensive multiple-purpose nature of our problem. We need to apprise members in Congress of our organization, its purposes, and its aims, and to solicit their help and cooperation, not just with the activities of the Federal Government, but with the definite understanding of the need for support and funding for the efforts and the studies that will go into the entire Susquehanna Basin picture. We need to encourage our own state

governments and local governments not to temporize or discard current and future endeavors regarding the Susquehanna and areas within its basin. We each need to take all the active steps that we can to continue and intensify sanitation and health controls, pollution controls, zoning, erosion controls, and the like. These efforts must never stop, notwithstanding any amount of progress we make in encouraging controls of the entire river basin. We must gather together all the study information and report material, factual or otherwise, from each of our states for common references and analyses, including similar efforts and studies of other river basins. We must bring into our activities, on a collateral basis, all the state and local agencies with mutual interest in the area, possibly setting up local and state conferences on the Susquehanna River. And we must initiate public education programs for familiarity as well, to build up support for our future programs.

While we all know in general the results that we seek basically in the Susquehanna, namely, better water quality, I am sure, to put it more specifically, we would be satisfied if, as an end result, we were able to restore the water to its miracle working attributes of many years ago. In this I refer specifically to an episode quoted in the book "The Susquehanna," one of the Rivers of America series written by Carl Carmer. It seems in the book that an Ebenezer Cook, an English tobacco buyer, came to Maryland in Colonial days and he was accustomed to expressing a lot of his experiences in rhyming couplets. One time back in the year 1708, Ebenezer had a particularly good night on the town. The next morning he was in great physical unhappiness and discomfort, but he finally rallied and later he wrote about it like this:

"Waking next day with aching head
And thirst that made me quit my bed,
I raised myself, and soon got up
To cool my liver with a cup
Of Susquehanna, fresh and clear."

If we ever achieve such results as this in the Susquehanna, I think posterity will know no end to our fame.

In concluding, I would like to commend and thank the Honorable Harris Breth and his staff and the host State of Pennsylvania for the splendid reception that we have had, for their excellent cordiality, for the opportunity to get together in furtherance of the objectives of the Interstate Advisory Committee on the Susquehanna River.

Mr. Chairman, if I may speak for the Maryland delegation, I would like to extend to you and to the committee as a whole a most cordial invitation to schedule your next meeting in the State of Maryland. Thank you very much.

DR. GODDARD: Thank you, Mr. O'Donnell. That was a magnificent statement and I am sure well received by all parties here today, and we know that your spirit of cooperation is sincere.

Before we proceed with Mr. Heacox, I would like to ask just one question, if I may. I think it would be of interest to the people to know the status of the withdrawal of the water from the river to the City of Baltimore.

MR. O'DONNELL: I think the raw water line will be completed by the end of this year—December, perhaps, or January. This, of course, will supplement the current water supply of the Lock Raven and Prettyboy Dams on the Gunpowder and the Liberty Dam on the Patapsco.

DR. GODDARD: I think people understand that this diversion—we call it diversion, but this taking—is from above the Conowingo, and what does it represent—about a \$30 million investment or thereabouts to the City of Baltimore?

MR. O'DONNELL: Yes, sir, thereabouts.

DR. GODDARD: The important point is that the economic development on the river is of tremendous concern to the city and you can see why they are interested in good water at that taking point. Thank you very much, Mr. O'Donnell for a very fine presentation. I am sure we all have common interests in this regard.

We would like to hear next from Mr. Cecil Heacox, Secretary of the New York Department of Conservation, who, as we stated earlier, is here representing Dr. Wilm, Director of Conservation of the State of New York.

MR. HEACOX: Mr. Chairman, distinguished representatives from the states, ladies and gentlemen, I do not believe I am wired for sound. Perhaps it is just as well. Earlier this Spring I found myself in West Chester County addressing a large group at the county center, which is larger than most theaters. All of a sudden as I started rolling, there was a terrific feed-back on the mike and I said, "Can you hear me in the back of the room. I can't hear what I am saying up here." A loud voice boomed out, "You're not missing a thing brother."

I envy the preparation of my predecessor. I did jot down a few notes after breakfast. They have already been said more eloquently by the Governor and to some extent by Mr. O'Donnell. I wonder how he got that wonderful script. He must have stayed up all night. You apparently knew you were going to be here. I am a pinch hitter, so that you will have to excuse me.

It is a pleasure to represent New York State and my boss, Commissioner Wilm. This is just the kind of meeting that Harold would get so much fun out of and be able to make such a contribution to. Many of you are familiar with his role in the last stages of the Delaware in achieving the objectives of the Delaware River Basin Compact and the resulting commission. He brings to this job of Vice Chairman over 25 years of experience in his speciality—watershed management and river basin development. Most of those years were in the arid Southwest where they really have water problems because there is no water to start with. Here in the Susquehanna, with 40 inches of rainfall every year or thereabouts, it is more a question of getting the right amount of water at the right place at the right time.

In New York, the watershed is a working unit. This has been a concept since at least 1926 when our own Conservation Department made a study of the Genesee River, whose source is in Pennsylvania. In 1935, a similar study was made of the Susquehanna *per se*; then in 1937, the Chemung, a tributary of the Susquehanna, which we separated for administrative efficiency in New York State. Those studies were oriented chiefly to fisheries, but water quality studies will furnish a good perspective on the problems that we face today.

In New York we are essentially in conservation a field organization working at the grass roots level. As your program unfolds and develops, you will find that our regional offices are going to be very helpful. They are well staffed with veterans who know their territories, and I am sure that is where we can take up an awful lot of the slack in providing information that was not available on the Delaware. Our sister agencies long ago also realized that you cannot run a governmental agency successfully in all aspects by remote control from Albany, so that you will find regional offices for commerce, health, and public works that will also be very helpful in rounding out the picture.

Closer to home, at headquarters, Commissioner Wilm has strengthened the Division of Water Resources within our

Conservation Department. We have added to our staff; we are fortunate in getting Mr. Montanari from the Ohio River Valley Water Sanitation Commission, who is coming with us as Assistant Commissioner of that division in September.

The policy-making agency in New York State is the Water Resources Commission. That is the outfit that you will be working very closely with as your plans unfold and develop. There again, through the leadership of Commissioner Wilm, that body has been strengthened; its base has been broadened. Now at the cabinet officer level we have representation from commerce, health, public works, law, agriculture, and markets, and of course, conservation. That is just getting underway too, but we have great hopes that that will make a very significant contribution to the total picture.

On the legislative side of the coin, we are fortunate in having completed very recently a recodification of the conservation law as related to water resources. That was accomplished under the magnificent leadership of Assemblyman Leo Lawrence. We appreciate the wonderful job that he has done for us in New York State.

In conclusion, I can only echo the sentiments expressed by Mr. O'Donnell of Maryland that we, in New York, appreciate the fine hospitality that you extended us here in Pennsylvania and hope that perhaps after the Maryland meeting it will be our turn again. You certainly put it over. It is going to be hard to beat. Thank you very much.

DR. GODDARD: Thank you very much, Mr. Heacox. I think you can see why he is the Secretary of that great Conservation Commission group in the State of New York. He does better without a speech than I do with one.

I would like to ask one question. You talk about these regional headquarters. Are they by basins, or how is that organized?

MR. HEACOX: We would like to have them by basins, but we have counties, political subdivisions, and it is necessary to regionalize on that basis. In conservation you will be dealing with at least two regional offices that are in the Susquehanna River drainage—the Chemung, for example.

DR. GODDARD: We will go to the third and last address by a participating state. Pennsylvania's comments will be

made by Francis A. Pitkin who is here representing Mr. Robin, the Chairman of the State Planning Board. Mr. Pitkin is the Executive Director. I think, of all of us in this room today, he has perhaps the most experience in the work of water resources development at the state level. He has been for many, many years, as you know, the Chairman of the Interstate Commission on the Delaware River Basin that has done a tremendous job in the cleaning up of the Delaware River. If we do not remember him for any one other thing, we can remember the great contribution in this regard. Actually it was the stepping stone to the Delaware River Basin Compact. It is with great pleasure that I present to you Francis A. Pitkin for Pennsylvania's comments.

MR. PITKIN: First, Mr. Chairman and ladies and gentlemen, I would like to present to you Jack Robin's regrets that he cannot be here. Originally he regretted that he could not come to this meeting because he planned to be on vacation, but he cut the vacation short—one of the reasons being that he wanted to get up here—but yesterday I had a message from him that he was ill and would not be able to make it after all.

It seems almost superfluous for me to talk on Pennsylvania's point of view on the Susquehanna River Development Program, since we have just heard the Governor talk on that same subject. Nonetheless, I would like to reiterate and try to emphasize again some of the points I tried to make at the Binghamton meeting and which the Governor made so well this morning.

Certainly I cannot overstress the importance which we in Pennsylvania attach to a comprehensive basin development program on this river. As the Governor said, this magnificent stream drains 48 percent of our state. We are interested in it, not only because of that size factor, but also because within it are some of the most distressed counties of Pennsylvania from the economic point of view.

Despite the painful economic adjustments which are now taking place in parts of the Pennsylvania section of the Basin, we believe this great region stands today on the threshold of a new era. The interstate highways, which will soon cross the Basin from east to west and from north to south, provide us with a number of economic opportunities which hitherto did not exist. Millions of acres in this Basin, many of them State-owned forest land, can soon become an American vacationland, directly on the "short route" from Chicago to New York City.

The interchanges of these new freeways will offer many opportunities for new investment and growth in such fields as warehousing and distribution, manufacturing, research and development, and in recreational and tourist development. In a word, the upper Susquehanna Basin in Pennsylvania has suddenly become, or will soon become, highly accessible to the greatest concentration of people in America.

But the Susquehanna region must become more than just accessible if we are to realize our promise in full measure. We must assure ourselves that the Susquehanna Basin becomes a desirable place for modern industry and commerce. We can only do this by harnessing the rich water resources of the Basin for the purpose of man.

This means we must have flood control to protect heavy industrial and urban development. We must have water supply to sustain new growth. We must have low flow augmentation to keep the wheels of industry turning. We must control pollution in order to provide high quality water to water-consuming industry. We must protect the fish and wildlife resources of the Basin because of the great economic return which they can mean to the area, and because they are an essential element in the general livability of the Basin. We must provide the recreation sites necessary to serve the population which lives in the Basin as well as the many, many tourists which we can attract to what, by all odds, is some of the most beautiful countryside in the United States.

In other words, the Susquehanna River Basin plan is more than simply a plan to protect and develop our water resources. It is the framework for a great economic development program for northern and central Pennsylvania, as well as portions of our sister states. The large impoundments in the Basin, which a river basin program will provide, will create unparalleled opportunities for developing the tourist potential of our mountain forests in the Basin. This will make many communities currently suffering from economic distress far more desirable as locations for new growth.

Now, those remarks, you may recall, I made at the Binghamton meeting. I would like to report just a little bit on some of the things that have been happening and are happening in the Pennsylvania portion of the Basin.

Just last Wednesday, we dedicated the second great flood control dam on the West Branch of the Susquehanna—

rather, on a tributary of the West Branch. The first, George B. Stevenson Dam, named for our good friend Senator Stevenson, was completed by the Commonwealth of Pennsylvania in 1956. Now, as of last Wednesday, August 8th, the Federally-constructed Alvin R. Bush Dam is in full operation. Earth movers are already at work at the third site which is Curwensville, near Clearfield. Curwensville and the fourth dam, Blanchard, which is near Bellefonte, now under design, will be built by the Army Engineers.

When all four dams are in operation as a unit, we will have comprehensive flood control on the West Branch for the first time, flood control which will save the people and industries of the basin an estimated \$6 million each year.

But flood control is not enough. The Bush Dam must be the last major impoundment built on the Susquehanna Basin for flood control alone. I might say that while Bush dam—we called it Kettle Creek before it was decided to name it for the late Congressman Bush—was originally designed for flood control purposes alone. At the insistence of Secretary Goddard, the recreation potential was recognized. The dam was raised slightly in height and a larger recreation pool, a permanent pool, behind the dam was provided. With some help from the Army Engineers, but largely through the efforts of our Pennsylvania Department of Forests and Waters, a very attractive recreation area is going to be developed on that conservation pool at Kettle Creek or Bush Dam as we now call it. But as I say, we must not in the future design dams in the Susquehanna Basin for flood control alone. Our need for good quality water in steady flow is too critical for us to waste precious reservoir sites for single-purpose structures. From now on we must utilize every reservoir for its maximum possible contribution to the economic use of the river.

This is why Pennsylvania is so strongly interested in having Congress authorize the Raystown Reservoir on the Juniata River, which for you outlanders is a tributary of the Susquehanna. This must be done as soon as possible. A true multi-purpose dam, the Raystown, can make far greater contributions to the economic growth of the basin than any earlier purely flood control plans announced. Lest anyone doubt this, just look out the front of the Capitol today. The Susquehanna River, despite the rain we had last week, is at its lowest point in recorded history.

Recreational use of the river, normally thriving in front of Harrisburg, is practically nil today because of this extreme low flow condition. Steel mills and power dams down

river are concerned about whether they have sufficient water to continue full operation. Because of the limited flow, the threat of acid mine drainage, or other forms of pollution killing fish life, is drastically increased.

All of these are reasons enough for us to be concerned about harnessing the Susquehanna. We have seen major industries turn away from this Basin because we could not guarantee them the large year-round flows necessary for their operations.

A comprehensive development of the Susquehanna Basin will eliminate this liability. Never again will we be cursed with too much water in the river during some months and too little in others. We will have a river full of economic promise. Certainly these are not just Pennsylvania objectives; they are tri-state objectives behind which we can all unite and today we are doing just that.

DR. GODDARD: Thank you very much, Mr. Pitkin. I do not want to be critical, but I think, for the record, we want to correct one item. When you say the Susquehanna is at the lowest point in recorded history, it is the lowest point on the same date. There have been periods in late September when I think it has been the lowest ever. But here is a significant point—the river is now at a point where it normally is two or three months from now, and there lies the critical nature of the Susquehanna. In June and July we had a record low for those months.

That was a very excellent presentation and I would like to stress also, as Secretary of the Department, the comment on the multi-purpose aspects of the reservoirs is an important point.

I would like to report to this group that in about a month the Department will have ready a comprehensive study of Codorus Creek in York County. This was made at the request of the York Planning Commission. We have been at it better than two years due to complications of finances and other aspects of the study. We did not want a study that was just good in theory; we wanted a plan that had some chance of success when it was presented to the local government bodies, which delayed our report. You will find that the reservoirs recommended in this plan—water supply features, low flow augmentation, recreational features—run the whole gamut of uses of a small tributary stream. There obviously is no power feature; the stream is too small for this, but for many other uses they have multi-purpose

aspects. I think that is the one point Mr. Pitkin made that I would like to reiterate.

Before we go on, if there are any questions we would like to direct to these three people, I am sure they would be glad to try to answer them. I interrupted and asked a few as we went along. Would anyone from the floor like to ask any technical or organizational questions of these three gentlemen?

MR. HEACOX: This was just an oversight when I had the floor before. Harris Breth did a wonderful job of introducing the New York delegation. The only one that is working, and the most important member of the delegation, happens to be the very charming wife of Assemblyman Leo Lawrence, if you did not meet her last night, Mary, would you please just take a bow.

DR. GODDARD: At this point, we have a few items of business I believe we ought to attend to. I jumped the gun and have taken care of one already, raising our Treasurer to the status of Secretary-Treasurer. I am sure this was the intent when we discussed this program in Binghamton, but through an oversight we used the word Treasurer.

Assemblyman Lawrence, would you like to offer a resolution related to our organizational structure?

ASSEMBLYMAN LAWRENCE: Mr. Chairman, at this time I offer the following resolution and will present it to the temporary clerk to read, and I move its adoption.

MR. DAVIS: This is the original resolution signed by Assemblyman Lawrence which I think the Chair might read.

DR. GODDARD: The resolution reads as follows:

By Mr. Leo A. Lawrence of New York

Harrisburg, Pennsylvania
August 13, 1962

BE IT RESOLVED, That this Interstate Advisory Committee on the Susquehanna River Basin does hereby authorize and instruct its Executive Committee to take such steps as are necessary to implement, with all speed, comprehensive basin development programs and the formulation of a plan for a permanent organization for the Susquehanna River Basin.

SENATOR JAMES: Mr. Chairman, I would like to move the adoption of the resolution.

SENATOR STEVENSON: Mr. Chairman, I second the adoption of the resolution.

DR. GODDARD: I think we all understand the intent of the Executive Committee to organize committees or other types of groups to implement the purposes expounded on page one of our organization document.

On the question, those in favor signify by saying aye.

It was unanimously agreed.

I think another point that we should address ourselves to today is some general discussion on the matter of financial participation. Obviously, if we are going to have a growing organization, it must be financed.

If I may, I would like to call on Mr. Breth at this time to talk on this point.

MR. BRETH: I think the Chairman made a good point in calling upon the Treasurer to notify the gathering that we have no money and that proper necessary steps be taken to provide the Treasurer with some necessary wherewithal to do business. I would like to say, since Pennsylvania has some 20,000 square miles of the river basin area, that we should volunteer to assume the major obligation in budgetary matters. In discussing this with the representatives of the Commonwealth who are here today, we would like to offer a suggestion to the Interstate Advisory Committee, that the division of 60 percent for Pennsylvania, 20 percent for New York, and 20 percent for Maryland be established as the proportion in the budgetary funds. I think this would be acceptable to the Commonwealth of Pennsylvania, to the legislature, and to those involved. I would like to make that as a motion, Mr. Chairman, that the budgetary proportion be set at 60, 20 and 20 percent.

SENATOR JAMES: The Maryland delegation would like to second the motion. We will make every effort to have this included in our next legislative budget with the hope that we can request the Governor to provide funds in advance of the next session if this is deemed necessary.

ASSEMBLYMAN LAWRENCE: The New York State delegation concurs, and while we cannot make any firm commitment as to the position our leadership will take, I assure

you we will recommend the acceptance of the offer made by the Secretary-Treasurer on the 20 percent basis.

DR. GODDARD: We all understand now what we are doing. We are talking about a percentage distribution without a firm budget. At this point we cannot see what the budget figure is going to be. I will have to have some organizational meetings and discussions with the Executive Committee and members of the group before we can come up with this. We have to devise a little better idea of our plan and our goal and how we are going to accomplish it. I think it is important that we do establish some kind of a guideline as to what we are doing.

On the question, those in favor signify by saying aye.

It was unanimously agreed.

MR. BRETH: Mr. Chairman, at this time I would also like to make an additional motion that the Executive Committee proceed forthwith to establish a tentative budget so that the amounts can be submitted to the three state legislatures this coming January.

ASSEMBLYMAN LAWRENCE: Mr. Chairman, I would like to second the motion.

DR. GODDARD: On the question, those in favor signify by saying aye.

It was unanimously agreed.

I think this is obviously one of our most important objectives. I think, too, that perhaps there are means available in each state to supply some, let us say intermittent, type of financing on a small scale, at least to carry us until July of 1963. This is the earliest, as you gentlemen from Pennsylvania know, that we can insert this in our new budget that is being prepared for presentation to the legislature in January. This year's budget has already been passed and adopted, so that it would have to come from Forests and Waters funds, Planning Board monies and Joint State Government monies. This is the way we financed the Delaware River Basin Advisory Board. I think we can find a small amount to get it started and get it organized. We are going to have a staff.

Are there any other items of business we should discuss before we adjourn?

MR. BRETH: I would like to say for the record, speaking on behalf of the Commonwealth of Pennsylvania, we are pleased and happy to have been the host state. I would also like to say that we have a great many members of our Task Force on Conservation here present with us this morning. I would like to introduce them as I see them: Representative Varner, Representative Elisabeth Wynd, Representative Fred Shupnik, Representative Orville Snare, Representative Adam Bower, and Senator Murray. We did have some members of our Executive Committee: Representative Stephen McCann, Majority Leader of the House, Representative Dougherty from Philadelphia, Majority Whip of the House, Representative Anthony Petrosky, and the Speaker of the House.

I do want to say that the Conservation Task Force deserves an awful lot of credit in the work it has done in the past year under a resolution from the General Assembly directing them to make a thorough and complete study of the Susquehanna River Watershed Development Program. This, as I have said before, has led us to this point, together with the excellent cooperation of the State of New York and the State of Maryland.

I would like to recognize, too, the magnificent cooperation of the Joint Legislative Committee on Interstate Cooperation of the State of New York and the very effective work of Frederick L. Zimmermann and Mrs. Storey of its staff, and the marvelous work and cooperation that Miss Doris Smith and Dr. Carl Everstine of the Maryland Legislative Council have given us from that state.

This is a very auspicious occasion. I think it is an historic occasion. I think we can all go forward full speed ahead.

DR. GODDARD: I believe there is one point I would like to have some discussion on before we adjourn. I think we can say without any reservation whatsoever, Mr. O'Donnell, that we accept the invitation of Maryland to meet in Baltimore.

SENATOR JAMES: Mr. Chairman, I would like to make that official. At such time as the Chairman may select for the meeting in Baltimore, if you will notify us, we will make the necessary arrangements to see that you are properly housed and taken care of.

DR. GODDARD: Thank you very much, Senator. We will take advantage of this invitation. I would like to suggest,

if there is no objection, that our Executive Committee try to do as much staff work as we can in the next two months and try to meet in Baltimore say about mid-November, a week or two before Thanksgiving so that we do not get involved in the holiday, but then try to have some semblance of a firm budget set up, an organizational committee structure, what we might recommend for staffing. I do not see how we can do this much under the next several months, hard pressed as we all are with many other types of work and business. But, I think, if it is acceptable with the members, that is what the Executive Committee will strive for.

As Chairman of this group, and I know speaking for the Vice Chairmen and other officers, we are indebted to Harris Breth and the Joint State Government Commission for their fine effort. I think we have a real spirit of cooperation.

Sometimes we talk about the spirit of cooperation and, you know as well as I, it is not always there. I really sincerely feel that we have the spirit. I think we captured part of it by our work on the Delaware. We did not have the fine relationship with Maryland there that we are going to have here, but we worked very closely with the State of New York. We had a very difficult problem to resolve with the diversion of water by the City of New York. Dr. Wilm deserves a great deal of credit for resolving this part of our differences and opinions. We had little differences here and there but I think we all remembered the main objective and reached it. I am sure that with the people that we have and this tremendous association with the legislatures, we are going to succeed on the Susquehanna River.

Hearing no other objections, we stand adjourned.

MEETING OF
INTERSTATE ADVISORY COMMITTEE
ON THE
SUSQUEHANNA RIVER BASIN
BALTIMORE, MARYLAND

MEETING OF
INTERSTATE ADVISORY COMMITTEE ON THE SUSQUEHANNA RIVER BASIN
BALTIMORE, MARYLAND
TUESDAY, NOVEMBER 20, 1962
ATTENDANCE

MARYLAND

Carl N. Everstine, Director, Department of Legislative Reference	Marvin Mandel, Delegate
Thomas J. Hatem	Albert Miller, Department of Planning
Edgar H. Hollis, Department of Tidewater Fisheries	James J. O'Donnell, Director, State Planning Department
Senator William S. James	Herbert Sachs, Department of Planning
J. R. McComas, State Health Department	L. V. Sherholz, Water Engineer, City of Baltimore
Harry J. McGuirk, Delegate	Doris G. Smith, Research Analyst, Department of Legislative Reference

NEW YORK

N. Barbarossa, Department of Conservation	Assemblyman Leo A. Lawrence
Senator Elisha T. Barrett, Chairman, Joint Legislative Committee on Interstate Cooperation	F. S. Montanari, Assistant Commissioner for Water Resources, Department of Conservation
Cecil E. Heacox, Secretary, Department of Conservation	Ronald Peterson, Deputy Commissioner of Commerce

PENNSYLVANIA

Rep. Harris G. Breth, Chairman, Joint State Government Commission	Francis A. Pitkin, Executive Director, State Planning Board
Rep. Adam T. Bower, Task Force on Conservation, Joint State Government Commission	John P. Robin, Chairman, State Planning Board
Rep. William B. Curwood, Chairman, Task Force on Conservation, Joint State Government Commission	Rep. Orville E. Snare, Task Force on Conservation, Joint State Government Commission
Guy W. Davis, Counsel and Director, Joint State Government Commission	Alan D. Sommerville, Department of Forests and Waters, Chief Water Resources Development Engineer
Dr. Maurice K. Goddard, Secretary of Forests and Waters	Senator George B. Stevenson, Task Force on Conservation, Joint State Government Commission
Senator Martin L. Murray, Task Force on Conservation, Joint State Government Commission	Senator John H. Ware, III, Task Force on Conservation, Joint State Government Commission
	Ralph R. Widner, Assistant Director, State Planning Board

OTHERS

Hal Burdette, Baltimore News Post	Harry Schwartz, Baltimore District Corps of Engineers
Gerald W. Ferguson, Project Director, Chesapeake Bay-Susquehanna River Basins Program, U. S. Public Health Service	John T. Starr, Assistant Chief Engineer for Civil Engineering, Corps of Engineers, Baltimore
Clayton M. Hoff, Brandywine Valley Association, Inc.	A. Russell Vollmer, (Partner), Whitman, Requardt and Associates
General Norman M. Lack, Dover, Delaware	Dr. Mitchell Wendell, Council of State Governments
William Miller, Princeton, New Jersey	Bruce Winters, Baltimore Evening Sun
Ray Regnier, Whitman, Requardt and Associates	

PROGRAM

	<i>Page</i>
Presentation by John T. Starr.....	74
Assistant Chief of Civil Works Engineering	
Baltimore District Office, Corps of Engineers, U. S. Army	
Presentation by Gerald W. Ferguson, Project Director.....	84
Chesapeake Bay-Susquehanna River Basins Drainage Study	
U. S. Public Health Service	
Presentation by A. Russell Vollmer, (Partner).....	93
Whitman, Requardt and Associates	

MEETING OF
INTERSTATE ADVISORY COMMITTEE ON THE SUSQUEHANNA RIVER BASIN
BALTIMORE, MARYLAND
TUESDAY, NOVEMBER 20, 1962

DR. GODDARD: We're pleased to have so many out this morning on a thoroughly gloomy day, but we are in a water session and this is very pertinent perhaps to our cause. This is our third meeting. We met in early June in Binghamton and then we had a meeting in midsummer, as you know, in Harrisburg. We are meeting today in Baltimore as guests of the planning group and the legislators of the State of Maryland.

We would first like to call upon Senator William S. James to give us words of welcome from Governor Tawes who, unfortunately, was committed earlier and could not be with us today. Without further ado, I would like to call on you, Senator, for your welcome and any comments you would like to make.

SENATOR JAMES: Dr. Goddard, assembled guests, distinguished representatives from our neighboring states, I would certainly like to bring you greetings from the Governor.

I am sure Mr. Starr will review all of the challenging problems and objectives that we have on this great river. I know that Maryland has a great stake in this river. Governor Tawes realizes that Maryland has a great stake in the river. In spite of the fact that only one percent of its length is within the State of Maryland, we recognize that the river means a tremendous amount to us.

You noticed in this morning's Sun, a study committee has recommended that a great metropolitan commission be created to handle our sewage and water problems on a metropolitan basis, including not only Baltimore City, but the entire metropolitan area stretching clear to the Susquehanna River. That means that not only does Baltimore City have a stake in this water supply, but a large part of the State of Maryland, so that we are certainly not only sympathetic, but extremely enthusiastic.

I personally live near the town of Havre de Grace and am a member of the Havre de Grace Rotary Club, and I never fail to be impressed by the fact that on our Rotary newsletter each week we have a little message describing the city of Havre de Grace where the Susquehanna River meets the Chesapeake Bay and we recognize that the Susquehanna River in large measure does not meet the Chesapeake Bay, but unites it.

In last Sunday's Sun there was an article bragging about the best oysters in the world which we have in the

Chesapeake Bay. Very deep in the article was a statement that our oysters are so good, and this is a serious comment, because they are fed by the Susquehanna River which drains this great basin of 27,000 square miles and brings to these oysters and seafood and the marine life in the Chesapeake Bay this tremendous volume of nutrients, so in more ways than one are we dependent upon this river.

Finally, I would like to say that whenever I think of the Susquehanna River—and I love the river, the part that I am familiar with,—I am reminded of Robert Louis Stevenson's trip to America when he was riding along the banks of the Susquehanna in a train and he asked the conductor what the name of the river was and he responded that the name was the Susquehanna. When he heard the name Susquehanna, he knew that the name was part and parcel of the beauty of the river and he said that the name Susquehanna suited the river such as no other name could; it was part and parcel of this shining river and desirable valley.

We have a great inheritance here and it is a great pity, I think, that this is the last river in the United States, the last great river, to receive a broad study and a broad treatment. I think I can speak for Governor Tawes, really for any Maryland Governor, by saying that we are deeply interested; we are going to cooperate; if there is anything we can do to assist in this great project, we want to do it. Thank you very much.

DR. GODDARD: Thank you, Senator James. We appreciate that. Does anyone have any questions they would like to direct to the Senator?

SENATOR BARRETT: Yes, I would like to ask a question. Have you ever had a bluepoint oyster?

DR. GODDARD: The question is out of order.

SENATOR JAMES: Any response I would make would be purely chauvinistic.

DR. GODDARD: We appreciate your comments, Senator, and we certainly know that Maryland will cooperate in this venture. I don't know that we need to talk to the point of the need for this study. We are aware of all the study and all the work on the Delaware and the years and effort it took to get it to our present compact. I think there is one difference that I would like to point out and my speech

will be finished. Mr. Widner has made these comments, Mr. Pitkin, Mr. Sommerville and others,—there is a great difference actually between the Delaware and the Susquehanna. The really simple difference is that the Delaware system is already a very heavily developed metropolitan area with a lot of industry, tremendous growth. When we think that Bucks County in our own state has grown 113 percent in population between 1950 and 1960 and we lost 48 percent of the farms in Bucks County in that ten-year period, you can see the tremendous amount of metropolitan growth there. I think the Corps' figure shows that on one-half of one percent of the land area of America, we have one percent of the population and in 1960 we generated something like 17 percent of the personal income of America. You already have a heavily developed metropolitan basin, and if we can just meet the needs of these people we are going to be hard pressed. When we come to the Susquehanna Basin we have large areas of tough economic conditions; we have very large areas not being developed. As we see it, our role in the Susquehanna is that, if we can make a good water development project, this might stimulate the whole economic growth of the basin. I think this, in a nutshell, is the great difference between these two basins.

I'm not saying we want a TVA, but we are all in this room aware of what the Tennessee Valley Authority did for that part of America. Whether you agree with the concept or not, it did stimulate the industrial development, industrial growth, and it was the salvation to them economically. Now, if we are successful in the Susquehanna, I think we can do the same thing here. If we can improve the water quality, improve the amount of water available, improve the recreational opportunities, the low flow features, and all the other points in the Susquehanna, it will be a great success, and I think it is the whole key to the economic growth of this valley. Maybe I shouldn't go to the point of saying the whole economic growth, but in a large measure the economic growth is going to be predicated on how successful we are in developing a plan of the river not only to meet the current needs as we see it, but to build a lot more into it so that we can have a lot more growth potential in the future.

It was our hope that at this time we would have a fairly important business session, but, as all of you in this room know, the Pennsylvania delegation is all a lame-duck delegation right now. We are going to have a new Governor and our two legislative members will not be

legislators next year. This is an unfortunate event, of course, and it is going to make it very difficult at this time to do any real organizing for the Pennsylvania delegation. We are going to ask the liaison man between the incoming administration and the current administration to think seriously about this so the new Governor can appoint his representatives early in the game. I would recommend to the delegates of the committee, the advisory committee, that we plan to have a meeting, I would say in the latter part of January, and I would assume this time we would rotate and meet back in New York. I see Senator Barrett nodding his head in approval and we will take that as an acceptance from the New York delegation to meet at your location in the basin in January. I think we cannot set the date here today. The exact time will take some coordination of effort because it will take a week or two, I am sure, for the new administration to get properly oriented, but we don't want to lose time. I think we don't want to make drastic mistakes and jump the gun, I'll admit this, but we know how long it takes to work out even the simplest of arrangements and every time you delay a year or six months, some other part of America is ahead of us.

I don't know how many of you followed carefully the Omnibus Rivers and Harbors Bill, but I think there are five or six great projects that were eliminated in the last bill that Congress has agreed to review early next year in the new session of the Congress and I think their total authorization was something like \$200 million just in the projects they deferred. This shows how rapidly and how much events get ahead of you in this chain of legislative development. I think it is important that we act with all the speed we can muster, but without being discourteous to any administration and without making a serious mistake. Would anyone else like to talk to this point? Do we all agree that we will meet in late January?

SENATOR BARRETT: I would say as soon as the Pennsylvania organization has been perfected.

DR. GODDARD: That is a better way of saying it rather than setting a date.

ASSEMBLYMAN LAWRENCE: As long as we are on this subject, Mr. Chairman, might I interpose this question: our legislative sessions, I assume, in all the three states convene shortly after the first of the year, but what day of the week would be most convenient for the members, say, to

come to New York City, a location which would be, in my opinion, about as convenient a location as any.

DR. GODDARD: I would say in the latter part of the week.

ASSEMBLYMAN LAWRENCE: That is our thought. In the first month of the session we can pretty conveniently get away on Thursday to meet on Friday. I don't know if that would be acceptable to Pennsylvania and the representatives from Maryland or not.

DR. GODDARD: I think Friday would be a good date myself. Does anyone object to Friday? I think Friday is good because I know most of our legislative work is done Monday, Tuesday, Wednesday, sometimes into Thursday. The technical staff too is most committed the first of the week. They have to be there Monday and Tuesday when the legislators are present. I would say if we could aim for a Friday of the week after the Pennsylvania delegation, as Senator Barrett has stated, is organized, this is what we should aim for. We will leave the location to the discretion of the New York delegation, but I think New York City would be a good location. It would be easy for you people from Maryland to get there. It doesn't make much difference to the Pennsylvania group. We are agreed on a Friday then. We will coordinate it with the legislative body in Pennsylvania.

Are there any other business items we ought to talk about? If not, we asked, on very short notice, Mr. John T. Starr, who is the Assistant Chief of Civil Works in the Baltimore District if he would be kind enough to come this morning and explain to the group assembled what they have done so far in the coordination of the Corps study. I think it might be of interest to review under what authority they are operating—two resolutions, one of the U. S. Senate passed the 5th of October, 1961, introduced by Senator Clark of Pennsylvania, and a resolution of the House Public Works Committee of the 87th Congress, the 10th of May, 1962. I believe it was introduced by Congressman Flood. These are the two joint resolutions that the Corps is operating under, and, as all of you here know, I'm sure all of you know, there was \$300,000 appropriated by the Congress this year in the Public Works Bill.

I will say this for the Corps: prior even to the appropriation of \$300,000, in anticipation of this, they knew it was in the President's budget, they did discuss this with the Fish and Wildlife Service, the Fish Commission and Game

Commission in our state and I know they talked to Harold Wilm's group, Montanari's group I guess, in New York State and with Maryland, and they did quite a bit of liaison work in anticipation of this appropriation, and it is with real pleasure that I present Mr. Starr of the Baltimore office to make his presentation. He has his associate, Mr. Schwartz, with him. I think you can discuss this for 20 or 30 minutes and then we can have an opportunity to ask questions—not only the delegates, but any of the legislators and members in the audience. I'm sure we would be glad to have them participate. We want this to be as informative as we can make it, but educational at the same time. John, we welcome your comments. We have some reprints of John's article which we will distribute.*

MR. STARR: That is very interesting because most of you gentlemen were at the Binghamton meeting, so if I said many things it would be a repetition of what was said at Binghamton. Following that, sometime in the summer when I was talking to Philip Wagner, editor of The Sun, who is an old friend of mine, he asked me if I would put some of those things in 1,000 words. That's a very magic number if you're going to put it under the Yardley cartoon. Don't laugh, Ralph, that's serious. One thousand words fit nicely under the Yardley cartoon. This runs about 1,200 and he had to put it in two and a half columns, but that tells pretty much what was said at Binghamton, only briefed down a great deal.

DR. GODDARD: You bring us up to date from Binghamton.

MR. STARR: In the meantime, as Chairman Goddard said, we have been working on the Susquehanna for many, many years, and in fact, prior to this authorization of the Senate and following that by the House, we had an authorization whereby we were studying the North Branch of the Susquehanna above Sunbury and the West Branch, again above Sunbury, separately. We had recently completed a study of the Juniata which reached the last Congress. As a result of this one, we have pooled them all together, that is the outstanding studies, and made them into this one comprehensive study. We were very fortunate. These things take a lot of time; they are very complex. We had just completed—the Baltimore District will take credit for it even though it was started in the old Washington District—a study of

* ("Close Look at the Susquehanna" by John T. Starr, from "The Sun," Baltimore, Maryland, dated October 9, 1962.)

the Potomac. I know that the people from Maryland and those from Pennsylvania are quite familiar with it, and in just completing this study of the Potomac we have already set up an organization which was experienced in these comprehensive studies and also, fortunately, we were, by and large, acquainted with many of the people, especially the Federal people who would be involved in a comprehensive study of the Susquehanna. What is happening now is the process of changing over from the Potomac, which is being reviewed and a few last minute revisions made, to the Susquehanna, so that people like Harry Schwartz are working right now on both, that is, he is finishing up the Potomac and starting the Susquehanna.

Now as one step in this comprehensive study, and let me say for the benefit of anyone who might not have been at Binghamton, this will cover all water and related land resources in addition to flood control and navigation with which we have been associated for many years in the Corps of Engineers. There will be water supply, water quality control, which has superseded that nasty name which we couldn't use a couple weeks ago in the meeting at State College, pollution abatement; it will include recreation, enhancement of fisheries and wildlife; it will include irrigation, which is, as you know, coming to the fore here in Maryland and in Pennsylvania, and which, as General Lack has told us on many occasions in Delaware, has some influence in Pennsylvania. It will include other things—hydroelectric power possibly, any other water and as we say related land resources because that is a very important part of it as we see it. This will include not only large dams or even medium-sized dams, but it will include small dams. I think it bears some repeating in that connection that in the Potomac, which topographically, geologically and hydrologically is not too different from the Susquehanna, the big difference being that it is a great deal smaller and not nearly so complex, as many of you know, we are coming out with a recommendation for 16 major dams and 416 small dams on the Potomac, that is the little fellows, the kind that the Soil Conservation Service builds up in the headwaters. I should think in the Susquehanna when we come to a report that it shouldn't be too much different, that there should be many, many, many small dams spotted pretty much all over the watershed which will supplement some of the large dams, some of which are now built, some of which are now under construction, some of which we are actually designing, and some which have been authorized for many years. One in particular which is close to the heart of your Chairman and mine, Raystown Dam, is,

incidentally, the only large dam which has been authorized thus far in the Susquehanna.

In connection with this, we have already made overtures—in some cases, arrangements—with all of the other Federal agencies which may in any way be involved. To run down some of them, and possibly miss some of them, in the Department of the Interior there will be such people as the Fish and Wildlife Service that Dr. Goddard mentioned; the National Park Service; the new Bureau of Outdoor Recreation; the Bureau of Mines; the Geological Survey. There will be the very important U. S. Public Health Service which I understand you will hear about a little later this morning from Mr. Gerald Ferguson. There will be the Bureau of Public Roads; the Weather Bureau; the Federal Power Commission; there may be others. In addition to that there will be coordination with the three states and with the various departments, not only with the states at a high level, but with the various departments in the states. There will be coordination with a goodly number of the localities. Some of them come to mind right away in the Binghamton area of New York—Broome County and other triple city areas over in the Corning-Elmira area of New York; in that vast complex which is growing up around Harrisburg; in the Williamsport-Lock Haven area, and any of you who have driven through there lately have noticed that Williamsport is getting close to Jersey Shore and that is getting close to Lock Haven. You can visualize that some years hence there could possibly be one community right in there just as there is tending to be one community connecting Elmira and Corning in New York State. Binghamton is spreading out—sort of a small megalopolis of its own. You can find that in various parts of the basin, so that steps are being made toward complete coordination.

We in the Corps of Engineers feel that everyone not only has a right to a say in this but,—this is very important,—that everyone who is involved in this business has a duty to say in addition to his right to say. We have taken some steps and these things move slowly as does most governmental action. We have taken steps toward a coordination between the Secretary of the Army and secretaries of the various other Federal departments such as Interior, Agriculture, Commerce and others. We are about to take steps between ourselves and the people who work under these secretaries, that is, the second or third level agencies—you might call them the individual people of Fish and Wildlife, Public Health Service and others. We are about to take steps between ourselves and the Governors of the states,—that is

important. This is a little bit premature, maybe tomorrow this would be legal or the day after tomorrow, but I see no objection to reading a paragraph out of a letter which the District Engineer will send to the Governors of the various states.

"It is proposed that the membership of the committee"—this is a committee which it is proposed to set up on which there will be representatives of the various people to advise and meet periodically,—“it is proposed that the membership of this committee consist of a representative from each of the states, a representative from each of the Federal Agencies concerned, namely, Departments of Agriculture, Commerce, Health, Education and Welfare, Interior, the Federal Power Commission, and the Housing and Home Finance Agency, and that the District Engineer who is charged with making this investigation, representing the Department of the Army, would serve as a permanent chairman. It is expected that each representative would have an alternate and would be free to bring such additional technical personnel as deemed necessary to the accomplishment of committee objectives. It is desired that the initial meeting of this organization be arranged as soon as practicable after the designation of representatives has been completed,”—something like you gentlemen were just talking about with your meeting in January. This one probably should follow soon after that because while yours is concerned with the three states, this other committee would have the Federal representation on it also. “In this first meeting consideration will be given to function, responsibility, schedules of work, details of frequency and place of meetings and other matters.” That’s going to be a long meeting.

DR. GODDARD: Could I interrupt you for just a minute? Maybe this is the place to make the suggestion,—it would be my recommendation that the Governors—of each state appoint as the coordinator to the Corps a member of this group—in the instance of New York, Dr. Wilm, who is the Vice Chairman of this group. By doing this, we would have direct relationship between this advisory group and the Corps study. Maybe Wilm would be the coordinator in any event, but it might not be. If O’Donnell, who is the Vice Chairman from Maryland, was appointed as the coordinator from Maryland we would have a link already between this advisory group and the Corps. Don’t you think this would be a good idea?

MR. STARR: From our viewpoint, yes. It would tie both the organizations together, have them working together,

because when you have too many organizations working on this they get at cross purposes and then you can have delays.

Now this entire business we expect to take six years. People have asked, “Why can’t it be done in less time? If we got more money couldn’t it be done in less time?” That was one of the questions that was asked at the Water Resources Conference at State College a couple of weeks ago. It would be most difficult. Fortunately with the tie-in which we have made with the U. S. Public Health Service, we were even able to negotiate a contract for this work because we are co-venturers in it. We have started making an economic base survey of the Susquehanna Basin. This is going to take something more than a year; it’s very complex; it’s very important. It will tell such things as: what is the basin now; what is its population; what is its industry; what is its income; what is its agriculture; what is its commerce now; what will it be 20 years from now, 40 years from now, 50 years from now, as well as can be seen; where will the increases in population occur; where will the increases in industry occur; what is the pattern of expanding commerce. This will be the base upon which our study, to a very great extent will be built.

It should also point out some things Mr. Widner has been saying for quite some while, not only what will it be in its present condition, but what is necessary in resource development, particularly water resource development, in order to attract industry and, of course, people to the Susquehanna. What must we do with the Susquehanna? As Mr. Pitkin has said on numerous occasions, the last one being up here at State College, the Delaware has been growing in industry, commerce, population and so forth; the Susquehanna, by and large, has not.

There are various areas in the Susquehanna Basin, especially in the middle of the basin, where, if I’m not mistaken, population has been decreasing. Maybe it should. It is something which this study will certainly point out. It certainly appears that the southern tier of New York from east of Binghamton to west of Corning is a prime area naturally by reason of its resources, by reason of topography, by reason of its very geographical location to be an area for industry, especially light industries, IBM and the Corning Glass type of industry that you find up there. It may be that the Harrisburg-York area and to the east of Harrisburg, over toward Allentown, which is growing closer together as you drive across, is destined and should be developed into a center. It may well be that the various

areas in between should be developed, particularly that area,—it's a shame we don't have a map,—picture that area north and west of Williamsport, particularly north of Williamsport, the Endless Mountains area, the area to the west of the Endless Mountains over in the Bucktail,—it's a vacationland, beautiful scenery, some of the best in the east, good clear sparkling rivers as long as you don't get into the main stream, an excellent area to develop for recreation, and, if you want to hear an excellent talk on the development of that area for recreation with all the passion that it needs, get Ralph Widner to tell it to you. That is what we hope this study points out.

Now, when we get that, where do we go? We find out how much water do we need at this point at this time; how much water at point a, b, c, d, e, f, g, all over the basin in 1980, 1990, 2000, 2010 and the like; where can we get that water; what needs to be done to make that water available; where, for example, should reservoirs be placed; where can reservoirs be placed. In the Susquehanna we have an entirely different condition than we had in the Potomac or even in some parts of the upper Delaware. All of the major valleys, with the exception of Raystown, have a railroad line and many of them have a highway line. Raystown is the only undeveloped valley, I believe, in the Commonwealth,—963 square miles of drainage area. Those are the answers which we will be looking for; those are the answers which Harry Schwartz will be working on day after day after day including some Saturdays, Sundays, holidays and Holy Days of Obligation. Some six years from now we can come up with a report. We think, as Dr. Goddard pointed out, that this report,—these sound like a lot of fancy words, but we think it is true,—is going to be a basic document for the development of—I think you'll find it in that piece that Phil Wagner was good enough to print—the economic and social well-being of this large area.

There is one thing before I sit down which we want to say and we consider it very important. What should we do in the meantime? Should we just turn everything over to Harry Schwartz and the group of people he has and let them work on it and come up six years from now with a report which will probably stack up about so high? The Delaware report weighed 30 pounds; the Potomac will probably weigh just as much, and the Susquehanna is as big as the Delaware and Potomac combined, so you can look for 50 pounds of paper. Is that what we're looking for? And what should we do until we get this 50 pounds

of paper? We in the Corps think, and I think some of you gentlemen probably feel the same way, that we should not stop in the development of the Susquehanna Basin. We are in the midst right now. We have completed the Alvin Bush Dam. The Commonwealth built the Stevenson Dam,—named after Senator Stevenson right here on the committee,—which we had recommended as part of the plan for the West Branch. We are building the Curwensville Dam and we are now planning the Blanchard Dam. There have been some questions—why don't we stop building until we see where we're going? Well, we can see even now to a great extent where we are going on some of these things. The Blanchard Dam, for example, which is number four in this set of four which were authorized some seven or eight years ago by Congress, is in a position that no matter what comes out of the study this site is being developed to its maximum physically. We are developing this for flood control, for water quality control, and for recreation. It is in a very important recreational area, an area which needs the recreational development not only for the amenities of recreation, but also to bring tourist dollars into the area. If we find, as a result of this six-year, 50-pound paper study, that Blanchard should be operated differently, it is a simple matter to change the operation, but in the meantime we need it; Pennsylvania needs it; the area right around it needs it. The Raystown reservoir which was authorized just in the closing days of the last session is needed. It is the keystone of Pennsylvania's Project 70, one of the keystones along with Tock's Island. Raystown is needed for several purposes, one for flood control for which the study was originally authorized, and another for the very large recreational development which is possible at Raystown. Imagine right in the central part of Pennsylvania a lake 40 miles long and ranging up to better than a mile in width of excellent water in beautiful surroundings in an economically depressed area which needs a lot of tourists to come into it, and still it is within an easy four hours' drive of here; it is less than that from Pittsburgh; it is not too far from Buffalo; it is close to the smaller places such as Williamsport, Altoona and so forth. We think that should be pushed and should be built. We think that the Tioga-Hammond reservoir, in the upper part of the watershed, should be built and built soon. Those three in particular we think should be built during this six-year period. We also think that some of them in New York State should be built. There are some which Binghamton needs grievously for flood control and the area in which they are proposed needs them also for the recreational development. This is a very big point, that is, the recreational develop-

ment. I am thinking there,—and I know that Senator Barrett is probably familiar with the area,—of Charlotte Creek above Oneonta in particular, Canasawacta Creek up above Norwich. We tried to interest Congressman Taber in supporting that as one of his last acts in Congress,—he said, “It’s a beautiful site, it’s a beautiful valley, but I can’t change at this late date.” Genegantslet Creek down below that we think should be built in the meantime. These are all up in the headwaters as far as you can get, and no matter what comes up in this study, they can be laid out in the operation to become, to a great extent, water supply if that is needed 50 years from now or water quality control, but right now flood control and especially recreation can be put into it.

I think, Mr Chairman, that is all I have to say now. Maybe I talked too long.

DR. GODDARD: You did very well, John. Don’t get away, we have some questions. I’ll ask a question to start off here. Do you propose to do what the Corps did in the Delaware study, to contract with other agencies to do a good bit of the work, or how are you proposing to do it?

MR. STARR: Yes, other agencies will do a good bit of the work.

DR. GODDARD: Will you pay this from the appropriation to you, or which you hope to get? For instance, the Public Health Service got its own appropriation direct from the Congress; it didn’t have to come through the Corps. What is the thinking in this regard, will most of it come direct, or will most of it come through you?

MR. STARR: Most of it will come from us. Of course, it was nice that the Public Health Service got theirs and appeared before Congress and made their own presentation and justification.

MR. MONTANARI: In what range are the Public Health Service monies for the study of the Susquehanna-Chesapeake?

MR. SCHWARTZ: The total is somewhere under \$5 million. This year it is a little less than \$250,000 to \$300,000.

DR. GODDARD: We can ask Mr. Ferguson of the Public Health Service; he will know.

MR. FERGUSON: The Public Health Service has a Chesapeake Bay-Susquehanna River project, the Susquehanna is

only part of it. We envision that the total cost will be somewhere between \$4 and \$5 million. That will depend upon certain studies later on that we haven’t defined as yet. For this year we have \$200,000 for the entire basin.

SENATOR BARRETT: Mr. Starr, you mentioned something about your coordinating committee and I think I understand what you are driving at. In the light of that, how do you feel this group could best tie in to the program; what would be our role?

MR. STARR: Speaking personally, you’ve got the title already—the advisory committee—and that can be an advisory committee to the states’ members on the coordinating committee. I do think, as Dr. Goddard said, if the same people represented the states on the coordinating committee as are on this committee it certainly would help a great deal.

SENATOR BARRETT: An executive secretary employed by us to tie the groups together to advise what we are doing?

MR. STARR: Selection of an executive secretary is really your business and not ours, but I should think somebody,—an executive secretary of any group like this,—would certainly be a big help, just as in this coordinating committee the executive secretary of that group who will tie the business together and keep it running will be Harry Schwartz and some of his assistants, because it’s a big job for one man.

SENATOR JAMES: You said that one of the possibilities would be that of irrigation. Now in an area such as we have here on the East Coast, generally bountiful in rainfall, the question I ask is this: would this be a proper use of the waters of the Susquehanna, or would it be a use that could be better channelled into other uses. What would be the sense of an irrigation project in this area of the country?

MR. STARR: We didn’t visualize any irrigation project like the one out west or anything like that. This is not just the Susquehanna River; it is the Susquehanna Basin which means Broad Creek where the Boy Scouts meet in Harford County—just using that as an example of a creek,—it means Canasawacta Creek in New York, Bald Eagle Creek in Pennsylvania. I mentioned that really in passing because irrigation has become more and more important here in the east for supplemental rainfall during periods just like we had this past summer. I would say there was many a

farmer who would have loved to have had additional water this past summer.

I was up to Binghamton to a meeting in September, to a meeting of county agents and others like that. I was the only one in the room who was not a farmer, or close to the soil, as they say, and they were more interested in irrigation in water for irrigation than for any other use at all. They weren't particularly concerned about floods, and they weren't concerned about floods in Binghamton, because none of them lived in Binghamton. They were a little bit interested in this idea of recreation because they thought they would like to go fishing and they thought that would bring some money into the area, but they were more interested in irrigation, and this was up in the Broome County area of New York State, than they were with any other single purpose.

SENATOR STEVENSON: How does the small watershed program work under this plan of yours? Who administers that?

MR. STARR: I would say that, when the chips are all down and everything is cleared away by the legislation that will follow, I have no doubt but that many of the small dams would be built by the Soil Conservation Service. The Soil Conservation Service will be working with us on this study.

SENATOR STEVENSON: Do they have any money for that purpose?

MR. STARR: We will be supplying them with some of the money for it and we hope they will be using some of their own.

DR. GODDARD: If there is a project recommended it would be carried out in the same procedure as carried out by Public Law 566 in any event. In other words, the local people would be the sponsors for the contributions to the Soil Conservation Service and the Department of Agriculture, and then if our departments, for example, wanted to add to the recreation the state would pay for it or the local people would pay for it. They would just be part of the package.

I see Mr. Schwartz wants to talk to this point.

MR. SCHWARTZ: Something happened that John doesn't know yet because it happened yesterday afternoon. We had

a discussion with the Soil Conservation Service and the Department of Agriculture. It seems the organizational problems are getting squared away and the organization will be set up to operate and work with us the same as it did on the Potomac. The small reservoir projects and land-based and soil conservation projects will get the same treatment as any part of the plan because they are just as much a part of the plan as any of the large projects. What John said about dams or reservoirs which are now under construction the same goes for 566 projects. There is no point to waste something that is definitely locally needed upstream. What is locally needed is justified. This can be done and should be done upstream as a part of the local specific need in the area in which you need it and which you are developing. The only thing we have to watch is that we don't underdevelop something and spoil a site for a future larger use for water in the local area. In the upstream area the choices are usually very limited. The water is only good to you when it is there where you need it.

DR. GODDARD: Does that answer your question, Senator Stevenson?

SENATOR STEVENSON: Yes. I was hoping it wouldn't be delayed for a six-year period while the study is going on.

MR. STARR: No, sir, that is one thing which Harry touched on here which is very important that we don't ruin reservoir sites, that we don't ruin them by underdevelopment of the site by shortsighted development. We've seen it all over the country many times in the past. We've seen it in recent years where an excellent reservoir site has been developed, not to its maximum capacity, but to some lesser use and some lesser capacity and has pretty much ruined that site. You can say that we can go in and increase the size of this dam, the height of it or we can build a new one downstream from it possibly at another site. Sometimes there is no other site. Or you can say envelope it, enclose it in a larger project or something like that, all at great expense, but you very seldom do that. Most of the time when a limited project is put into an excellent site, that site is used and is used for the future. We in this generation really have taken that site away from future generations because this dam is going to be there a long time. Holtwood, for example, was built, if I remember correctly in 1914, 50 years ago, give or take a couple of years. The others on the Susquehanna are getting old now and they're still excellent structures; they'll be here for that same time ahead.

Another thing that we have to be careful of in reservoir sites is that we don't use an excellent reservoir site for some purpose that doesn't need the site. We have to be careful we don't put our industries right smack in the middle of an excellent reservoir site; we don't put a power plant in the middle of an excellent reservoir site; we don't put in a housing development and so on, and you've seen it done. You can point out examples, particularly several in Pennsylvania, and also in New York. In other words, this purpose could be taken care of in some other location.

DR. GODDARD: I want to come back to Senator James' question on irrigation. I don't know if it is quite clear as yet. Senator, we know the farmers in this basin are going to use more and more irrigation water as individuals, and what the Corps is going to try to do is predict how much water in the basin is going to be used by the individual farmers as irrigation water and try to make provisions for this, but we are not going to do as the Bureau of Reclamation does and establish an irrigation district.

ASSEMBLYMAN LAWRENCE: Mr. Starr, I happen to have a map here that is very informative and I have been following with great interest your dissertation. My question is you have pointed out or designated on this map several proposed or authorized dam sites in New York State, five or six of them, West Oneonta may I name as one, on page 18—

DR. GODDARD: For the benefit of the audience, they are referring to this publication put out by the League of Women Voters.

ASSEMBLYMAN LAWRENCE: My question, sir, is this: in setting up those sites, I assume that your agency at the outset cooperates with the Water Resources Commission of the State of New York, for example?

MR. STARR: I can't remember back when that particular site was set up whether it did because that site, and you picked a good one, West Oneonta, has been authorized for some 20 years and hasn't been built and incidentally the city of Oneonta has expanded, that is one of the places where they have actually expanded into the reservoir area so that it would be very expensive to develop that site now. But, in most of those sites that were selected some 20 years ago, there was some coordination with local interests; there was some with the states; there was some with political

subdivisions included within the state, but nothing near so much as now because for one thing the great interest in water resource development that we have now wasn't around the country then. You actually had to grab somebody in the state and make him sit down and listen to you because they had other problems, they were thinking about roads, schools and things like that.

ASSEMBLYMAN LAWRENCE: It's just within the last decade that this has developed. Just to conclude my thought, following that in 1960 we in New York revised completely the Water Power and Control Commission and established what is now and for a long range purpose the Water Resources Commission of which Commissioner Wilm is chairman and five other commissioners form the group. Likewise we adopted and enacted laws relating to the small watersheds such as you have discussed in the basin and not necessarily on the Susquehanna River, and, third, we also have a Water Resource Planning Commission all working together. They are very new, established as I say in 1960. It is my thought that through this group, Senator Barrett and myself representing the legislature, and Mr. Montanari and Mr. Heacox and Mr. Peterson representing the various executives who are members of the Water Resources Commission would be liaison between this general group and your Corps and the Water Resources officials in the state of New York, is that about the picture?

MR. STARR: That is right. Mr. Schwartz has met with Dr. Wilm in connection with this.

ASSEMBLYMAN LAWRENCE: That is along the theory of your earlier question as to where the control, not necessarily the control, but the approval of these dam sites would finally rest. That is my thought and it would be with the cooperation of the agencies that I have mentioned when the time comes. You say this plan of the Oneonta dam was authorized 20 years ago and now it can practically be abandoned for the reasons that you stated and now you are working on to the future.

MR. STARR: That is correct.

SENATOR BARRETT: How do you prevent a repetition of the Oneonta situation if this is to be a six-year study? What action can you take to prevent the spread to a point where you have made the site impractical from the standpoint of cost?

MR. STARR: Well, of course, there is no action that we can take.

SENATOR BARRETT: I don't know that there is much the state can do.

MR. STARR: It is something which we can point up as a problem.

MR. PETERSON: I don't know if there is anything we should appropriately do or even why it should take six years to do a good economic base study. It's not a unilateral thing—developing water resources—it is one specific object. We have to be interested in the total development. The competition for available land, especially in this basin is going to be complicated by the fact that there is probably less than 10 percent of the land suitable for development for many social purposes and community purposes. Maybe it is all to the good that Oneonta spread west. Maybe this is the best possible use of the Oneonta valley.

MR. STARR: It could be expected that dam sites are a rare commodity. This was not a good dam site to begin with. Physically that particular site was not too good.

DR. GODDARD: Ralph Widner of the State Planning Board had a question.

MR. WIDNER: I would like to come back to this organizational problem because I think the group that John talked about fits into the pattern you established at our first meeting in Binghamton. You remember we said there were really three basic jobs: the technical job of preparing the water resources plan; the political and social job of setting the goal for such a plan and getting the compact and all the other political aspects of the plan and scope; and finally the educational job of getting the people to understand what we are doing and support it. Really what he is proposing is the third of the three. You are the political and social group. The advisory committee's duty is to shape the technical objectives. You have an educational group, the Susquehanna River Basin Association, which is just getting off the ground, and now he is talking about the group of technicians that will actually do the technical work. The tie-in is somewhat similar to the coordinating committee on the Delaware Basin where you had an advisory committee of the four Governors and the two Mayors and you also had the Corps' coordinating committee, so there is a direct parallel with what he is proposing and that is why I think what he is saying is directly in line with what you intended in the first place. You have a

natural tie-in because the three states' technicians are the three prime members of this body, the Secretary of Forests and Waters, The Conservation Commissioner and the Director of the State Planning Board of Maryland, so I think what John is proposing is just exactly what you have.

MR. MONTANARI: I hate to dissent with my esteemed colleague, as a lawyer would say, but I think there is something to be said in con of a coordinating committee and an advisory committee. I think we've gone through the Delaware; I think we have progressed and there is one thing that bothers me when we talk about doing the technical job, the political and social job, and educating the people; I would ask this question: Don't the people fit in somewhere else in being educated? Isn't this a two-way street? We never seem to talk about it as a two-way street, it's always educating them, but I think they can educate us, and this one facet disturbs me a little bit because I think it has to be included for a successful project.

MR. WIDNER: Don't they do it through their legislators? That is why we have legislators on this body as a transmission line from the people to what we are trying to do at the technical end. I don't see how you can visualize people as a group coming to this body.

DR. GODDARD: You can't ask the masses of people to pick a reservoir site.

MR. MONTANARI: No, this isn't their role, but they should somewhere have an opportunity of expressing themselves, of having their questions answered and a free flow of information on a two-way street.

REPRESENTATIVE BRETH: I think this has been done and I think we are following the people because this entire commission got off the ground when we started to hold public hearings on the Susquehanna River as directed by resolutions of the entire legislature in Pennsylvania. We held a public hearing in Wilkes-Barre, and I think the most exciting thing that came out of that was the terrific public acceptance and the public interest in such an over-all Susquehanna development program. We went to Huntingdon to the site of the Raystown Dam and here again it was demonstrated that the people were there; they were interested; they wanted to go; and I think our problem is more or less to get out in front of the people and exert the leadership that is expected of us.

MR. PETERSON: I think there is another point of people participation in New York state that I would like to point out for the information of the other states. We are in the process under our new law of creating County Water Resources Planning Units. We are going to plan the development of the water resources, county by county, wherever this is practical. We have the first one pretty nearly organized. It takes in four or five counties. I imagine a little bit of the Susquehanna Basin will fall in one of these, perhaps not. We are going,—at least in New York state,—to superimpose on whatever plans are done by the Corps or any other agency of these county planning units. They are going to come up with some plans for developing, conserving, using their water resources. I can see great benefit in this providing we don't come up with conflicting wants on the part of the local county planning unit and whatever plans are developed on a broader scale. We are going to have to justify these, and I think someplace along the line definitely get the local planning units at least cognizant of what is going on in the over-all study. But on the plus side, they can be a very effective local voice for the needs of an area.

MR. SCHWARTZ: I think in reply to your question about the feedback, which is an important one, we have actually three or four lines of feedback: statutory feedback through the public hearings; secondly, through your body as you are in a state and as legislators you have your feedback which comes to this body; thirdly, we envision at the meetings of the coordinating committee—which are public as were those on the Delaware where anyone interested can listen to and ask questions and get his questions answered. A fourth form of feedback is through the state agencies which have specific jobs, specific responsibilities in the water related field, such as the fish commissions, game commissions, pollution control boards and so forth which feed directly through you to us and through the other Federal agencies which are cooperating, through their channel back to us. There is a close cycle of feedback information which comes from the study and goes back. It is the only way we can get something reasonable out of it. We are very conscious of this and of its importance and try to do everything we can to make this thing work.

MR. O'DONNELL: At one of our earlier meetings some concern was expressed about some of the utility companies, particularly in Pennsylvania, going ahead with separate studies in this area. I had occasion to talk with a representative of one of the companies several weeks back who

informed me that their project involved the coordination of 12 or 13 utility companies who were addressing themselves to the Susquehanna Basin with these thoughts in mind: first, a public relations program to help improve their own position with the public; secondly, a study of specific areas in the basin so that they had a prepared position when your study and the Public Health Service and others came up with the total basin study so they were on sound ground from their own point of view. I wondered, John, if you or Harry or any of the people here have had any direct contact with their efforts and can shed any light on what they are actually doing.

DR. GODDARD: Would you do that through the Federal Power Commission or directly?

MR. STARR: We will probably do it both ways.

MR. WIDNER: This is one of the things that maybe this body should think about. You will recall we had a problem on the Delaware, a very simple misunderstanding on the part of the steel companies of our intention on the Delaware plan. Now maybe this is one of the first problems you are going to have to consider: How do we get the major industries with a large stake in the water resources of this basin fully informed of our intentions of what we're after, what we're going to do and maybe integrate them into the program?

MR. O'DONNELL: They are very interested in cooperating completely on it, but, of course, they are looking out for their own interests at the same time.

MR. MONTANARI: Of course, you can also tap a tremendous source of knowledge, expertise and information which is very generously given by industry if they are included in a partnership role because they do have this very great stake in the water resources and they have knowledge of their operations which you just can't get any other way.

REPRESENTATIVE BRETH: Mr. Chairman, I think here an observation would be acceptable on the basis of this advisory commission—that, as a result of public hearings and conferences with New York and Maryland, particularly the members of the legislature, we have brought into this committee both the technical side and the legislative side. Now there are certain things that the legislators and the legislatures of the various states can do that cannot be done by any other body. We followed the program in Pennsylvania

and have for years through our Joint State Government Commission, which I like to think sparked this whole thing by holding public hearings. For instance, we can call public hearings in Pennsylvania; we don't need to open them to the public; we can direct the legislature to determine the attitude of certain groups, and we will determine the attitude of those groups to the satisfaction of the legislature. The dovetailing of the legislative efforts of this commission and the technical efforts is the outstanding fact, I believe, that we, as a body, can use to dovetail the complete efforts of this body with the other efforts of the engineers and other Federal or other agencies that are set up to cooperate. I think this is the one salient fact here in our group: We do have the legislatures of the three states represented and greatly represented so we are over a tremendous hurdle that faced the Delaware Commission situation.

DR. GODDARD: You mentioned the legislature and there are quite a few Pennsylvanians here, Senator Murray, Senator Ware, Representative Bower, Representative Curwood and Representative Snare. Do you gentlemen have any questions? We don't want to slight anybody. I think the delegates had a pretty good chance to cross-examine the Corps. Mr. Widner from the audience has asked questions. Anyone else have a question? We're going to have to run on pretty soon to our Public Health man. We want to close this discussion off. It's been very helpful. General Lack from Delaware is here, Mr. Hoff of Brandywine is here. Don't be bashful, gentlemen, if you have any questions, just ask them. Before the General asks you, I will ask if you propose to study the general plan of a dam at Turkey Point in your study?

MR. STARR: I think we will have to reserve comment on that for the present.

DR. GODDARD: To explain where this is, Senator James is interested, it is at the mouth of the Susquehanna and you can make a fresh water dam in the title estuary, sort of like the Delaware River.

SENATOR BARRETT: Can you have that Turkey dam ready by Thursday?

MR. HATEM: I can understand Senator James' concern because my own reaction was probably the same as his, both of us being fairly familiar with Turkey Point.

DR. GODDARD: Senator Ware, do you have a question?

SENATOR WARE: I was merely going to observe that I think we need not be concerned about public participation. As you know, Dr. Goddard, in my district we do not border on the Delaware, but there are a few tributaries involved. The people have expressed great interest. If all of them are handled as well as Dr. Goddard has handled them, our problem will be minimized. Secondly, I would like to minimize the fact that we should invite utility and industry participation. It seems to me, and this is just a recollection, that 90 percent of the objections we had on the Delaware came or arose really out of a lack of communications and we could eliminate that.

DR. GODDARD: I think this is something we should keep track of in our January meeting. That would be the appropriate time. I think we were very careful at our Binghamton meeting that the utility people were represented along with the water works people. At this point we were not too well organized and I didn't think it was pertinent to bring them since we didn't have anything too concrete to talk about, but I think this is an important point and we don't want to overlook it.

I think most of you saw in the press this morning, if you did not it's a very interesting point, the utilities announced yesterday a great plan for developing steam-generated power at the mines in West Virginia and Pennsylvania, a total project of about \$350 million. This is certainly worth studying and reading. There are about 14 major utilities together on this project, and, while it is not directly involved here, it will have an impact on the Susquehanna, on the basin, and on the development in the other reaches. They are going to circulate this and get some documents to distribute to the legislatures.

If there are no other questions, I think we ought to move on. We want to thank you, Mr. Starr, and Mr. Schwartz for your fine presentation on very short notice. We called you last evening and we know you can talk about this anytime of the day or night at the drop of a hat and this proves it.

MR. STARR: The only thing is that when Mr. O'Donnell called, we were just in the midst of Tchaikovsky's Concerto No. 1, a brand new record I had bought. I'm going to play the other side tonight.

DR. GODDARD: Thank you very much, Mr. Starr. At this time we would like to call on Gerald W. Ferguson whom we heard from earlier who is the Project Director of the Chesapeake Bay-Susquehanna Basin study of the U. S. Public Health Service, and as was stated earlier they have received an appropriation from the government to start the water quality study in the bay and in the river. Mr. Ferguson is well qualified to talk to this point, so without any further ado we will call on him. I think we will follow pretty much the same procedure we did with the Corps. If we have a pertinent point we might interrupt him; it's not very polite, but we want to be informal and we want to get as much out of it as we can. We are pleased you could be with us, Mr. Ferguson.

MR. FERGUSON: Thank you very much. It is a pleasure to be here to discuss our project with the committee and the guests and the audience. I, too, am always interested in talking about this project because for the time being it is my bread and butter. I have been assigned to this project something less than a year now and have been talking about it quite considerably. I put these notes out here specifically to indicate to you gentlemen that what I say I have talked about previously and I am going to say the same thing with the Corps here or without the Corps here. If you wish, there are copies of the Prospectus of our Project and if you don't want to read all of it, there is a summary statement of a couple of pages which we hope summarizes the same thing.*

As with all government activities, they start with and are based on a law and our activity, our particular project here, is based on the original Public Health Law 660 of the 84th Congress, the Federal Water Pollution Control law, which was amended in the last Congress. I would like to take this moment to read from it in order to be sure that we understand exactly the responsibility of the Department of Health, Education and Welfare and the Public Health Service. It says ". . . that the secretary shall, after careful investigation in cooperation with other Federal agencies, with state water pollution control agencies and interstate agencies and with municipalities and industries involved, prepare or develop comprehensive programs for eliminating or reducing the pollution of interstate waters and tribu-

* See p. 18, Binghamton meeting.

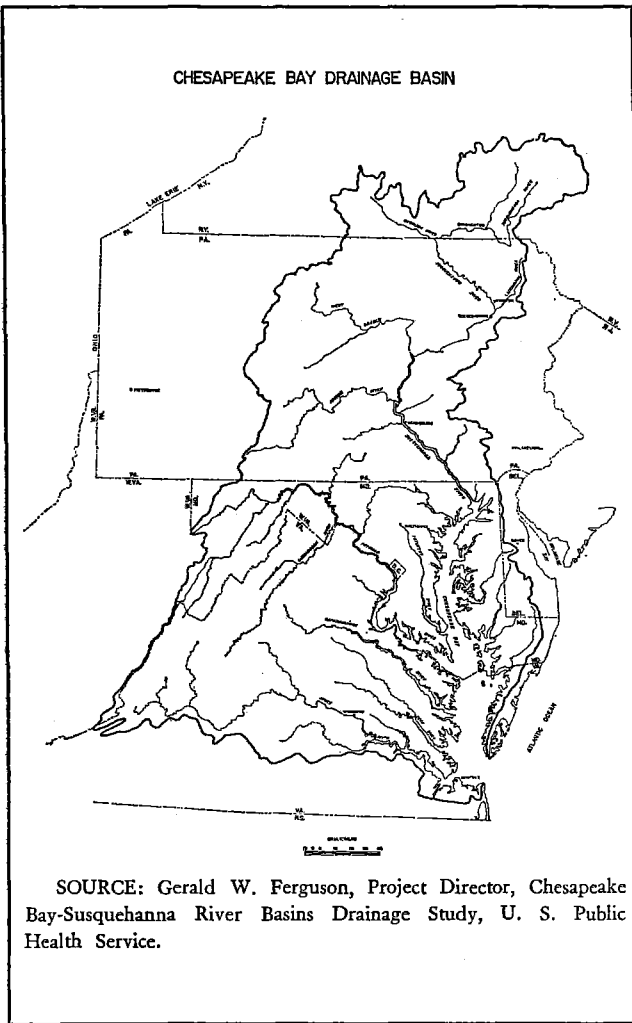
taries thereof and improving the sanitary condition of surface and underground waters. In the development of such comprehensive programs, due regard shall be given to the improvements which are necessary to conserve such waters for public water supply, propagation of fish, aquatic life, wildlife, recreational purposes, agriculture, industry and other legitimate uses. For the purpose of this section, the secretary is authorized to make joint investigations with any such agencies of the conditions of the waters of any state or states" and so forth.

I won't bother going on, but I want to point out two salient facts: we are interested in water pollution control, water supply and water quality management; secondly, we do this with all levels of government with all people involved and we, in this project, hope that when our recommendations are written it will be the consensus of all concerned and the selling of it will be easy because it will be bought in the making. We also are not a construction agency. We have no dams to sell or buildings to sell. We want to present a program which all agencies can use to incorporate water quality management into water resource development.

I brought along a few maps in order to set the stage, if I may. I might say that the Public Health Service is undertaking and is planning several comprehensive water quality projects throughout the United States, and it is hoped that by 1970 all the major basins will have been completed. This is one of several; we have some going on in the Colorado, Columbia, the Illinois, Great Lakes and several others. This (indicating on the map) is the political boundary of the basin. We did that in order to be sure that all areas are considered, some by our project and some by other projects. You see it goes up into New York State and Pennsylvania down here. Then we superimposed the basin over that so you see it is practically the same thing. We divided it into sub-basins and for the particular subject of interest for today, the sub-basin of the Susquehanna.

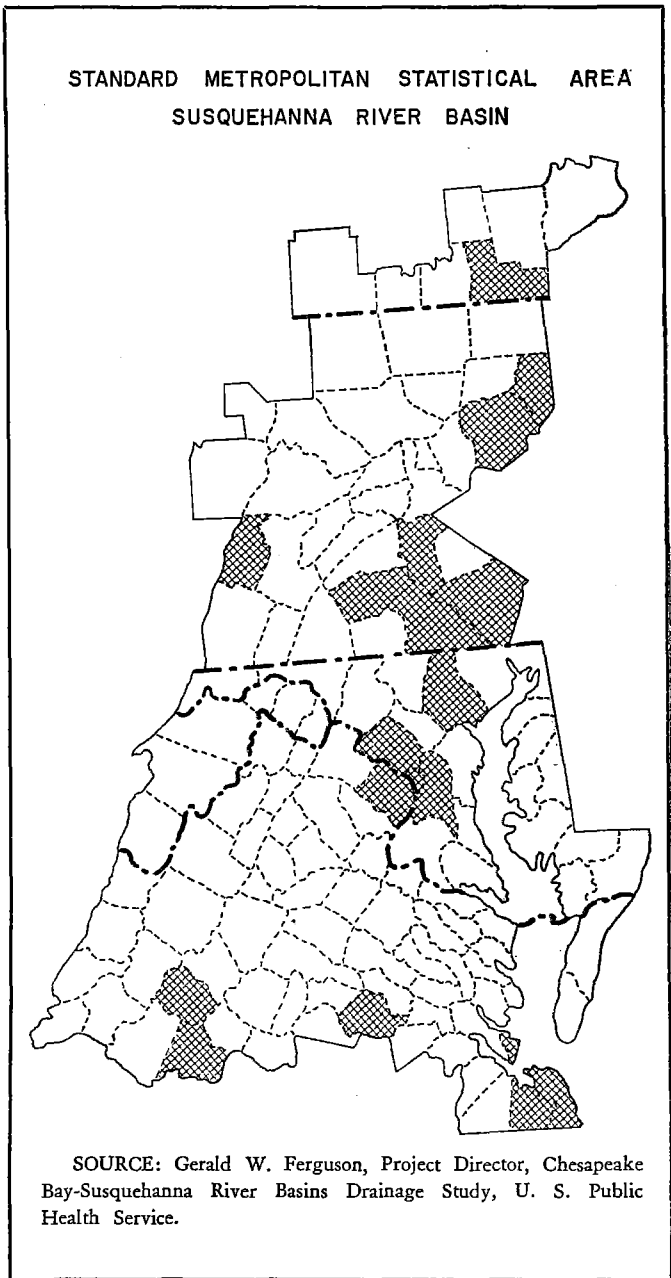
DR. GODDARD: How many are there, may I ask?

MR. FERGUSON: We have four sub-basins in the Susquehanna. We have four and the Bay in the other part.



Going back again to the map, here is the standard metropolitan statistical area and this is where the problems are because this is where people are. One other map I want to show you. This is called Key Manufacturing Marketing Centers which are defined as counties having 10,000 or more employees. This is where other areas of problems probably exist.

Again, I want to point out that not only because of this law business but the history of the Public Health Service is to work very closely with state and local agencies. Jokingly and not so jokingly, I used to say that 20 years ago, when I came into the Public Health Service, I never went into the states without calling the sanitary engineer ahead of time to let him know I was coming. There is some truth in that and we continue that because we believe



the best health work can be done on the state and local level and it is the responsibility of the Federal Government to reinforce as much as possible these agencies by various means of research, of training, of general guidance, of field studies and so forth.

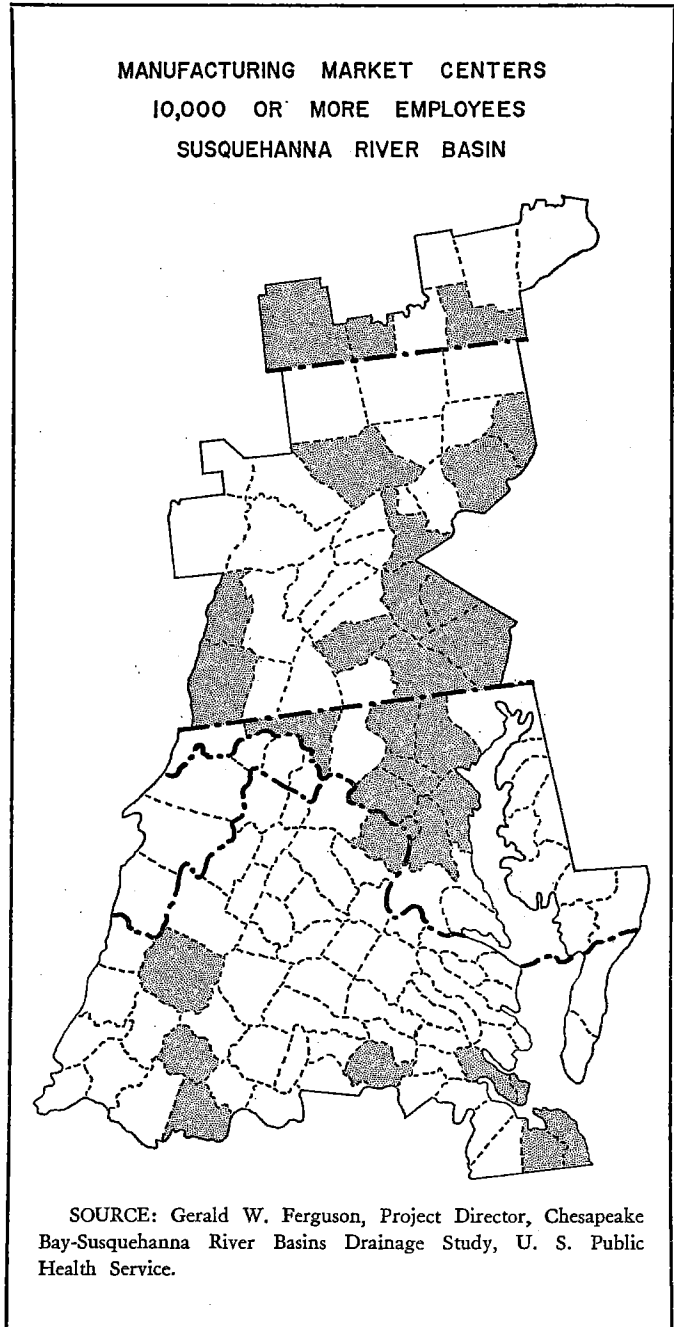
My next item here differentiates the difference between the Corps of Engineers' project and ours and this again

APPROXIMATE LAND AREA—67,000 Square Miles POPULATIONS $\times 10^6$			
Year	Urban	Rural	Total
1920	6.1
1930	6.6
1940	7.3
1950	5.5	3.0	8.5
1960	6.7	3.4	10.1
	13	1950	1960
STANDARD METROPOLITAN STATISTICAL AREAS		5,676,000	6,667,000

SOURCE: Gerald W. Ferguson, Project Director, Chesapeake Bay-Susquehanna River Basins Drainage Study, U. S. Public Health Service.

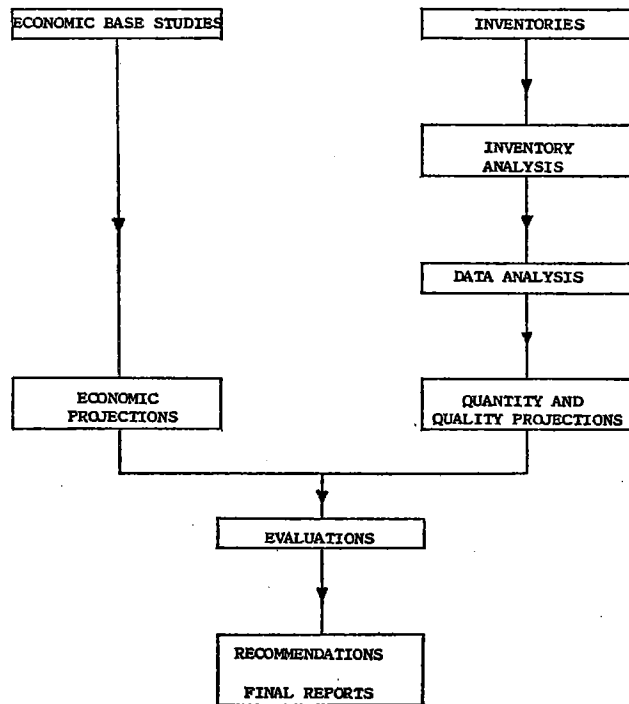
goes back,—we are interested in water quality management for the entire reach of the stream; we're interested in salt water and brackish water and fresh water; we are interested in the entire stream. We will not construct anything. We will hopefully present a program which can be integrated in the Corps' plan or integrated into anybody else's plan. We want to be sure that water quality is considered, regardless of what you do with the water resources, and we propose at the end to come out with a series of recommendations, alternates if you wish, which will basically say this: if you want this type of good water for the implementation and advancement of the economy of the country, you are going to have to do this and it is going to cost so much money. Now, if you don't want to pay that much, then you will have water quality of a lesser degree and that in turn will have an effect on the economy of the area. We would hope that we could have a series of suggestions. The more you want to pay, the better product you will get in the form of water quality. We, as I said previously, estimate that our cost will be somewhere between \$4 and \$5 million, according to how much oceanographic study we will have to do in the Bay.

As to the breakdown of our planned activity, this is a brief sketch of what we propose to do. We propose to have an economic base study to determine and have projections made to determine what the water requirements, quality and quantity, will be in the next 50 years. The Corps of Engineers wants the same thing, so in the beginning when



we heard that they had an authorization to study this we already had our wheels going, our mechanism started, so we contacted them and we have been working very closely with them. We agreed that one economic base study would serve both purposes; we agreed that the Public Health Service would be the contracting agency; and we further agreed on the specifications of the contract in

SKETCH SHOWING VARIOUS STEPS OF PROJECT DEVELOPMENT
SUSQUEHANNA RIVER BASIN



SOURCE: Gerald W. Ferguson, Project Director, Chesapeake Bay-Susquehanna River Basins Drainage Study, U. S. Public Health Service.

order to be sure that our contractor reflects,—we have our organization which we haven't signed a contract with, but we think there isn't much question about it, meet with the Pennsylvania planning people, meet with the Maryland study group and the economic contractors of the State of Maryland Water Supply and Resources Study and they have also gone with us to the State of New York and had a meeting up there with their state agencies in order to be sure that the local flavor, the local interpretation can be worked into this economic projection,—not only the thinking of some long-haired economist but that it will also reflect the thinking of the agencies and of the state. We anticipate that will take a two-year period of time.

In the meantime we are carrying out an inventory of water supply, municipal sewage facilities, industrial waste and industrial water supply and also an inventory of information on water quality data which now exists and anything regarding hydrological studies. We have one man

working with the Health Department in this building; we have two working with the Health Department in Pennsylvania at this time; and we will have two more up there shortly, and those people will also be working with the Health Department and other state agencies in New York State to collect facts to find out what exists because there are many, many organizations and a lot of work being done on this whole problem of water quality, and we hope to get as much information as we can in one place and then find out where these voids are and where there is a lack of data. We will then proceed to obtain this data by establishing laboratory test capabilities ourselves and field studies in the area and we hope to implement the capabilities of the local organizations to incorporate and help them expand their activities in this regard. That is what our objectives would be.

This information then is to be fed back to us. We have on our staff a combination of people. We have an oceanographer, a sanitary engineer and we now have a computer programmer. He is putting down on IBM cards and devising a system of all this data whether it's chemical, physical, bacteriological, whether it's hydrological information or information on facilities, and puts this all into IBM cards and has it so stored that he is able to retrieve it quickly, and he is also writing programs for sanitary engineering techniques,—I won't get into this actual side curve,—in other words, we're trying to use modern techniques in this regard. We have the inventory; we analyze the results of the inventory; we make field studies by ourselves and in cooperation with others; we analyze that and then we come down and marry our economic base study together with what we know at the present time. We make the prediction as to water use and water quality in the future based upon the projection, and then we work very importantly at this point with everybody concerned at the state and local levels to determine what the water quality objectives will be.

We will, from that point, go to the next as to how to achieve these objectives. One way of achieving them, of course, would be treatment, and there is no question that that is number one. Another way of achieving them will be flow regulation. Another way of achieving this may be or could be salinization. There are many other phases, not many, but some more that could be considered. We have worked with several agencies at the present time and will, in the future, work with others. We have worked with the U. S. Geological Survey, the Corps of Engineers, De-

partment of Agriculture, with various state agencies, the Geodetic Survey on the Bay. At the present time we have four contact points in the four states. In Virginia we have the Virginia Water Control Board and they are our contact point and liaison with the state agencies. In Maryland it is the State Planning Department and through them the State Health Department and the Water Control Commission. In Pennsylvania it is the State Health Department or the State Sanitary Water Board,—they are one and the same thing really, at least in my mind. In New York State it is the State Health Department. Normally these are the agencies the Public Health Service deals with in water pollution control matters and through these agencies we would hope to work with the other state agencies involved.

Now we are at a point where we need technical task groups and liaison committees. One of the reasons I was so pleased to come here today was not only to differentiate our project from the Corps', but to point out that we are funded separately. One project supplements the other, but it is not a substitute for the other. The second point is to find out, or throw out on the table for discussion, how we could have a continuing relationship perhaps with this group leading toward a more formal contact in order that we can explain to the official state administrations our project and have a feedback from that as to the direction that they think we should go in certain conditions. We further would hope or plan on having technical task groups probably on a state level including both state and Federal organizations and they would lay out our field studies to this group and ask what work is being done by the other agencies and how we could coordinate our technical aspects to the project. All this we believe will be done and we hope to wrap up a package in about five years. However, we don't believe it is going to be five years before you have a piece of paper. We hope to have a series of reports on various phases of this, and we also hope that when this is completed that there will be no problem convincing others that this is a program to be followed because it will be their program.

Thank you very much, gentlemen. If you have any questions, I would be happy to try to discuss them.

DR. GODDARD: Thank you very much. There will be questions, so don't go away.

MR. HEACOX: You mentioned the economic base study as being identified with the Corps study. In your separate

**TYPES OF ADVISORY COMMITTEES
DESIRED BY THE CHESAPEAKE
BAY-SUSQUEHANNA RIVER
BASINS PROJECT
ADVISORY COMMITTEES**

1. Project Liaison
2. Technical Committees
3. Civic Advisory Groups

SOURCE: Gerald W. Ferguson, Project Director, Chesapeake Bay-Susquehanna River Basins Drainage Study, U. S. Public Health Service.

reports are they identical in content or do you editorialize? Does the Corps editorialize with the facts contained in this economic base study?

MR. FERGUSON: I might say that our project covers a larger area than the Corps and we have discussed this problem with the Corps and arrived at some figures on how much they will pay for the study and how much we will pay, since it covers really two areas, a large area and then the same smaller area. There will be two parts to the report because the Corps isn't going to pay for the Bay, at least the Susquehanna project is not; they are not interested in that part of it. I can't say what the Corps is going to do, but we would have an economic base study and projections as part of our project and we would not editorialize. We would take the facts that they present to us. Where we would modify, not modify, but take off from that point. They will tell us what economic activity, where they think the people will be, what kinds of industry will be in what place, but they won't tell us how much water is going to be used or what the type of the quality of the waste will be. That is our interpretation, so from that point of view we will editorialize; otherwise we won't.

MR. HATEM: We speak of the basin and the Bay. Would your study encompass the entire watershed above the Bay, in other words, the tributaries draining into the Susquehanna?

MR. FERGUSON: That's right, sir. It will be the entire watershed including the Bay. It will include drainage from the James River. We show the Potomac in here, but that is done and we don't anticipate doing anything in the Potomac except in estuarial parts where the Corps would then emphasize mostly the work in the upper reaches or in the area where the dams are going to be built and some

study of the effects of that on the estuaries. We anticipate we are going to have to do some work in the estuarial part, but it is the total basin, yes, sir.

MR. O'DONNELL: The ultimate end of this study or any study is a series of recommendations on what to do to establish and obtain the water quality that we seek. Now how will those final recommendations be coordinated or reconciled with what the Corps is doing in their total program?

MR. FERGUSON: We would hope in our continual and continuous contact with the Corps of Engineers that if we see an area where treatment will not produce the quality of water we want in the Susquehanna, we will turn to them and say, "can you give us and how much will it cost to give us so much water passing this point?" On the other hand, if they have a schedule which shows this is a good dam site and here is another and they would like to develop these areas, they will come to us and say, "what will be the effect on water quality and water supply from a facility built here, the good and the bad," and we will then hopefully be able to give them that information from our study immediately. I imagine, though, occasionally we will have to speed up one part of our study in order to answer specific questions. Incidentally, at the present time, when a facility is going to be built to store water, whether it is the Department of Agriculture or the Corps of Engineers, or whether it is the Bureau of Reclamation, they are required to consult with the Secretary of Health, Education and Welfare to determine the advantages and the possibilities of using these facilities for water supply storage and for the effects on water quality on the downstream side, so that in cases you mentioned previously, the Raystown and Blanchard, these, if they go forward and are going forward, I understand, special studies may have to be done immediately to answer these questions and we will have to work them into our over-all program.

DR. GODDARD: In this regard, could I ask this: You have just these four sub-basins in the Susquehanna. Can this work be done before you do the rest of it or are you going to try to carry the whole project along so that it is done at about the same time or would you have to do the basin before you do the Bay anyway because it has an effect on the Bay study?

MR. FERGUSON: Originally when we started we didn't know about the Corps' project, and we had hoped to pick on the small areas first because we felt nothing succeeds like success and we wanted to make our mistakes little mistakes, but, when we heard that the Corps was going to have a project in the Susquehanna, obviously we reoriented our thinking and we will expend the maximum effort in the beginning in the Susquehanna and work south.

DR. GODDARD: Thank you. That is what we all wanted to hear. How long will that take to do the basin itself, to do the data the Corps will need on reservoirs? Will that take three years, four years?

MR. FERGUSON: I would hope that in three years we would have it well along the way.

MR. HEACOX: How much will the total report weigh?

DR. GODDARD: That question is out of order.

MR. HATEM: I heard some mention of the public relations that will be necessary in conjunction with this project and I remember also that you said one man from your department would be working with our State Planning Commission and appropriate state authorities in Maryland—

MR. FERGUSON: One at the present time is here. We anticipate there would be more.

MR. HATEM: What I am getting to is that I know Pennsylvania has done a tremendous amount of background work on this project, far beyond what I believe has been done by either New York or Maryland in the way of public relations because I attended some preliminary meetings that were probably held a year ago in Wilkes-Barre in which various committees were formed to publicize the possible plans of this group, and I was just wondering if it would be possible for Maryland as this project proceeds to impose upon maybe some of your people or yourself to assist us in our public relations with this project in the way of supplying information or possibly speakers from time to time?

MR. FERGUSON: Absolutely. The answer is yes, without any question. I might take this opportunity to explain a little bit of the relationship that we have now with the Department of Planning in Maryland. As you no doubt

know, they are sponsoring a state water supply and resources study and they are actually going through many of the steps which we are going through, which we are proposing to go through. However, in their particular plan, if I may speak for it momentarily, it was anticipated only to gather the data which now exist in various places within the state and not do any additional field studies to fill the voids. It would be calling attention to the lack of data and the need for getting these, and they have a contract, or at least they will have soon, for an economic base study and projections. In order that we integrate our effort very closely with the local area—I am a member of their advisory committee—we meet with them each time, we have continual discussion with them so that their economic contractor will collect basic data in Maryland and our economic contractor won't have to do it and he will spend more time on the national projections, on analysis and on the other projections of a local nature, and there is a feedback in this relationship. There is a feedback all along the line, and, from the public relations angle, I would very much hope that we could push that angle because, after all, we are all public servants and, if we don't let the people know what we are doing and trying to do, we won't get their support.

MR. MONTANARI: I am still not entirely clear and maybe you can spell it out. What is the state role in this? We talk about your cooperation with the Corps, how you finally got together and you are now working together, but where in this picture and in what way does the tremendous competency of the state agencies fit in?

DR. GODDARD: Excuse me for interrupting, but I see the fellows from the Press are leaving. Do you fellows have any specific questions? I was going to recognize you later. We are glad you were here.

MR. FERGUSON: We are getting any studies which the state agency has made in a particular basin and, if it is out of date, help update it, and in this particular case we would take the information which the state health department has developed for the water quality of the Susquehanna River in the state. If there is a need for further information upon the present day water quality, we would first ask them if they could get it, and, if they couldn't get it in their budget within the limits of time we want it, our next step would be to see how we could integrate our efforts or

perhaps, if possible, how we could make some money available to them to do the work or just how we could get this work done jointly with them—that would be regarding water quality. Now objectives we would hope would be uniform throughout the basin and we would naturally be relying on the various state agencies to come up with their concept of the type of quality objectives they want in that particular area. In other words, we look at our project as supplementing the state effort and going beyond where they can't go because of budgetary reasons.

MR. MONTANARI: Is there any participation in the planning and in the drawing up of these specifications that you are carrying out or do you come to the state agencies with the request for what you want?

MR. FERGUSON: What specifications are you talking about?

MR. MONTANARI: The general outline of studies. Again the state's role is one of just providing you with information, is that it?

MR. FERGUSON: No. I can't speak for New York state at the moment, but, as an illustration, next week a man from our office is going to Pennsylvania to sit down with the Health Department and say, "What are you going to do in field studies in the Susquehanna next year?" Then we will say, "what additional work do you think should be done?" Together we will arrive at a plan of field studies for 1964 which goes into our budget justification. It is necessary to do this now because we have to get these in shortly. We intend to go to New York state before too long for the same purpose and also have meetings with the Maryland people along the same line to find out what studies they are going to do and how we can reinforce their efforts to get the maximum result. We do not intend to go and say, "You get this and you get that and we will pay you so much money for it." We want a feedback all along the line.

DR. GODDARD: Any questions from the audience? We don't want to slight anybody.

MR. FERGUSON: If there are no more questions I would like to go back to pose a question I did originally and that is I would hope that you could consider at some time our need for liaison with official state administrations. We have day-to-day technical operations and working relationships with the state agencies, but we feel the lack of a political umbrella, I guess you would call it.

DR. GODDARD: I would suggest that we do the same thing we propose to do here with the Corps. We are going to suggest to the various states that the key personnel on this committee be the key state contact at the state level. I don't see why the same person couldn't be the key contact with you in the Public Health Service.

MR. MONTANARI: In New York, as you probably know, through the Water Resources Commission there is a focal point for all the water matters because it includes all the agencies that have a stake in the water.

DR. GODDARD: Who is the chairman of that group?

MR. MONTANARI: Dr. Wilm.

DR. GODDARD: That's what I mean.

MR. MONTANARI: This brings them all together. I don't know about your political umbrella.

MR. FERGUSON: Well, perhaps my term is ill-conceived, but it was an attempt to differentiate between the day-to-day technical people and others.

DR. GODDARD: We are going to continue to invite you to these meetings. We certainly want to know what you are doing and how you are progressing.

MR. FERGUSON: We would like to have the opportunity if it so develops to ask questions or help from this group as we progress.

DR. GODDARD: If I can go back to a technical question, we know, for example, that the North Branch of the Susquehanna River at times has acid conditions from the deep mines. Will your report show how we can maybe prevent it from being acid, that if we build reservoir a, b, and c, that we can always keep it in an alkaline condition? Will you go this far in your report?

MR. FERGUSON: I would hope so. Harry Schwartz says that it better.

DR. GODDARD: Well, that is an example, I think, to clear up with people here as to what we hope to get out of this. It is really important work. I was a little bit staggered when you said it was going to cost \$4 or \$5 million. I'll be frank, I didn't think it was that steep. I thought perhaps the whole package of the Corps would cost that much.

MR. FERGUSON: The figure of our total study will depend upon how much effort will have to be expended in oceanographic work in the Bay for long-term planning. Oceanographic studies do not come cheap.

DR. GODDARD: Do you think that the Bay effort is actually going to be more than the upper basin effort? I understand it is more complex.

MR. FERGUSON: We have a contract with the Chesapeake Bay Institute at the present time to review all the data available to their knowledge, all the data available in their shop at the University here, and to analyze it and to present it in an atlas and then to make recommendations as to where the lack of data exists and what plans should be developed to obtain these data in order to have a true picture of the absorptive capabilities of the Bay, and when we get that report we will be able to answer your question better.

MR. HOFF: Based on your remarks, Secretary Goddard, I begin to see why oysters are regarded as social liars. Less facetiously, however, based on what work has been done on the four states of the Delaware River Basin, they have agreed upon the classification of the river and the quality of the water. Would it be contemplated, and would it be the responsibility of the three states on the Susquehanna or the U. S. Public Health Service, to establish, you might say, the classification of the different sections of the river and also the standards of quality?

MR. FERGUSON: It's a two-edged sword. It's a question which comes up on all these comprehensive studies. We say we work with the state agencies and organizations to come up with a satisfactory program. That is our comprehensive plan, our objective, not only in the department, not only in the Public Health Service, but in our own division. We have an enforcement division and they have another part of this law which covers enforcement which says that if interstate pollution exists it shall be eliminated. That is a Federal responsibility, so after pointing out those two things, that we have a history of working closely with the states and hopefully having the state agencies take care of their own problem, we get involved only when a nut is too hard to crack.

DR. GODDARD: My own opinion would be,—maybe I'm wrong here, but I don't think your attempt is to classify the streams in the Susquehanna Basin,—you are going to show the condition of the stream and that, if you do item a, b, and c, this is how you can improve it. I don't think they have any intention of classifying the streams.

MR. FERGUSON: Not only improve, but what the water can be used for, what the beneficial uses will be, and on the contrary if you don't do it what the problem will be, not only for today but for the next 50 years.

DR. GODDARD: Are there any more questions?

MR. MONTANARI: Yes, the results of your study, of course, then will be available to the enforcement people in your shop?

MR. FERGUSON: It would. It's a public document; it's available to anybody.

DR. GODDARD: Thank you, Mr. Ferguson.

MR. FERGUSON: Thank you; it was a pleasure to be here.

DR. GODDARD: It was a very interesting discussion. I can see that it is a pretty technically involved project you are tackling, and, obviously, if you look at the League of Women Voters' report in Pennsylvania, you can see the tremendous amount of heavily acid contaminated streams we have in the State of Pennsylvania, primarily from the deep mines, and I think the only solution here in many respects is this low flow augmentation. We don't want this as a substitute for pollution abatement, but I don't see any other solution to it.

For the information of the people that are here, for example, the Allegheny River reservoir, when it is in operation it is anticipated it can reduce the acidity of the Allegheny where the Kiski enters it from about 77 days a year, when it is now acid, and reduce it to about 50 days, or by the operation of the flow releases from one reservoir we can cut down the acid condition on 27 days. Now it's obvious if we only added one or two other reservoirs to the system maybe we can tip the whole Allegheny system over to an alkaline condition. This has to be done to make the Corps' report really a good document. It is a really difficult problem. I would hope that we could speed up these four and six years but I recognize that it is extremely difficult. I don't think we are going to be in too great a hardship in our individual states if we can keep, for example, our Blanchard project moving ahead and our Raystown project and some others in New York and Maryland, but obviously you can't get the money for all of them at one time anyway. I think this is the important point, but we have to keep the thing moving. The people are going to be most interested if they see some off-the-ground accomplishments. It's pretty hard to keep the people in a dormant state for six years. It's pretty difficult to sell them on a long-range plan

in any event, and, of course, if we are talking six years, we're going to be through our next Governor and into the next one and that is discouraging for the Governor. We've got to push this as fast as we can. We want it to be as accurate as we can and we know in any event there are a lot of inaccuracies in it, but any plan is better than no plan, and I am sure with the technical capabilities we have in the state and in the Federal Government and local organizations the will of these legislative people—men like Senator Barrett that have worked on this effort for many, many years, Dr. Wendell from the Council of State Governments; many of you know the Doctor and we're glad you're with us and hope you will stay for lunch with us—we can succeed in this effort. People say you can't coordinate effort. Sometimes you get breakdowns and it doesn't succeed, but the little Schuylkill project—we're building a dam there, the county commissioners are putting money in it, the Soil Conservation Service is putting money in it, our department is putting money in it,—it can succeed. We hope to do it on some of the Brandywine dams. I think we've made tremendous progress. If we can bury our little idiosyncracies, our little differences, and stop the conflict between water companies and sportsmen and vice versa, we can succeed. I am almost ready to give my speech again.

SENATOR BARRETT: What you need is a political umbrella.

DR. GODDARD: That's a true statement. I don't have an umbrella at all right now.

We will adjourn and meet in the Red Room of the Sheraton-Belvedere. Mr. O'Donnell will be our host and moderator. We are going to have a very fine presentation on the taking and the development of the water system into the City of Baltimore from the Susquehanna. I think this will be of tremendous interest to all of us. I've read a little bit about it in the press in Pennsylvania and in the Engineers' News Record, but I really don't know very much about the detailed material, and I think it will be a very enlightening luncheon and we will adjourn immediately after that. We thank all the participants in the audience and the delegates and guests.

(AFTERNOON SESSION)

MR. O'DONNELL: I would like to say there are several people here from Maryland and Baltimore who were not introduced over at the conference this morning and I would like them simply to be identified here with us today. Ed Hollis is here representing our Tidewater Fish-

eries Commission; Ed Barry, Game and Inland Fish Commission; Jim McComas is with the Department of Health; and I think you've met on earlier occasions Al Miller and Herb Sachs of my office who have been here with us today.

Our principal presentation here today involves the raw water line from the Susquehanna serving the City of Baltimore and supplementing the Baltimore city supply which I think is a very important feature of the Susquehanna development program as far as the people in Maryland, and certainly specifically in Baltimore, are concerned. With us here also today is Mr. Leroy Schuerholz, who is Chief of the Bureau of Water Supply of the City of Baltimore.

Without further ado then I would like to proceed to turn over the rostrum and the program to the representative of Whitman, Requardt and Associates, consulting engineers in Baltimore who are the consultants to the City of Baltimore on this line, who designed it and lived with it from its inception. Helping our guest speaker is Ray Regnier, of Whitman, Requardt and Associates, who I think will take care of the projector, and Russ Vollmer, partner, Whitman, Requardt and Associates, who will do the presentation and the explanation.

MR. VOLLMER: Thank you. I want to tell you about a specific water supply problem in the basin that is now under construction. I listened briefly before lunch to some of the projected plans and I think you might be interested in seeing something that is now underway. I have some sheets that will show you a summary of what we are talking about, but I would like to give you a brief outline of what we propose to do and how it will shape up. I want to take a few minutes to give you the background and then to have some slides for the general projection here that we can see more clearly.

Baltimore's water supply, maybe some of you know, has been developed over a long period of time. It is a regional supply; it is not just for the City of Baltimore; it branches out into the counties and is now serving about 1.4 million people. It has been served now by two surface systems, one the Gunpowder on the north of the city and the other the Patapsco on the west. Between the two they supply about a safe yield of 243 million gallons per day. Right now the raw water demand of the city is just under 210 million gallons with a great deal of potential to increase in the future so that the undertaking of the new

supply is none too soon. During the war years there was some considerable period of time when the city was on thin ice, having a raw water demand considerably above the safe yield. At that time it was about 148 million gallons and was reaching about 200 million average use so that any drought that would happen would certainly put the whole area and region in a precarious position.

Following the war, the city and the Department of Public Works recognized the need for additional supply so that the report was undertaken about 1951, what is known as the Wolman, Requardt, Shaw water supply report of the advisory engineers' report. It was attempting to learn what the needs of the city and the region would be until the year 2000, a little far in advance, but ultimately it would be necessary. What happened was that a report came out about December of 1953 which recommended going to the Susquehanna for a supply which would be 250 million gallons daily added to the present safe yields. This will be shown in a later slide, so I don't think you have to worry about the statistics that may show up.

At that time the studies were made on the Potomac and the Patuxent,—of course the Patapsco and the Gunpowder had already been taken over by the city so that further north,—Deer Creek, a tributary of the Susquehanna, plus the Susquehanna itself, was considered. The recommendations were for a supply from the Susquehanna River of that 250 million gallons daily demand. That is of course a pumped supply; it is a supplemental supply; it is not a base supply because the point of take-off is at the Conowingo Dam which has a water surface of about 108 elevation. The mixing basins at the Montebello Filtration Plant, which is one of the major filtration plants in the city, is about 215, so that every drop of the water had to be pumped all the way through. It was obvious that the supply should be supplemental and not base because they had the Gunpowder which, through the Loch Raven system, could supply by gravity all the low portions of the city from zero to about 150 and with the new Patapsco supply it would be possible to serve from elevation 150 to above only a middle surface zone so it had a great deal of importance to have the present two systems in operation, one being for the low zone and one for the middle zone and higher zones, because it made a great saving in pumping costs annually.

The Susquehanna then would be a supplemental supply which could be called upon over the years more and more to reach this point of at least 250 million gallons daily in the year 2000. That is based on the fact that there will be a need for serving, I think, about 2.2 million people in the region at that time. That is projected in the report we are operating from and it will be an average annual demand of about 460 total million gallons per day so that the total will be a three part supply at that time. The supply from the Susquehanna will be used when necessary and up to this figure that I mentioned. The project as was developed required legislative approval in 1955 by the Maryland Legislature which was done by the Spring of 1955. Immediately thereafter, an appointment of engineering was made and the first order of business was to write a general location of structures report and an estimate of costs which would be submitted prior to the referendum that had to be given approval in the 1956 election. That was favorably voted upon, and in 1957 approval was given to proceed on final design, and in 1958 the first contract was awarded. As it stands now, we have one contract yet to go. It is the one of the gap of the pipeline that will be shown on the slides that will complete this project.

In total, the estimated construction cost is about \$30 million of which about two-thirds is pipeline and conduits and one-third is intake tunnel, pumping stations and connections at the city. This is a raw water supply; no nutrient is involved; it will be usable all the way down the line if there are customers and that was part of the original report for raw water to be served either to industry or to the local municipalities in that area from Havre de Grace to Baltimore. The project as it stands was divided into about seven or eight different contracts and, as I say, now we expect that the work will be completed by 1965 and we will have a chance to pump the water at that time. It was originally scheduled for several years earlier, but the right-of-ways and the difficulties involving the pipeline and the coordination with the Northeast Expressway, which parallels and is adjacent to the line for about half the distance in town, were responsible for some of the delays.

I think we now could take the slides and please feel free to ask any questions that occur to you as you see the slides and I will try to answer them. I have a stalwart backer here in Mr. Schuerholz, who is the water engineer. If I can't answer them, I'll ask him to supply the information.

(A series of slides were presented showing general pictures of the entire project including projected water demand, proposed reservoirs, pumps and pumping stations, underground piping and tunneling, land scars, intake structures, etc.)

MR. VOLLMER: This is the project as it stands now, and, as I say, I have some job sheets you may take if you wish that will summarize the project and what the costs are.

DR. GODDARD: How is this being financed?

MR. VOLLMER: The City of Baltimore is now floating a bond issue for the construction. The city is in control of the whole picture. There was a nice article in this morning's Sun—you may have seen it on the back page where we look for local news,—that the metropolitan area studies commission has recommended a joint metropolitan system,—I think Jim may be in on that same committee, but this is the starting I guess of this whole thing. A lot of these studies are needed to determine how that can be worked out. It is a matter of working out details of how you can put one authority or one commission over the whole works.

MR. O'DONNELL: I certainly want to thank you, Russ and Ray. That was very, very interesting, not only to these people, but to us locally. It is a very revealing piece of information.

With that, I would like to turn the meeting back to our Chairman.

DR. GODDARD: I would like to say a very hearty thanks from the people from New York and Pennsylvania for the very excellent hospitality both for yesterday and today. We are grateful for the excellent arrangements and for this very fine presentation.

I don't know if there is very much else we can add. It's been very stimulating and interesting to me, particularly this presentation at lunch today. I've read a little bit about this in the press, but you did a very excellent job. I know it is very complex and we just scratched the surface, but if we have any questions in the future we can direct them to you, Jim, or the consulting firm for elaboration.

Again, I want to thank everyone for attending. I hope you all get home safely and I hope to see you in late January.

This meeting stands adjourned.