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THE INTERSTATE COMMISSION ON THE DELAWARE RIVER BASIN

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A Report

ON ITS ACTIVITIES AND ACCOMPLISHMENTS

July 1, 1943 to June 30, 1944

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A REPORT ON ITS ACTIVITIES AND ACCOMPLISHMENTS

July 1, 1943 to June 30, 1944

THE INTERSTATE COMMISSION
ON THE DELAWARE RIVER BASIN

PHILADELPHIA, PENNSYLVANIA

THE activities reported upon in this brochure necessarily have been presented in summarized form. They illustrate the principles for which Incodel was organized and the objectives to which this joint governmental agency of the States of Delaware, New Jersey, New York and Pennsylvania is devoting its attention and efforts. More detailed reports upon each of the subjects covered herein, and upon other activities of the Commission, are available in its offices. Many of these are in reproducible form and will be furnished to anyone interested, upon request. All may be consulted and reviewed with members of the staff at any time.

Special attention is directed to the more complete reports on Postwar Public Works Program, the Schuylkill River Project and Federal-State Relationships printed in the appendices of this booklet.

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FOREWORD

BECAUSE of the destructive and exhausting effect of the war the most important task confronting this nation, aside from winning the war and the peace, is to formulate, adopt and execute wise and constructive policies for the most appropriate development and utilization of our resources.

No country has been more generously blessed with these assets than our own. But, until recently, this splendid heritage too often has been squandered with a recklessness which gave little heed to the requirements of public welfare or the needs of future generations. Vast forests, enormous mineral deposits, fertile soils, waterways, and social equities which constitute the foundation upon which our economic development and prosperity have taken place in the past, and upon which they will rest in the future, have been thoughtlessly wasted or selfishly exploited.

Today there is a general public awakening to the necessity of ending such practices. There is now an insistent demand for the conservation of human and natural resources.

The Interstate Commission on the Delaware River Basin, popularly known by its abbreviated name, Incodel, is the joint governmental agency which was created by the States of New York, New Jersey, Pennsylvania and Delaware to carry out these objectives in the Delaware River watershed. To it has been entrusted the responsibility of formulating cooperative policies for the development and conservation of the resources of the interstate river region which occupies a part of each of the four sponsoring states, and embraces an area of 13,000 square miles and a population of 5,000,000 persons.

The activities of Incodel during the twelve months ending June 30, 1944, were productive of a greater number of far-reaching and significant results than for any similar operating period since its creation. To a large extent these accomplishments are the culmination of the Commission's spade work of previous years. But they also reflect the particularly effective work done during the last fiscal interim. That they were attained while operating on a budget voluntarily reduced by one-third as a wartime economy measure is all the more impressive.

Most significant of the accomplishments was the continuing demonstration of the states' eagerness and competence to work together cooperatively toward the solution of their mutual regional problems.

It has long been recognized that a tendency to give up local responsibility in government saps the vigor of a democracy. Yet, until Incodel was created by its four supporting states, individualism and jealous competition

among them was a growing menace, and the trend toward centralization of activities in the federal government was increasing at an alarming rate.

By bringing the people of the four participating states together through their own governmental officials for the purpose of developing a program for the Delaware River Basin, Incodel is setting a pattern which represents a significant national as well as a regional service.

During the past year Incodel proved the value of its services in providing leadership in coordinating the interests of the numerous agencies responsible for the detailed preparation of physical and financial arrangements for the execution of practical projects for the development of the basin's resources. Its program of postwar public works construction and its project for the restoration of the Schuylkill River are two examples of the practical results of such service.

Summarized statements covering these two items as well as the other activities to which the Commission has directed attention during the past year are presented in separate sections of this report.

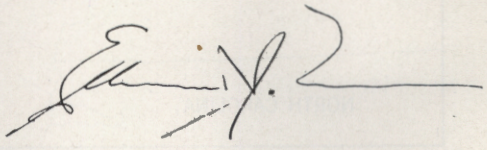
The future has greater things in store for the four state governments participating in the Incodel program.

Of necessity the Commission applied itself during its formative years to urgent, pressing and important problems. From these efforts has evolved a sound, sensible and practical solution to each problem, all of which are a component part of a comprehensive plan for the basin.

The time now has come when the States, viewing the region in its entirety through Incodel, should build into the picture of the basin the many other component parts of an over-all program.

Many problems which will emerge during the uncertain years to come will continue to be regional rather than national or local. They will be solved best and with the least dissipation of substance and character if they are tackled in the enlightened, cooperative manner developed by Incodel.

Upon such a foundation of cooperative and friendly spirit the states may look forward with confidence to the Commission's ability to formulate a complete comprehensive plan for the region.




THE DELAWARE RIVER BASIN
VERMONT
NEW HAMPSHIRE
NEW YORK
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
PENNSYLVANIA
NEW JERSEY
MARYLAND
DELAWARE
WEST VIRGINIA
VIRGINIA
NORTH CAROLINA
ATLANTIC OCEAN

Incodel Accomplishments

SUMMARY

Wise development and utilization of the resources of an interstate watershed involve problems which have grown steadily in size, in importance, and in complexity over the years. Control of floods has become imperative; domestic water requirements demand greater and more dependable sources of supply; industries constantly are using larger volumes of water for manufacturing; stream pollution and sanitation problems press for solution; water power is being sought for more and more; navigation demands safer and more convenient routes and greater channel depths; fish and aquatic life are increasingly valued commercially and by the sportsman; recreational areas must be developed with the increase in leisure time and improvements in transportation.

The Incodel method of formulating a program to provide for these many and ofttimes divergent demands comprises a pooling and coordination of the governmental and administrative activities and resources of the individual states and of the communities of the region, complemented by the assistance of interested federal agencies, under an informal, purely voluntary, functional arrangement.

The four states of the Delaware River Basin have agreed to act in unison toward the common goal of preparing blueprints upon which the region may be developed to serve present and future generations more advantageously. This approach has not involved the creation of a superimposed governmental structure; it has not entailed the addition of a new set of governmental officials; it has not supplanted or superseded any existing governmental agency. No new fields of activity have been created.

The dangers inherent in centralized planning, ownership and control have been carefully avoided. There has been no interference with the functions of local self government. Each state and each municipality is free to determine the details of and to carry out its own programs. But, by taking advantage of the Incodel machinery for cooperation, projects of all governmental units have been shaped and adjusted to key into a well-rounded, practical plan for the entire watershed region.

On the following pages are set forth several examples of the practical results which have been attained in the development of a unified program for the Delaware River Basin by the application of the Incodel procedures.

Water Supply Diversion Projects



On May 15, 1944, Governor Walter E. Edge of New Jersey affixed his signature to a bill under which the State of New Jersey joined with New York and Pennsylvania in accepting the principle of interstate cooperation in place of competitive litigation for the adjustment of differences in points of view arising over the manner in which the waters of the Delaware River could be diverted for municipal water supply purposes.

Governor Dewey of New York and Governor Martin of Pennsylvania, having signed a similar bill for their States a year earlier, had blazed the trail for the action to put an end to the not-at-all-times-too-friendly controversy which had been going on among these three states for almost a quarter of a century in regard to their respective rights and responsibilities in this question.

Since 1920, when the Delaware River watershed was determined to be the most logical source of future water supply for their metropolitan subdivisions, the three states had tried repeatedly, but unsuccessfully, to find a formula under which their respective requirements could be met.

Compact negotiations had failed in 1925 and 1927. In 1930 the question was brought into the Supreme Court of the United States when New Jersey sought to enjoin New York from proceeding with a proposed water supply diversion project. Pennsylvania intervened in order to establish and protect her interests.

When the Court gave its decision two years later it looked for a moment as if the question had been settled. But not for long. Each state soon found that none had profited. Nor had the basic question of respective rights and responsibilities been settled.

Early in its existence Incodel decided that the solution of this problem should be one of its major objectives. Being founded upon the principle of cooperation, its approach, in contrast to previous efforts, was to have the states tackle the problem jointly, not independently, and on a friendly and unbiased basis.

The successful culmination of this objective was the most significant accomplishment of the past year.

Postwar Public Works Program



In the conduct of its work, Incodel always has taken pains to do first things first and to attune its activities to the times.

On December 19, 1941, only twelve days after Pearl Harbor, it called a business meeting to re-examine its work-program in the light of the country's entrance into war. It decided to curtail its activities immediately; to reduce its budget requirements by one-third; and to focus attention, insofar as possible, on problems vital to the war effort.

Again on July 17, 1943, it once more took stock of the state of affairs of the country. Concluding that the United Nations had begun to take command of the war situation it decided to turn part of its attention to preparations for the period of reconstruction and peace.

That task has been one of the major activities of the Commission during the past year. It has concentrated its energies on persuading governmental authorities to prepare plans and specifications for necessary and practical public improvements well in advance of the time for their construction.

Appraisal of the requirements of the region shows that there exists a reservoir of approximately $900,000,000 worth of economically advisable projects in the basin. Blueprints are in readiness for about $400,000,000 worth of work.

Of the total program, $600,000,000 will be required for projects for the utilization, control and conservation of water resources. The remainder would be used for construction of highway improvements, airports and local municipal facilities.

The $600,000,000 water program consists of $170,000,000 for projects under the supervision of the Federal government; $50,000,000 for improvements by the State governments involved; and $380,000,000 for municipal programs.

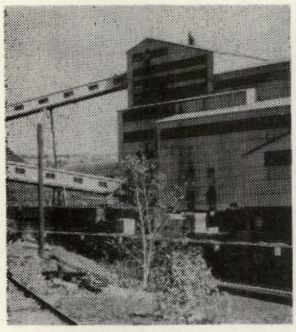
Included in the program are projects for the abatement of stream pollution, for municipal and industrial water supplies, for navigation and flood control, and for soil conservation and reforestation.

If necessary, the construction of this reserve of wealth-producing facilities can be so timed as to help in cushioning the effects of such business or employment dislocations as may occur in the postwar era.

One of the Commission's greatest responsibilities in the future will be to provide liaison services to assure that the independent projects of each of the Basin's many governmental subdivisions will be coordinated and carried out in a wise and efficient manner.

A more comprehensive report regarding the Commission's Postwar Public Works Program is set forth in Appendix A.

The Schuylkill River Project



Incodel's leadership in the formulation of a practical solution of the Schuylkill River problem is an excellent example of the effectiveness of its services in coordinating conflicting efforts and interests of varied agencies, public and private.

The Schuylkill River is the largest tributary of the Delaware. It rises in a section of Pennsylvania which nature has endowed with the richest anthracite coal deposits in the world. Upon this resource Pennsylvania's development and prosperity was founded.

Discharge of untreated sewage and industrial wastes into the Schuylkill was outlawed many years ago, but the mining industry, until this year, had been permitted to use the river as a depository for the waste products of its operations. As a result the beds and banks of the Schuylkill are covered with 25 to 30 million tons of black coal culm and sludge.

Floods and freshets gradually push the material downstream. Every year about a million tons are washed into the navigable section of the Schuylkill and Delaware Rivers in Philadelphia. Here, at an expense of $400,000 annually to the Federal government, it must be dredged out of the rivers in order to maintain navigation channels.

Affected or involved in this problem are a variety of agencies. Not having the benefit of a coordinating body, each had been accustomed to view the problem independently of the other, often on a competitive basis.

Knowing the futility of such practice, Incodel undertook to bring them together. It recommended the adoption of a construction project for the correction and control of the situation. The proposal included an appraisal of the responsibilities and costs among the Federal government, the Commonwealth of Pennsylvania and the coal industry.

Benefits will include the elimination of burdensome expenses in securing municipal and industrial water supplies and in removing silt from channels, waterworks intakes and sewage treatment plant outfall sewers. Floods will be reduced materially, and recreational facilities along the River will be restored and property values greatly enhanced.

A detailed report on the Schuylkill Project is contained in Appendix B.

Stream Pollution Abatement



Although it has been generally necessary because of the war to defer construction of sewage and industrial waste treatment plants much substantial progress was made during the past year in furthering Incodel's planned program for the control of stream pollution.

Outstanding are two examples indicative of the growing recognition on the part of industry of its responsibility in this field.

Of major importance is the acceptance of the obligation by the anthracite coal industry to discontinue the practice of the past century of using streams as the dumping grounds for wastes resulting from mining operations. The coal operators' willingness to participate in the project for the restoration of the Schuylkill River is the key to the solution of that problem.

Perhaps equally significant is the action taken by one of the leading industries of the region to avoid the unreasonable use of the Lehigh River for the discharge of wastes resulting from its manufacturing processes. Voluntarily the company has spent more than $500,000 during the past year for the construction of a plant for the treatment of its process waters. Simultaneously, it undertook a dredging operation to recover wastes which had accumulated in the river over a period of years by reason of past methods of operation.

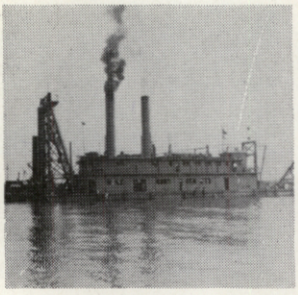
Also particularly encouraging is the municipal situation. In the most grossly polluted section of the Delaware River, the cities of Philadelphia and Camden have placed the completion of sewage collection and treatment facilities as their Number 1 postwar public works obligation.

Simultaneous construction of these projects as soon as material and manpower again become available will be one of the most forward steps possible to take in restoring the Port of Philadelphia and Camden to its rightful position as the greatest single natural asset of the immediate metropolitan region.

In the development of its postwar public works program, Incodel gave particular attention to municipal sewage problems. The estimated cost of sewage collection and treatment works necessary to meet the requirements of the basin will approximate $100,000,000. Construction plans and specifications are in readiness for a large proportion of the program.

With Philadelphia and Camden showing the way municipally, with the coal operators and large manufacturers setting the example industrially, there is no reason why the Delaware River and its tributary watercourses should not be freed of all forms of reasonably avoidable pollution within a very few years after the resumption of business and employment for war-reconstruction and normal peace-time purposes.

Federal Projects



In an interstate watershed region—a natural planning unit—the best program for the utilization and development of the basin's resources will be produced if the responsibility of viewing the entire picture is entrusted to a single agency.

In accepting this responsibility Incodel always has been aware of its obligation not only to view the Delaware Basin as a region but as an integral part of the nation as well. It fully recognizes that the Federal government has a part to play in the development of the watershed. It knows that projects clearly for the national welfare must be given the right-of-way in case conflicts arise with local interests that cannot be reconciled.

For these reasons and to secure the best solution of all problems it has attempted to cooperate fully with Federal agencies and to do everything possible to help the projects of these and all other agencies to move forward harmoniously.

This task will be of ever increasing importance.

Among the projects coming under the jurisdiction of various Federal agencies whose appraisal and integration will be an Incodel responsibility are the following:

New Jersey Ship Canal—U. S. Army Engineers.
Lehigh River Flood Control—U. S. Army Engineers.
Lackawaxen River Flood Control—U. S. Army Engineers.
Schuylkill River Restoration Project—U. S. Army Engineers.
Delaware River Navigation—U. S. Army Engineers.
Surface Water Investigations—U. S. Geological Survey.
Ground Water Investigations—U. S. Geological Survey.
Soil Conservation and Reforestation—U. S. Dept. of Agriculture.
Shad Survey—Fish and Wildlife Service, Dept. of Interior.

Of these the New Jersey Ship Canal is the most complex. To connect the Delaware River just below Trenton with Raritan Bay near New Brunswick raises difficult problems concerning the protection of water resources. It is proposed to secure water for the operation of the canal—a lock level waterway—from impounding reservoirs in the Delaware Basin in New York and Pennsylvania and from intrastate sources in New Jersey. It is Incodel's responsibility to guard against the incorporation of any features which would be unreasonably inimical to the interests of the states.

Similarly it is Incodel's duty to integrate each of the other Federal projects into a comprehensive basin-wide plan for the region. In many instances arrangements already have been made to develop procedures and to clear the results of investigations through Incodel.

Federal-State Relationships



No annual report of this Commission would be complete without reference to its position in relation to the activities of the Federal government. This year is no exception.

The war has put a temporary quietus on the efforts of the Congress to extend Federal jurisdiction and control over interstate watersheds, as was done in the case of the Tennessee Valley in 1933 and attempted on a nation-wide scale in 1937. These efforts now are being renewed although, unfortunately, it seems that Authority legislation is not needed to accomplish the purpose. The recent decisions of the United States Supreme Court in the New River and Red River cases make it possible for Congress to create navigability in, and therefore jurisdiction over, every creek in every state of the union by the simple process of authorizing improvements of non-navigable streams.

The best insurance against Federal intrusion in the Delaware Basin is the continuance of Incodel's programs demonstrating that the States in the region recognize their responsibilities in the field of water utilization and control and can competently solve their problems.

But the Commission also has kept informed as to Federal legislative policies with the view to lending its efforts to movements to persuade Congress to adopt such principles as are necessary to afford adequate protection of states' interests and rights in the development of rivers.

In this field, it has participated in the formulation and support of an amendment to the now pending River and Harbor and Flood Control Bills for the incorporation of a specific declaration of policy on the part of Congress to recognize and protect state interests in the development and construction of water control projects. The proposed amendments require that a cooperative Federal-State investigation must be made and a report in which the views of the affected states are set forth shall be submitted to Congress before it may take action respecting the authorization of any future Federal project for navigation, flood control or related purposes.

This activity is one of the most significant of any to which the Commission ever has given its attention. For, in the absence of such an amendment as is now being proposed, the states could be completely deprived of any say in the development of the waters of their rivers, if the national administration were so inclined.

Action on the part of Congress is necessary to correct this situation. The accomplishment of this objective is a responsibility upon which the Commission proposes to concentrate its efforts and energies in the future, as it has in the past.

A more detailed report on this subject is contained in Appendix C.

Upon the success or failure of the efforts of those who have been pioneering in the movement to preserve self-government in the states by the employment of the principles of interstate cooperation may depend the type of future government under which this country will operate.

No greater opportunity than now likely ever will be afforded the states to remain united in their determination to prevent the completion of the trend which has been going on with increasing momentum during recent years toward the transfer of authority from the state to the federal level of government.

But to accomplish this objective it is essential that the states shall be alert and shall recognize clearly their responsibilities in providing governmental services and facilities abreast of present day requirements. If they cannot or will not do the job it is very probable that demands will be made upon the federal government to do it for them.

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Future Opportunities

The most significant result of Incodel's past activities has been to confirm the desire, the will, and the competence of state officials in New Jersey, New York, Pennsylvania and Delaware to carry forward an interstate program for the wise development of the Delaware River Basin.

As a public agency, new in scope, the Commission purposely limited its activities in the past to a solution of those specific and intricate problems of land and water use and conservation which were of particular importance, most urgently needed, and immediately useful.

The time now has come when the Commission should expand its activities. In the future it must do more than demonstrate that its supporting state governments can manage certain programs for the development of the resources of the region. It also must show that the states intend to take the leadership in formulating a complete program for the entire basin—a program in which the project items of all levels of government and of business and private agencies will be properly and sensibly coordinated.

When the watershed is viewed as a distinct entity rather than as composed of parts of four separate sovereignities, Incodel, as a joint governmental agency of the states, is in a better position to plan for the welfare of the region than a federally controlled authority. Being closer to the people it can see their problems with greater clarity and with a more healthy interest and understanding.

One of Incodel's greatest opportunities in the future is to prove these points. With the continued and expanded support of the state governments to which it is responsible it proposes to do so. Its aim will be "to march on, step by step," slowly perhaps but surely, in the framing of a practical program for the over-all development of the resources of the Delaware Valley.

INCODEL • INTERSTATE COOPERATION



N. J.

Basic credit for Incodel's progress and accomplishments in the formulation of a well-planned, self-reliant program for the wise development and conservation of the resources of the Delaware River Basin belongs to the Commissions on Interstate Cooperation of the four states participating in and supporting the Incodel movement.

Pioneers since colonial days in the advancement of a "More Perfect Union," New Jersey, New York, Pennsylvania and Delaware promptly recognized the importance of the movement initiated by the Council of State Governments in 1935 to secure greater unity and harmony among the states in governmental administration and practices. They were among the very first sovereignties to organize a state governmental agency for that purpose.



N. Y.

New Jersey laid the cornerstone on March 12, 1935, when it became the first state in the union to create an Interstate Cooperation Commission. Its vanguard position was a repetition of its action of 148 years earlier in championing the New Jersey Plan upon which the Constitution was framed and adopted.



PENNA.

New York on April 16, 1935, and Pennsylvania on May 29, 1935, were the second and third of the remaining forty-seven states to comply with New Jersey's request that the Legislatures of each State organize a similar Commission "for the purpose of establishing and maintaining governmental machinery to facilitate communication, negotiation, understanding and cooperation among the States of the Union, both regionally and nationally."



DEL.

Although a Commission was not officially established in Delaware until May, 1939, that State actively joined with its sister sovereignties from the very beginning of their activities "in the common cause of reducing the burdens which are imposed upon our citizens by governmental confusion, competition and conflict."



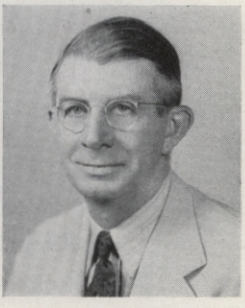
JUDGE RICHARD HARTSHORNE, Chairman of the New Jersey Commission on Interstate Cooperation since its inception, is one of the country's most indefatigable jurists. A graduate of Columbia University Law School in 1912 he has been Judge of Essex County Court of Common Pleas since 1931. Because of his special interest in the subject he also has served continuously as Chairman of New Jersey's Interstate Commission on Crime since its formation in 1935.



HON. HAROLD C. OSTERTAG, Chairman of the New York Joint Legislative Committee since 1937, is a graduate of Chamberlin Military Institute, class of 1916. A member of the Assembly since 1932 and continuously one of its outstanding leaders, Mr. Ostertag, whose interests are broad and varied, has supplied the foresight, initiative and drive which has made the Joint Committee's record of accomplishments so successful and effective.



HON. FLOYD CHALFANT, Chairman of the Pennsylvania Commission on Interstate Cooperation and Secretary of the Pennsylvania Department of Commerce is a newspaper man by profession. Rising from the ranks he has served as president of the Pennsylvania Newspaper Publishers Association and of the Associated Press of that State. Mr. Chalfant also is Chairman of Pennsylvania's State Planning Board, Aeronautics Commission, and Anthracite Committee, and a valued member of Incodel.



HON. BURTON S. HEAL, Chairman of the Delaware Commission on Interstate Cooperation and a member of Incodel has filled a large number of important legislative and administrative positions in city, county and state government in Delaware. At present Recorder of Deeds of New Castle County, Mr. Heal during his career of public service, has been a member of both legislative branches of the State, of the County Levy Court, and of the City Council of Wilmington.

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IN WHICH IS LOCATED

THE DELAWARE RIVER BASIN

HAVE EACH CREATED A

COMMISSION ON INTERSTATE COOPERATION

THESE AGENCIES HAVE JOINTLY ORGANIZED

THE INTERSTATE COMMISSION ON THE DELAWARE RIVER BASIN

WHICH THROUGH ITS

TECHNICAL ADVISORY COMMITTEES

QUANTITY

QUALITY

RESEARCH

PLANNING

AND

STAFF

IS DEVELOPING

PRACTICAL PROGRAMS FOR THE USE OF THE NATURAL RESOURCES OF THE BASIN

Organization

In 1936, shortly after their appointment, the members of the newly created Interstate Cooperation agencies in New Jersey, New York and Pennsylvania, together with representatives of state government from the three states and from Delaware, held a conference in Philadelphia to formulate programs to which they should direct their efforts.

Among other things they agreed that the problem of cooperatively establishing policies and programs for the development of the resources of the Delaware River Basin imposed upon them a responsibility and challenge which demanded special attention and treatment.

For this purpose they organized Incodel as the governmental agency to jointly serve their interests and coordinate their activities.

The machinery set up by Incodel to do this job is composed of three major divisions.

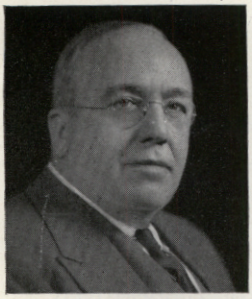
First, there is the Commission itself. This is composed of twenty members, five from each of the four participating states, of which four are members of the State's Commission on Interstate Cooperation. Of each group of five, one is a State Senator; one, a member of the House of Representatives; one, a member of the Governor's Cabinet; one, either the Chairman or Director of the State's Planning Board; and the fifth, a person from each state selected by the Commission as a group.

The second division of the organization consists of groups of technical advisory committees covering the several respective fields in which the Commisison is directing its attention. In each instance, the membership of such advisory groups is composed of one or more representatives of each state most qualified in the particular field in which the committee is serving, or members of state agencies dealing with the particular subject.

The third branch of the Incodel organization is a small central staff. In the conduct of its work the staff has access to, and avails itself of, the combined facilities and technical resources of the existing agencies of the states' government.

Working together, the COMMISSION, the technical advisory COMMITTEES, and the STAFF constitute the machinery by which the Delaware Basin States are demonstrating that the employment of the principle of cooperation in solving the problems of this interstate drainage basin is effective, practical and in accordance with the constitutional principles upon which this nation was founded.

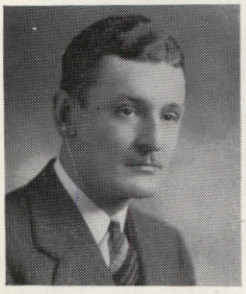
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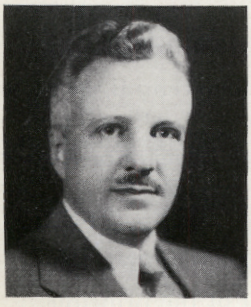
HON. ELLWOOD J. TURNER, *Chairman,* has been a member of the Pennsylvania House of Representatives since 1924. As Speaker during the 1939 biennium he instituted many outstanding reforms for the improvement of state governmental administration. An attorney by profession, Mr. Turner was elected to the Board of Managers of the Council of State Governments in 1937 and was its Chairman in 1940.



HON. WELDON B. HEYBURN, *Member,* has been a member of the Pennsylvania Senate since 1936 and is now the majority floor leader of that branch of the Legislature. A farmer by occupation, Senator Heyburn —a true friend of the land—always has taken an ardent interest in the promotion of progressive and modern measures for the conservation of the soil, the streams and other natural resources.



HON. FRANKLIN H. LICHTENWALTER, *Member,* has served in the Pennsylvania House of Representatives since 1938 and has been majority floor leader since 1943. In the Legislature he has been chairman and member of numerous important committees and has been active in the promotion of policies for improvement of relations among states and between the federal government and the states.



MR. FRANCIS A. PITKIN, *Member,* has been Executive Director of the Pennsylvania State Planning Board since 1936 and was Assistant Director from 1934 to 1936. An engineer by training, Mr. Pitkin is recognized as an authority in the field of practical planning. He is a member of the Council of State Governments Postwar Planning Committee and of many other public service agencies.

HON. FLOYD CHALFANT, Chairman of the Pennsylvania Commission on Interstate Cooperation (see page 17) is the other member of Incodel from Pennsylvania.

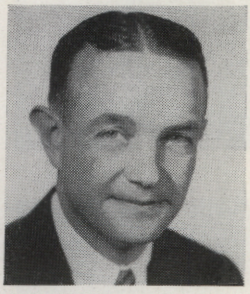
Delaware • INCODEL MEMBERSHIP



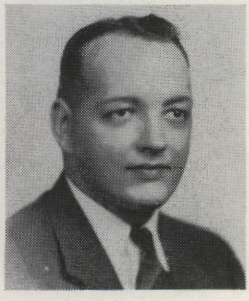
MR. RICHARD C. BECKETT, *Member,* has been the Sanitary Engineer of the State of Delaware since 1924. Prior to that time he was Assistant Engineer with the Pennsylvania and West Virginia Departments of Health. He is a member of the Council of State Governments' National Committee on Postwar Reconstruction and Development, and of numerous other public administration agencies.



HON. GEORGE R. CLARK, *Member,* has been a state legislator in Delaware since 1935. Elected first to the House of Representatives he then served in the Senate during the 1939 and 1941 bienniums and now is again a member of the House. Mr. Clark in private life is President of the Delaware City National Bank and takes a particularly active interest in the civic affairs of his community.



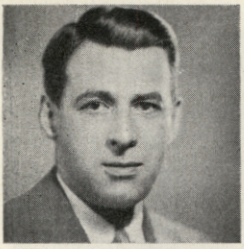
HON. GEORGE P. EDMONDS, *Member,* has been a State Senator in Delaware since 1943. An outstandingly successful business man, Senator Edmonds is President of the Bond Crown and Cork Company, a subsidiary of the Continental Can Company, and a Director of several industrial and banking institutions including the United States Rubber Company, Warner Company and the Wilmington Trust Company.



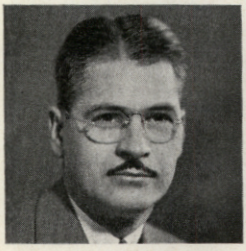
MR. W. B. McKENDRICK, JR., *Member,* is Assistant Chief Engineer of the Delaware State Highway Department. He also is a member of the Board of Directors of the Safety Council of that State. Freely devoting his services to many public activities, Mr. McKendrick, among other associations, is a member of several national committees dealing with Traffic Safety and Postwar Highway Development.

HON. BURTON S. HEAL, Chairman of the Delaware Commission on Interstate Cooperation (see page 17) is the other member of Incodel from Delaware.

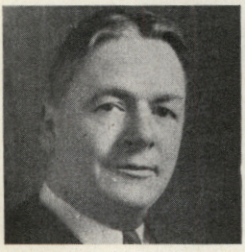
INCODEL MEMBERSHIP • *New Jersey*



HON. JOSEPH C. PAUL, *Vice Chairman,* is Secretary of the New Jersey Commission on Interstate Cooperation and was a member of the Legislature in 1935, 1936 and 1938. An attorney by profession, Mr. Paul is Chairman of the Legislative Committee of the New Jersey State Bar Association and an officer and member of other state and county legal associations.



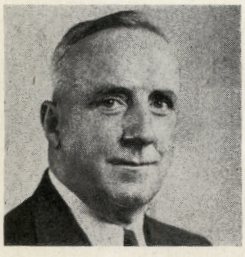
HON. ROBERT C. HENDRICKSON, *Member,* a Major in the United States Army, is now serving the Allied Military Government in Italy. On leave as State Treasurer, he previously was a member of the Senate, being its President from 1939 to 1942. Major Hendrickson was chairman of the Board of Managers of the Council of State Governments in 1941.



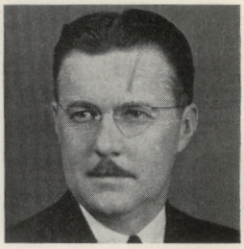
DR. CHARLES P. MESSICK, *Member,* is Chief Examiner and Secretary of the New Jersey Civil Service Commission, having been with that agency since 1910. An authority on public personnel problems he has been engaged as a consultant in this field by many agencies in the United States and Canada. Dr. Messick is a member of the New Jersey State Planning Board.



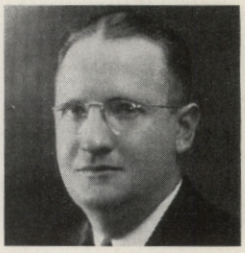
HON. DUANE E. MINARD, JR., *Member,* has served in the Assembly since 1941. An ardent advocate of interstate cooperation, he was sponsor of the reciprocal act in his State on water diversion projects and has been a leading spokesman in a nation-wide movement to secure a better coordination of activities between federal and state levels of government.



HON. JOHN G. SHOLL, *Member,* was elected to the New Jersey Senate in 1942 after five years of previous service in the Assembly. Prior to 1937 he gave many years of public service to local governmental activities. He is a member of New Jersey's Postwar Economic and Development Commission and a leader in promoting legislation for postwar needs.



DR. MARTIN P. CATHERWOOD, *Member,* has been Director of the Division of Commerce of the State of New York since its organization in 1941 and was previously Chairman of the Planning Council of that State. A recognized authority on business management and public administration, Dr. Catherwood has attained many honors in this field.



HON. GEORGE W. FOY, *Member,* has been an Assemblyman in the State of New York since 1936. Mr. Foy also has served as Deputy County Attorney of Albany County. While taking a keen interest in all legislative proposals he has been particularly active in the sponsorship of measures for the improvement of insurance and banking regulations.



HON. NATHANIEL L. GOLDSTEIN, *Member,* is Attorney General of the State of New York. In addition to his legal attainments he is a certified public accountant and has served as consultant to the Naval Affairs Committee of the United States Congress. Mr. Goldstein takes an unusually active personal interest in the advancement of civic movements.



HON. JOHN S. THOMPSON, *Member,* has been in the New York Assembly since 1930 and has served on many important legislative committees. Soldier by profession, he retired in 1937 with the rank of major general. During his 39 years in military life, General Thompson gained the unusual distinction of having filled every rank from private to major general.



HON. EARLE S. WARNER, *Member,* has been in the New York Senate since 1933. Senator Warner has sponsored many progressive legislative measures including the establishment of the Joint Legislative Committee on Interstate Cooperation. He is chairman of the New York State Flood Control Commission and of numerous important senatorial committees.

Advisory Committees

Executive Committee

Before being called to the attention of the entire membership, all Incodel policies first are cleared through the Commission's Executive Committee. It consists of Incodel's Chairman and one member of the Commission from each of its participating states. Serving at present are:

HON. ELLWOOD J. TURNER, Chairman.
MR. RICHARD C. BECKETT, Delaware.
HON. JOSEPH C. PAUL, New Jersey.
DR. MARTIN P. CATHERWOOD, New York.
HON. FRANKLIN H. LICHTENWALTER, Pennsylvania.

Planning Committee

In addition to specific assignments, the basic function of Incodel's Advisory Committee on Planning is to coordinate the activities of all of the Commission's other committees. Consisting of officials and advisors of the State Planning Boards in the Delaware Basin states the Committee now consists of:

MR. F. A. PITKIN, Pennsylvania, Chairman.
MR. W. B. MCKENDRICK, JR., Delaware.
DR. CHARLES P. MESSICK, New Jersey.
DR. M. P. CATHERWOOD, New York.

The committee is served also by officials representing other departments in state government.

Quantity of Water Committee

The task of formulating policies for the equitable sharing of the waters of the Delaware River Basin is delegated to Incodel's Advisory Committee on Quantity of Water. It is composed of the chief engineer of each of the states' principal water resource agency. The present membership is as follows:

MR. RUSSELL SUTER, New York.
MR. HOWARD T. CRITCHLOW, New Jersey.
MR. RICHARD C. BATLEY, Pennsylvania.

Quality of Water Committee

To Incodel's Advisory Committee on Quality of Water is assigned the duty of establishing standards for the treatment of sewage, industrial wastes and other polluting material for the abatement of stream pollution.

It is composed of the chief engineer of the Department of Health of each of the four states within the Basin. The members are:

MR. RICHARD C. BECKETT, Delaware.
MR. HARRY P. CROFT, New Jersey.
MR. CHARLES A. HOLMQUIST, New York.
MR. HOWARD E. MOSES, Pennsylvania.

Legal Affairs Committee

The function of Incodel's Advisory Committee on Legal Affairs is to advise the Commission on legal questions which arise in connection with the development of any of its policies and programs. The Committee is composed of the Chairman of Incodel and one representative from each of the four states. Its present membership is as follows:

ELLWOOD J. TURNER, ESQ., Chairman.
VINCENT A. THEISEN, ESQ., Delaware.
DUANE E. MINARD, ESQ., New Jersey.
LAWRENCE G. WILLIAMS, ESQ., New York.
HARRINGTON P. ADAMS, ESQ., Pennsylvania.

Information and Research Committee

Among other purposes, Incodel's Advisory Committee on Information and Research was organized to develop a program to establish the Commission's office as a clearing house for information on the basin and its problems. Its membership, shown below, consists of representatives from leading educational institutions in the four states.

DR. W. BROOKE GRAVES, Temple University.
DR. FRANK A. HEACOCK, Princeton University.
DR. FRANK B. HOWE, Cornell University.
DR. WILLIAM S. PARDOE, University of Pennsylvania.
DR. WILLEM RUDOLFS, Rutgers University.
DR. THORNDIKE SAVILLE, New York University.

Postwar Programs Committee

Incodel's Advisory Committee on Postwar Programs was formed in 1943 to formulate and recommend a program of specific and practical projects for development within the Basin during the period of transition between the end of the wars in which we are now engaged and the return to peacetime normalcy. The Committee is composed of:

HON. ELLWOOD J. TURNER, Chairman.
DR. M. P. CATHERWOOD, New York.
HON. DUANE E. MINARD, JR., New Jersey.
MR. F. A. PITKIN, Pennsylvania.
MR. W. B. MCKENDRICK, Delaware.

Meetings and Conferences

INCODEL BUSINESS MEETINGS, 1943-1944

During the 1943-1944 fiscal year the Commission held nine business meetings, of which three were of the entire Commission. Following a policy adopted in the interests of conserving time and expenses involved in the attendance of meetings, the remaining six business meetings were Executive Committee sessions. During the year numerous meetings of the several Incodel Advisory Committees also were held.

The time, place and principal purpose of the Commission's business meetings are summarized below.

July 16-17, 1943—Shawnee-on-the-Delaware, Pennsylvania

Annual Business Meeting and Conference attended by eleven of the twenty Commissioners, three members of the staff, and about fifty officials representing the Council of State Governments, State Commissions on Interstate Cooperation and other public and semipublic agencies of the four states in the Basin.

Discussion of Incodel activities for the closing year, the adoption of a program and budget for the ensuing year, and the annual election of officers were among the principal items of business considered.

September 17, 1943—Philadelphia, Pennsylvania

Business Meeting of Commission attended by fifteen of the twenty Commissioners, two members of the staff, and other officials representing state governments, the Council of State Governments and the press.

The business session was devoted primarily to consideration of the Commission's pollution abatement program and was followed by an inspection survey of pollution in the Delaware and Schuylkill Rivers from the City of Philadelphia's tug, John Wanamaker.

October 30, 1943—Philadelphia, Pennsylvania

Incodel Executive Committee meeting attended by six committee members, one member of the Commission, a representative of the Council of State Governents and two members of the staff.

Consideration of the Commission's postwar public works project for the abatement of stream pollution and silting in the Schuylkill River was the principal item of business.

January 8, 1944—Philadelphia, Pennsylvania

Incodel Executive Committee meeting attended by all of the members of the Committee, two members of the staff and a representative of the Council of State Governments.

Arrangements for staff conferences with the local District Office of Army Engineers to discuss the silting of the Schuylkill River and with the New

York Division Office in regard to the New Jersey Canal project were two matters to which special attention was given.

February 18-19, 1944—Atlantic City, New Jersey

Incodel Business Meeting and Conference. The business sessions were attended by thirteen Commissioners and four members of the staff. At the conference sessions were also about fifty executive, legislative and administrative officials of the four state governments in the Delaware Basin region. The meeting was arranged for the particular purpose of acquainting members of the New Jersey Legislature with the objectives of the Incodel reciprocal legislation for the control of water supply diversions.

April 1, 1944—Philadelphia, Pennsylvania

Incodel Executive Committee Meeting attended by five Committee members and two members of the staff.

Of special significance at this meeting was a report concerning the status of New Jersey Assembly Bill No. 176 relative to the Incodel agreement covering water supply diversion projects.

Attention also was directed at this meeting to activities for securing amendments to Federal legislation to protect states' interests in the development and operation of federal projects for the control of waterways.

April 26, 1944—Harrisburg, Pennsylvania

Incodel Executive Committee Business Meeting and Conference with representatives of Federal, state, municipal and private agencies for the purpose of considering the action program formulated by Incodel for the correction and abatement of pollution in the Schuylkill River. Five Committee and two staff members were present, as were also two other members of the Commission and sixteen representatives of state government and other agencies.

May 10, 1944—Washington, D. C.

Incodel Executive Committee Meeting Conference attended by six Committee members, one Commissioner and one member of the staff. The conference session was attended by thirty-five members of Congress from New York, New Jersey, Pennsylvania and Delaware.

The primary purpose of this meeting was to consider proposals for amending the 1944 River and Harbor Bill and the 1944 Flood Control Bill; also to seek Congressional support of the Commission's program for the reclamation of the Schuylkill River.

June 16, 1944—Trenton, New Jersey

Incodel Executive Committee Meeting attended by all Committee members, two Commission members and two members of the staff.

Items to which special attention was given at the meeting included arrangements for the Commission's annual meeting in July; preparations for the annual report; and the formulation of the proposed 1944-1945 program and budget.

OTHER MEETINGS, CONFERENCES AND HEARINGS

Further evidence of the wide-scale activities of the Commission is indicated by the following partial list of other meetings, conferences and hearings in which the members of the Commission or its staff participated.

August 3, 1943—Newark, New Jersey.
Meeting of the New Jersey Committee on Inland Waterways relative to the New Jersey Ship Canal project.

September 2, 1943—Harrisburg, Pennsylvania.
Meeting of Governor Martin's Committee of Cabinet Members on Stream Pollution Control.

September 8, 1943—Camden, New Jersey.
Meeting of State and Municipal officials in the Camden Metropolitan Area regarding the pollution problem in the Philadelphia-Camden section of the Delaware River.

September 9, 1943—New York City, New York.
Interstate Sanitation Commission's inspection trip of the New Jersey coastal section of New York Harbor.

September 10, 1943—Woodbury, New Jersey.
Meeting of the New Jersey Section of the American Water Works Association on proposed legislation for the creation of State Water Authority in New Jersey.

September 16, 1943—Gloucester, New Jersey.
Meeting of City Council regarding pollution conditions in the Delaware River.

September 23, 1943—Philadelphia, Pennsylvania.
Meeting of Atlantic States Marine Fisheries Commission.

September 24, 1943—Camden, New Jersey.
Participation in the meeting of the Camden Kiwanis Club on the Delaware River stream pollution problem.

September 24, 1943—New York City, New York.
Conference of Northeastern Section, Council of State Governments, on Postwar Planning.

October 14-16, 1943—Philadelphia, Pennsylvania.
Four States Section Meeting of American Water Works Association.

November 4-6, 1943—Atlantic City, New Jersey.
New Jersey Section, American Water Works Association Meeting.

November 17, 1943—Philadelphia, Pennsylvania.
Meeting of the Friends of the Land, Conservation Forum.

November 18-20, 1943—Harrisburg, Pennsylvania.
Meetings of Pennsylvania Municipal Authorities Association and Pennsylvania Municipal and Local Finance Officers Association.

November 24, 1943—Philadelphia, Pennsylvania.
Hearing by City Council Committee on Finance regarding the Philadelphia Sewage Collection and Treatment Program.

December 16-18, 1943—New York City, New York.
Conference of Council of State Governments on Highway Problems.

January 12, 1944—Harrisburg, Pennsylvania.
Meeting of Pennsylvania Roadside Council.

January 14, 1944—Allentown, Pennsylvania.
Meeting of United States Engineer Office, War Department, on Lehigh River Flood control problem.

January 20-21, 1944—New York City, New York.
Meeting of American Society of Civil Engineers and New York State Sewage Works Association,

February 4, 1944—Allentown, Pennsylvania.
Conference with municipal and state officials and members of the Lehigh Valley Flood Control Council.

February 10, 1944—Philadelphia, Pennsylvania.
Meeting of Institute of Local and State Government at the University of Pennsylvania.

February 24, 1944—Camden, New Jersey.
Meeting South Jersey Chapter of New Jersey Society of Professional Engineers, on postwar planning.

February 29, 1944—Philadelphia, Pennsylvania.
City Council Committee on Finance, hearing regarding Philadelphia Sewer Rental Ordinance.

March 9, 1944—Philadelphia, Pennsylvania.
City Council Committee on Finance, hearing regarding Philadelphia Sewer Rental Ordinance.

March 23, 1944—Philadelphia, Pennsylvania.
Philadelphia Maritime Society Annual Meeting.

March 23-24, 1944—Trenton, New Jersey.
Annual Conference New Jersey Sewage Works Association.

March 27-29, 1944—Philadelphia, Pennsylvania.
Institute of Local and State Governments Conference on postwar planning.

March 30, 1944—Philadelphia, Pennsylvania.
City Council Committee on Finance, hearing on Philadelphia Sewer Rental Ordinance.

April 13-14-15, 1944—Boston, Massachusetts.
Conference of Council of State Governments and New England Commissions on Interstate Cooperation regarding Federal legislation for navigation and flood control.

April 14, 1944—Conshohocken, Pennsylvania.
Meeting Southeastern Pennsylvania Sewage Works Operators Association.

April 18, 1944—Easton, Pennsylvania.
Hearing of State Sanitary Water Board, Commonwealth of Pennsylvania, on stream pollution abatement programs.

April 19, 1944—Reading, Pennsylvania.
Hearing of State Sanitary Water Board, Commonwealth of Pennsylvania, on stream pollution abatement programs.

April 20, 1944—Philadelphia, Pennsylvania.
Hearing of State Sanitary Water Board, Commonwealth of Pennsylvania, on stream pollution abatement programs.

May 11, 1944—Trenton, New Jersey.
Meeting of New Jersey Section of American Water Works Association.

May 18-19, 1944—New York City, New York.
Meeting of Atlantic States Marine Fisheries Commission.

May 21-23, 1944—Hershey, Pennsylvania.
Meeting of Pennsylvania Water Works Operators Association.

May 26, 1944—Salem, New Jersey.
Meeting of South Jersey Water Works Operators Association.

June 9, 1944—Washington, D. C.
Hearings before Committee on Commerce, United States Senate, in support of Milliken Amendment to Flood Control Bill H.R. 4485.

June 12, 1944—Washington, D. C.
Hearings before Committee on Commerce, United States Senate, in support of Milliken amendment to Flood Control Bill H.R. 4485.

APPENDIX *A presents a summary statement covering the results of an investigation conducted by Incodel over the ten-month period September, 1943, to June, 1944, to determine the scope and magnitude of the probable postwar public works requirements in the Delaware Basin.*

The report should be understood to be preliminary. It is subject to additions and modifications as the survey is extended into the future.

The value of pre-postwar planning is obvious. If it should become necessary to fall back on public works construction to cushion the effects of after-war readjustments, never again should leaf-raking and other non-useful projects be resorted to if it can be avoided. A reservoir of pre-planned wealth producing public works improvements should be available for such a contingency.

APPENDIX A

Postwar Public Works Program

In the annual report of the Commission, published in July, 1943, was this statement:

> "At the moment no task is more vital than winning the war. But next in importance is the necessity of being prepared for the period of reconstruction that is to follow. Incodel has an important part to play in this work . . . it has the responsibility of assisting the states in the development and execution of postwar programs of public works construction, particularly in the field of stream pollution control and water resources use and conservation."

Pursuant to this expression Incodel's attention during the past fiscal year (1943-1944) has been devoted to a considerable extent to the preparation of a postwar public works program for the basin.

The objective of this task has been twofold: First, to stimulate and persuade governmental authorities to prepare plans and specifications for the construction of necessary and practical public works improvements well in advance of the actual need and time for their execution. Secondly, to enable the Commission to secure a complete knowledge of future public works requirements in the Basin in order that, as far as possible under the limitations on personnel and time, the information thus collected could be assembled, evaluated and integrated into a basin-wide plan.

The execution of the projects included in the program will involve a large number of governmental agencies. One of the Commission's greatest responsibilities will be to provide such liaison services as are necessary to assure that the independent projects of each of the basin's municipal subdivisions, of the states and of the Federal Government will be coordinated and carried out in a wise and efficient manner.

SUMMARY OF MAJOR FINDINGS

The major findings of the investigations, as far as it has been possible to ascertain and develop them during the past ten months, (since September, 1943), are listed below.

1. The estimated total cost for the construction of necessary and desirable public works projects in the Basin during the next five to ten years is $867,000,000.

2. Of the above amount, approximately $595,000,000 will be required for projects designed to utilize, control and conserve the waters of the Delaware Basin, including measures for soil conservation and reforestation. The remaining $272,000,000 is an approximate estimate of cost for the construction of highway projects, airports and local municipal facilities such as swimming pools, public buildings and other similar improvements.

3. The $595,000,000 required for water utilization and control projects consists of $170,000,000 for projects to be carried out by or under the supervision of Federal Government; $50,000,000 for improvements by the state governments involved; and $375,000,000 for municipal programs.

4. The Federal expenditure of $170,000,000 for water utilization and control projects would be used for the following types of projects.

(a) Navigation	$ 27,000,000
(b) Flood Control	17,000,000
(c) Soil Conservation	126,000,000

The $27,000,000 allocated to navigation includes $10,000,000 for the Federal Government's participation in a project for the restoration of the Schuylkill River. (See Appendix B.)

The sum allocated to Soil Conservation, $126,000,000, has been classified as a federal item only because most work in this field is now being carried out by the United States Soil Conservation Service. Actually the responsibility for the determination and execution of projects would be distributed among all levels of government. The program probably would extend over a period of approximately twenty-five years.

5. The States' expenditure of $50,000,000 for water utilization and control projects is divided as follows:

New York	
New Jersey	$12,225,000
Pennsylvania	37,525,000
Delaware	50,000

Approximately $10,000,000 of the Pennsylvania sum is for its participation in a project for the restoration of the Schuylkill River (see Appendix B).

Included in the states water control program is $33,000,000 for the possible future construction of multiple purpose reservoirs. Twenty million dollars of this sum has been allocated to Pennsylvania and twelve million to New Jersey.

6. Municipal expenditures for projects for the utilization and control of water totaling $375,000,000 will be spent in the respective state sections of the region in the following manner:

New York	$108,000,000
New Jersey	25,000,000
Pennsylvania	223,000,000
Delaware	9,000,000

Of the total amount, $100,000,000 will be required for stream pollution abatement, $50,000,000 of which is for sewage collection and treatment facilities in Philadelphia and Camden.

7. The decision as to the source of additional water supply needed for northeastern New Jersey and as to improvements necessary to protect Philadelphia's existing source in the Delaware River at Torresdale, should rest with the agencies affected. It has been suggested that the Tocks Island-Belvidere-Chestnut Hill series of reservoirs on the Delaware River should be considered for these purposes. This project has been included in the Basin program. Its execution, if determined to be advisable, is looked upon as the joint responsibility of the states and local governments benefited.

8. It also has been suggested that the City of Philadelphia should adopt a program for the improvement of its Schuylkill River sources of supply. This could be accomplished by the construction of a storage-release reservoir on Perkiomen Creek for the augmentation of summer flows in the River.

9. Future water supply in the Chester-Marcus Hook region in Pennsylvania probably should be supplied from a project designed to utilize a new source for domestic purposes in combination with the existing source and works for industrial purposes. This project may be supplemented, if necessary, by the construction of reservoirs for the storage of industrial water supply for emergency use during periods of high salinity in the Delaware River.

10. The effort to influence municipal officials to "Blueprint Now" in advance of construction has not been entirely satisfactory. To some extent it has been difficult to overcome inertia and a tendency to

procrastinate. Fortunately, the exceptions apply to the most urgent cases. Philadelphia has made substantial progress in the preparation of plans for the construction of its sewerage facilities. The early completion of such works in this City and in Camden, together with the prosecution of the Schuylkill River project, will assure the success of the Commission's basin-wide program for the abatement and control of pollution.

11. At the present time blueprints-in-readiness are sufficient to make it possible for an immediate start on more than $400,000,000 of public works construction in the basin.

METHODS OF PROCEDURE

The procedure followed in carrying out its assignment to inventory and stimulate pre-postwar preparations for the future construction of public works projects in the Basin involved the following steps.

Before starting actual investigations, conferences were held with officials in charge of each of the four states' agencies dealing with the subjects to be considered. This was done to obtain approval of the methods which it was proposed to pursue and to assure proper correlation of activities. Available basic information necessary for the survey was secured and compiled from the files of the respective state agencies consulted.

With a few minor exceptions, every urban municipality in the basin was visited. Conferences were held with the governmental officials of these communities, both informally and at formal council meetings. These steps were taken for the purpose of securing additional data locally and to convince municipal officials of the value and importance of adequate advance planning for the construction of postwar public works projects. In the conduct of this phase of the survey, trips were made to 183 municipalities, conferences held with about 300 governmental officials, and 27 council and other group meetings were attended and participated in.

Based upon the information secured as the result of the above activities, the presently developed program for the basin was prepared.

THE BASIN PROGRAM

Based upon present-day prices the total estimated cost for the construction of those public works projects within the basin during the next five to ten years which are deemed to be economically advisable or, for other reasons, necessary or desirable is $867,000,000.

The allocation of this sum to the various principal types of projects, segregated as to the states within the basin, is shown on the following tabulation.

	Water Use and Control	*Transportation*	*Other Projects*	*Total*
New York	$138,300,000	$ 1,200,000	$ 200,000	$139,700,000
New Jersey	59,400,000	29,100,000	10,900,000	99,400,000
Pennsylvania	367,800,000	101,900,000	102,400,000	572,100,000
Delaware	29,700,000	12,300,000	13,600,000	55,600,000
BASIN	$595,200,000	$144,500,000	$127,100,000	$866,800,000

The probable manner in which the above total cost would be divided among the federal, state and municipal levels of government will be approximately as shown in the following tabulation.

	Federal Funds	*State Funds*	*Municipal Funds*	*Total*
New York	$ 31,300,000	$ 200,000	$108,200,000	$139,700,000
New Jersey	33,100,000	32,700,000	33,600,000	99,400,000
Pennsylvania	133,400,000	85,000,000	353,700,000	572,100,000
Delaware	36,400,000	5,800,000	13,400,000	55,600,000
BASIN	$234,200,000	$123,700,000	$508,900,000	$866,800,000

FEDERAL PROJECTS

Projects for the utilization and control of waters which probably will be constructed and financed by the Federal government consist principally of those required for or related to navigation, flood control and soil conservation and reforestation.

The following tabulation gives the estimated approximate cost required for each of these purposes.

	Navigation	*Flood Control*	*Soil Conservation Reforestation*	*Total*
New York	$ ...	$ 2,196,000	$ 28,885,000	$ 31,081,000
New Jersey	3,681,000	...	19,000,000	22,681,000
Pennsylvania	13,858,000	15,000,000	67,000,000	95,858,000
Delaware	9,658,000	...	11,000,000	20,658,000
BASIN	$27,197,000	$17,196,000	$125,885,000	$170,278,000

In addition to the "water" program it is estimated that the Federal government will contribute in the neighborhood of $64,000,000 for the construction of highway improvements and housing projects in the basin.

Navigation

The $27,197,000 allocated to navigation is for improvements in the Delaware River Basin which either already have been or probably will be authorized by Congress. It includes an item of $10,000,000 for the Federal government's participation in the project for the elimination of the existing silting of the Schuylkill and Delaware River channels resulting from anthracite coal mining operations in the headwater region of the Schuylkill Basin. (See separate report on Schuylkill River Project.)

No item has been included in the Federal government program for the construction of the proposed ship canal, costing at least $200,000,000, across the State of New Jersey connecting the Delaware River near Trenton to the Raritan River and Bay near New Brunswick.

This project is of special interest and concern to all four of the States in the basin. New York State, contrary to earlier indications, as well as her sister sovereignties, may be directly involved. Army Engineer investigations now under way include consideration of the possibility of getting a part of the water required for the operation of the proposed canal from impounding reservoirs on the West Branch of the Delaware in that State.

The project affords an excellent illustration of the desirability of the proposed amendments to the 1944 Congressional River and Harbor Bill and the 1944 Flood Control Bill (see Appendix C on Federal-State Relationships) being presently supported by Incodel. Under their terms States will be afforded an opportunity to cooperate with the Federal government throughout the progress of its investigation of future navigation and flood control projects. By this approach there is a much better chance for the development of a project which will properly protect present and prospective uses of water by the States and, at the same time, serve national interests.

Flood Control

Approximately seventeen million dollars will be required for the Federal construction of three flood control projects in the Basin. Two are in Pennsylvania; one, on the Lackawaxen River watershed in the upper Delaware; the other, on the Lehigh River. The third is in New York State.

These projects now are being investigated by the Army Engineers pursuant to authorization by Congress. They, again, offer examples of the desirability of the proposed amendments to pending Federal legislation providing for cooperative Federal-State investigation of projects for river control. In the absence of the proposed amendments in the River and Harbor and Flood Control Acts, there is no assurance that State agencies will be fully informed about projects or measures being considered for

flood control, until after the survey has been completed and the results are made generally public.

The cost of the Lackawaxen project probably will be in the neighborhood of $5,000,000; that for the Lehigh about $10,000,000. The project in New York State is believed to involve approximately $2,000,000.

Soil Conservation and Reforestation

The fund required to carry out needed, publicly financed projects in the field of soil conservation and reforestation in the Delaware Basin is estimated to be $126,000,000. The works would be spread over a period of approximately twenty-five years.

The program consists of the institution and execution of measures to avoid abuses which have occurred in the past in the development of agriculture, mineral extraction industries, lumbering and other enterprises dealing with the utilization of natural resources.

Funds required for the execution of projects would be furnished by all levels of government. It is estimated that Federal contributions would amount to at least 25 per cent of the total.

STATE PROJECTS

Public works projects to be constructed, in whole or part, by the State governments in the region is comprised of items segregated by States as follows:

	Water Utilization and Control	*Transportation Facilities*	*Total*
New York	...	$ 215,000	$ 215,000
New Jersey	$12,325,000	20,400,000	32,725,000
Pennsylvania	37,500,000	47,500,000	85,000,000
Delaware	50,000	5,800,000	5,850,000
BASIN	$49,875,000	$73,915,000	$123,790,000

Water Utilization and Control

Of the amount allocated to water utilization and control $33,000,000 has been earmarked for the possible future construction of multiple purpose reservoirs; $21,000,000 by or under Pennsylvania's auspices and $12,000.000 similarly allocated to New Jersey.

It is claimed that many benefits for many purposes including municipal and industrial water, stream pollution and salinity control, recreation, stream flow regulation and electric power would be realized from the use of the waters so developed.

Incodel's analysis of this phase of water control is still in progress. At the present time it has not been sufficiently advanced to permit the presentation of conclusive recommendations.

Schuylkill River Project

The $37,500,000 allocated to Pennsylvania for water utilization and control projects also includes $10,000,000 for the State's participation in the project proposed by Incodel for the restoration of the Schuylkill.

The details of this program are covered in a separate report on the "Schuylkill River Project."

Other Water Projects

Other items in the $50,000,000 states' water program include works for industrial water supply in New Jersey, local flood control and navigation improvements in Pennsylvania, New Jersey and Delaware, and reforestation projects in Pennsylvania.

Highway and Transportation

The $74,000,000 included in the states' public works program for highway and transportation facilities is an approximate estimate of the magnitude of state money required for the construction of these facilities in the basin. It has been assumed that most of this sum would be matched by a similar appropriation by the Federal government.

MUNICIPAL PROJECTS

Municipal public works projects in the basin that should be constructed in the postwar period will involve an expenditure of about $509,000,000.

The allocation of this sum by states and according to project classifications is given in the following tabulation.

	Stream Pollution	*Water Supply*	*Local Improvements*	*Total*
New York	$ 2,250,000	$105,000,000	$ 950,000	$108,200,000
New Jersey	22,750,000	800,000	10,100,000	33,650,000
Pennsylvania	66,350,000	142,700,000	144,650,000	353,700,000
Delaware	7,400,000	1,600,000	4,350,000	13,350,000
BASIN	$98,750,000	$250,100,000	$160,050,000	$508,900,000

Stream Pollution Abatement

The basin program for the abatement of stream pollution is of great importance. As shown on the above tabulation projects for this purpose

APPENDIX B

Schuylkill River Restoration Project

The purpose of this report is to offer for consideration a positive program of action for the avoidance of the future and correction of the existing unnecessary despoilation of the Schuylkill River and its tributaries.

Differing from most other river systems, these streams have been used not only as the natural depository for municipal and industrial wastes but also for refuse resulting from the past 140 years of extensive mining operations of the invaluable anthracite coal fields located in its headwater regions.

Today a point in our national history has been reached at which the public is demanding greater consideration of its rights in the matter of preventing and abating stream polution. If those who are responsible for or affected by undesirable practices do not recognize and meet their responsibilities in correcting them then they certainly will have created one basic reason at least for the institution of an all-embracing federal program not only to accomplish such objectives but, as well, to assume complete control of the development of the region affected. That is the threat; the danger of inaction. It is a challenge which must be met in a cooperative and practical manner.

Being the largest tributary of the Delaware system, the problems involved in the restoration of the Schuylkill River are a part of the broad program to which this Commission has directed its attention. At all times the objective has been to render impartial and constructive service in coordinating the conflicting interests of the various federal, state, municipal and private agencies involved. Its aim has been to assist, supplement and strengthen the functions of existing governmental agencies; in no way to supplant or supersede them.

The Commission is convinced that practically all of the facts of the Schuylkill problem are well known. It also believes that there has been too much loose talk about the situation in the past, and not enough constructive action. It feels certain that the policy too often indulged in by representatives of interested agencies to attempt to place the blame for the condition of the Schuylkill on one another is futile. It leads nowhere.

Based upon these premises, the Commission, in 1943, decided that the time had come to get down to brass tacks; that it should learn and report the facts, and offer its services in coordinating the interests of those agencies who must blueprint and execute the programs for the solution of the Schuylkill problem. To this end, it made a special investigation of the situation, the results of which are presented in the appended report.

Of special significance is the Commission's suggestion that the Federal Government, the Commonwealth of Pennsylvania and the anthracite coal operators should join hands in the execution of a construction project to clear the Schuylkill River system of existing coal silt and waste products and to avoid their discharge and re-accumulation in the future. It has concluded that the removal of the existing silt deposits from the channel and banks of the river is the joint responsibility of the State and Federal government; that it is the responsibility of the Sanitary Water Board to issue orders to the coal operators compelling them to discontinue the unnecessary discharge of solid wastes into the streams in the future.

The Commission does not in any way hold this plan to be the last word, nor has it any particular pride of authorship regarding it. But it is convinced that the solution of the extremely complex problem of the restoration of the Schuylkill River and its tributaries only will come from the application of methods and procedures developed from an intelligent, dispassionate and cooperative analysis of the facts involved.

This Incodel proposal was first advanced in October, 1943. It was presented to Pennsylvania State government officials at a conference in the Attorney General's office in Harrisburg in April, 1944, and to members of Congress from the four Delaware Basin states at a meeting held in Washington a month later.

In each instance the plan has been favorably received.

As presented on the following pages the report incorporates many of the suggestions offered by those with whom it has been discussed. The Commission is particularly grateful for such assistance.

SOURCES OF POLLUTION

In addition to the usual sources of pollution—municipal sewage and industrial waste—the Schuylkill River, as has been pointed out in the Foreword, also has been used to carry away the wastes resulting from the operation of the collieries in the anthracite coal fields located at its headwaters. Each of these sources of stream degradation has been the subject of a special study, the results of which are summarized under their respective headings in the following pages.

However, at the outset it may be stated that the study has led to the conclusion that the solution of the Schuylkill problems depends primarily upon the adoption and execution of a practical and equitable program for the abatement and correction of silting of the streams arising from coal mining operations at the headwaters.

MUNICIPAL SEWAGE

The responsibility for adequate treatment and proper disposal of municipal sewage rests with the individual governmental agencies involved. Aside from a few minor and unimportant cases the municipal subdivisions in the Schuylkill River basin for the most part already have met their obligations as far as may be reasonably required of them at this time. Philadelphia is the only exception. All other municipalities having a public sewer system and located in the portion of the basin below the southern edge of the coal field have constructed sewage treatment facilities. The investment in these plants is estimated to exceed $4,000,000. All plants are well maintained and provide a degree of treatment adequate to meet present requirements.

In the coal region in the upper basin there are a few relatively small communities which discharge untreated sewage into the Schuylkill system.

Being highly acid because of mine drainage, the water in the streams in this area assimilates and destroys the putrefactive characteristics of the sewage. To now require treatment in these communities under such conditions may not be entirely reasonable.

As to Philadelphia, the administration has publicly announced a definite commitment to complete its sewage collection and treatment projects and the City now is taking positive steps to fulfill its obligation in this matter. It is the responsibility of the Commonwealth of Pennsylvania to see that this program is carried out as quickly as possible.

INDUSTRIAL WASTES

Excepting the coal culm problem, Incodel has not made a detailed survey of the industrial waste situation in the Schuylkill watershed. The existing relations which have been established by the Pennsylvania Sanitary Water Board with manufacturing industries, for the great part, are the results of years of negotiations which must not be interfered with or confused excepting under extraordinary circumstances. For this reason no independent canvass of such industries has been made. However,

it is understood that the industrial waste situation is well in hand; and that many manufacturing plants are or can be served by municipal sewerage systems.

THE ANTHRACITE COAL CULM PROBLEM

From the preceding discussion concerning the municipal and industrial waste situation it becomes apparent that the restoration of the Schuylkill River system to a reasonable degree of respectability depends primarily upon the formulation of a practical program for the removal of existing coal culm deposits and the prevention of future accumulations.

In 1938, the Army Engineers Office, in House Document 183, 76th Congress, first session, set forth the results of a survey which it had just completed on this subject. This report has been carefully reviewed and analyzed, and constitutes the principal base of this study.

The physical plan suggested by the Army Engineers for the accomplishment of the desired objectives is believed to be sound and for the most part has been accepted. What is needed is a practical policy for the equitable sharing of responsibilities and costs for the works involved. It is believed that the program summarized herein meets this requirement. In any event, it should provide a basis from which an acceptable alternative may be developed.

Accumulations in the River

The 25,000,000 or more tons of culm which now lie in the bed and on the banks of the Schuylkill River must be considered to be "water over the dam." While it is true that they are there because of past mining operations, it is obvious that their removal is not now the responsibility of the coal industry, it having been legally permitted to dump its wastes into the streams by the State. But, if they are not removed from the river channel the bulk of these deposits will be washed downstream by floods and freshets and eventually be deposited in the navigable channel of the Schuylkill River below Fairmount Dam. That is exactly what is taking place now and, according to the 1938 District Engineer's report, "constitutes the basic cause of complaint."

One example of the detrimental effect of this condition is the silting of the channels and slips serving League Island Navy Yard and industries along the lower Schuylkill River. This situation has become so serious that there is actual danger that these facilities may be put out of order in case of a flood.

During the seven year period between 1931 and 1937, the Federal Government and the City of Philadelphia were required to dredge approximately 12,000,000 tons from this section of the river. This is equivalent to almost 2,000,000 tons annually. The yearly cost of this single item of maintenance amounts to about $400,000. At a four per cent interest rate, a capital expenditure of about $10,000,000 would be justified for its elimination. This sum is one measure of the extent to which the Federal Government should participate in the cost of removing the existing culm deposits from the river.

Dredging Program

The Army Engineers' plan calls for the dredging and disposal of the estimated 15,000,000 tons of culm which are in the river above Norristown, and a definite program is suggested for this purpose. The more important features of this project including the location of the required disposal areas, are indicated upon a set of plans made by the Engineers' office, copies of which will be furnished by Incodel upon request.

The execution of this part of the program for the redemption of the Schuylkill River is the responsibility of the Commonwealth of Pennsylvania.

Below Norristown, the 1938 report of the Engineers stated that adequate disposal areas were not conveniently accessible and consequently suggested that the remaining 9,000,000 tons below that city should be allowed to be carried downstream by river action and only be removed after they are washed over Fairmount Dam. Adherence to this policy would mean that the culm problem between Philadelphia and Norristown would not be solved for many years. In the interest of completing the entire job in one stroke it is recommended that the dredging of this section should be carried out simultaneously with the dredging of the upper river, despite the apparent deficiency of conveniently located disposal areas.

The dredging of the River below Norristown is a responsibility which should be borne and carried out by the Federal Government.

Wastes From Mining Operations

Regarding the problem of preventing coal deposits from reaching the streams, the Engineers suggested certain improvements at the various individual collieries excepting those which are located in Panther Creek

Valley where it was proposed that a single disposal and recovery plant should be constructed to serve jointly the mines in this area. The estimated cost given for the Panther Creek project is $5,000,000. This, however, includes $3,500,000 for a steam electric power station in which coal culm would be used for fuel. It is questionable whether this is desirable. Without the power plant, the improvements would cost $1,500,000. No figures are given for the improvements required at the other collieries. They might entail an additional $5,000,000.

It is understood that new recovery processes have been developed since the Army Engineers' report to prevent coal deposits from reaching the headwater streams. These would supersede such improvements as were recommended at that time.

This part of the Schuylkill improvement program is obviously the responsibility of the coal operators, regardless of the exact nature of the improvements required.

Desilting Basin At Auburn

Even after the construction of the above improvements some culm, although a comparatively small quantity, still would get into the streams. Furthermore, through erosion the shallow deposits of culm which cannot economically be removed by dredging would be transported downstream in the absence of other protective works. The Engineers recommended the construction of a desilting basin and by-pass channel at Auburn for the retention of this material. This project would cost about $2,000,000.

This work is believed to be the responsibility of the Commonwealth of Pennsylvania.

Measures for the Prevention of Erosion

In addition to the dredging program, the installation of recovery plants, and the construction of a desilting basin at Auburn, measures also should be instituted to prevent the erosion of spoil banks and erosion caused by surface stripping operations.

These problems can be met by the completion of the culm bank protection works started during the 1930 depression and by establishment of regulatory policies.

This is a problem which should be worked out cooperatively by the agencies involved.

A SUGGESTED CONSTRUCTION AND FINANCIAL PROGRAM

Based upon the above analysis it is recommended that the responsibilities and costs for the above described improvements should be allocated in accordance with the following program.

I. *Coal Operators*—The cost of the improvements proposed by the Army Engineers, or otherwise determined by the Sanitary Water Board to be necessary, at the sites of the individual collieries including the works for the Panther Creek area should be borne by the mine operators. It is indicated that approximately $6,000,000 will be required for this purpose.

II. *Commonwealth of Pennsylvania*—The cost for dredging the existing culm deposits in the basin area above Norristown should be borne by the Commonwealth of Pennsylvania. The State also should finance the desilting basin project at Auburn. These improvements will involve the expenditure of approximately $9,000,000; about $7,000,000 for dredging, and $2,000,000 for the silt retaining works at Auburn.

III. *The Federal Government*—The cost of dredging the culm deposits in the bed of the Schuylkill River between Norristown and Philadelphia should be assumed by the Federal Government. It is estimated that the cost to complete this improvement will not exceed the $10,000,000 previously shown to be justified for the purpose.

The total cost of the combined projects will amount to between $20,000,000 and $25,000,000. It is recommended that they be carried out concurrently. About five years would be required for the completion of the work. If, as has been claimed, there will be a market for the salvaged culm deposits, the cost of reclamation will be reduced correspondingly.

AN ACTION PROGRAM

It may or may not be possible to start the construction of the project before the end of the war. While the proposal originally was thought of as a postwar problem, there are indications that it may be not only possible, but desirable, to undertake the work in the near future. At the present time, manpower is the most serious critical material, but it is

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probable that within a short time this situation will be entirely changed, due to cut backs and cancellations of war contracts.

Consequently, as an action program, it is recommended that the following steps should be taken as soon as a mutally satisfactory agreement shall be reached concerning the details involved as to the participation of the respective agencies and as to a time schedule for the execution of work.

1. That the necessary orders shall be issued by the Sanitary Water Board to the coal operators respecting their responsibilities in avoiding the future discharge of waste from breaker operations. Recent rulings of Attorney General Duff and Judge Joseph L. Kun provide the necessary legal basis for requiring the industry to comply with this obligation.

2. That the Legislature of the Commonwealth of Pennsylvania at its regular session in 1945 should authorize the appropriation of that part of the funds required for its participation in the program as is determined to be necessary to permit it to begin dredging operations. If appropriate, funds also should be provided for the construction of the desilting basin and appurtenant works at Auburn at the same time.

3. That the Federal Government should provide for the appropriation of the necessary funds to permit the Office of the United States Engineers to dredge and properly dispose of silt and culm deposits in the section of the River between Norristown and Philadelphia.

4. That the Sanitary Water Board shall notify all municipalities and industries whose pollution responsibilities now are in arrears, or will be upon completion of the Schuylkill project, of their obligation to install necessary collection and treatment facilities.

ADVANTAGES AND BENEFITS

Benefits resulting from the completion of the program will include the elimination of damages caused by the silting of channels, water works intakes and sewage treatment plant outfalls; also the elimination of damages to sources of municipal and industrial water supplies. Floods will be reduced materially and the necessity and expense involved for the constant dredging of the navigable channel of the lower Schuylkill River will be mostly eliminated. Recreational facilities along the River will be restored and property values greatly enhanced.

Common sense and public good dictate that the principles involved in this suggested three-party program should be promptly accepted and plans for its early execution developed immediately.

DISCUSSION OF OTHER CONSIDERATIONS

Since the original advancement of this program in October, 1943, a number of developments have taken place which have a definite bearing on the problem. Each of these is discussed briefly in the order of its occurrence.

First, is the question as to whether the material to be dredged from the river bed would have any salvage value. This is a debatable subject.

According to the press, a report was said to have been presented to Governor Martin in November, 1943, setting forth a program under which the coal deposits, sand and other material could be recovered and marketed at a price which would more than cover the cost of the necessary dredging.

Incodel has made an intensive investigation of this possibility involving studies and conferences with representatives of the Department of Mines, the Sanitary Water Board, the Mineral Industry Department of Pennsylvania State College, the Anthracite Institute, the Lehigh Coal and Navigation Company, and the Pennsylvania Power and Light Company

The results of this survey are not conclusive. It is indicated that materials probably can be salvaged profitably in certain sections of the upper river although such operations may not be advisable generally. The question, however, is immaterial. The important thing is to decide and agree that the job must be done and to develop the plans for doing it. If a profitable market should materialize for the salvaged deposits, the result will be to affect a corresponding reduction in the cost of the reclamation project. This would be welcomed by everyone. The project, in any event, is desirable, worthwhile and economically justified.

Authority of the Sanitary Water Board

Undoubtedly the most important happening since the original Incodel report is the ruling given to the Sanitary Water Board by Attorney General Duff early in 1944 that the Board under the existing Anti-Stream Pollution Law has the authority to determine the extent to which it is practical to avoid the discharge of silt into the headwater streams at the collieries, and to require the industry to comply with such determinations.

As the result of this ruling the Board has taken action to compel the coal operators to meet new yardstick requirements to avoid the discharge of silt. These measures must not be relaxed.

Related to this ruling and the action of the Sanitary Water Board is the fact that some of the coal companies have developed methods by which most of the silt which they are wasting into the streams at the collieries can be recovered and marketed profitably within reasonable transportation distances. There seems to be no sound reason why the industry as a whole should not adopt such methods as are now available and be held definitely responsible for its obligation to avoid unnecessary pollution. Otherwise, as the District Engineer rightly states in his report, "Unless this initial pollution can be stopped, it is hopeless to undertake the cleaning up of the valley proper."

Decision in City of Philadelphia Suit

Also particularly significant is the recent decision given by Judge Joseph L. Kun of Common Pleas Court in the City of Philadelphia's suit to prevent the further discharge of silt into the Schuylkill River and its tributaries. In dismissing a petition by the coal operators asking the Court to quash the case, Judge Kun stated that it is a fundamental public right to require streams to be free of pollution. "The people," said the Judge, "have the absolute right to have the purity of their streams preserved against all other considerations."

Federal Participation in the Schuylkill Program

The request of Congressman Myers of Philadelphia for an appropriation of $10,000,000 under the 1944 Federal Flood Control Bill to be used to dredge the Schuylkill River of existing coal and silt deposits as a flood control measure is another recent development of importance. While this request was not granted, the early authorization of a similar appropriation will provide the means for the solving of one part of the program.

The Rivers and Harbors Bill

There is included in the Rivers and Harbors Bill now being considered by Congress (1944) an authorization for a resurvey of the Schuylkill River problem by the Army Engineers.

It having been generally agreed that such a study would be unnecessary and a possible source of delay this authorization, at the request of the

Senators from Pennsylvania, has been superseded by a Senate Commerce Committee Resolution instructing the Army Engineers to make an immediate review of its 1938 investigation.

The Philadelphia District Office is carrying out this directive and expects to file its report in January, 1945.

The study is being made to determine "the order and manner in which an appropriation not to exceed $10,000,000 for participation by the Federal government in the Schuylkill River project should be expended."

Joint participation of the Federal government and the Commonwealth of Pennsylvania in a common project for their mutual benefit will set an example in cooperation of the highest order.

Schuylkill River Dams

Related to the Schuylkill River clean-up project is the question which was raised concerning the future use and disposition of the dams in the River which were constructed many, many years ago to provide navigation facilities between the mines and Philadelphia. Most of the dams now are obsolete and on the verge of failure.

A special study was made of this problem for Incodel by Mr. Charles E. Ryder, former Chief Engineer of Pennsylvania's Department of Forests and waters. The results of this investigation are set forth in the following report.

CHARLES E. RYDER
CONSULTING HYDRAULIC ENGINEER
HARRISBURG, PENNSYLVANIA

June 1, 1944

The Interstate Commission on the Delaware River Basin
Broad Street Station Building
Philadelphia, Pennsylvania
Gentlemen:

In accordance with your authorization of May 11, 1944, I am pleased to submit the results of my investigation of the project which your Commission has advanced for the reclamation of the Schuylkill River. Complying further with your instructions, I have considered that project in particular relation to questions which have arisen concerning the disposition of the dams in the river which now are owned by the Schuylkill Navigation Company.

The action taken by the State, through the Sanitary Water Board, to initiate the first essential step toward preventing the future discharge of coal culm and silt into the River is very encouraging.

It also is understood that the Commerce Committee of the United States Senate, at your request, has directed the Army Engineers to make an immediate review of its 1938 survey on the Schuylkill. This is equally heartening.

These actions indicate a willingness on the part of the State and Federal governments to support and participate in the execution of a program for the restoration of the Schuylkill River.

May I assure you of my appreciation for the opportunity of making this special investigation on the Schuylkill River dams. If you desire, I shall be glad to confer with you in further reference to this matter.

Respectfully,

CHARLES E. RYDER,

Consulting Hydraulic Engineer

REPORT

Upon the

Use and Disposition of Schuylkill River Dams

CHARLES E. RYDER, *Consulting Engineer*

June 1, 1944

SUMMARY OF MAJOR FINDINGS AND RECOMMENDATIONS

The major findings and recommendations resulting from my investigation of the program for the restoration of the Schuylkill River, and the related problem concerning the future use or disposition of the dams now in this River, are as follows:

1. As pointed out in the report presented by the Commission at the conference in the office of the Attorney General of the Commonwealth on April 26, 1944, the restoration of the Schuylkill River depends primarily upon the execution of the two following steps:

   (a) The prevention of the future discharge of coal silt and culm into the headwater streams.

   (b) The dredging and proper disposal of the existing 25 to 30 million tons of wastes which have accumulated in the bed and banks of the river as the result of the past 140 years of mining.

2. The project which your Commission has advanced for the accomplishment of these steps is sound, practical, and commendable. Its execution is closely related to the problem concerning the future use or disposition of the existing dams in the river.

3. The Commonwealth of Pennsylvania through its Sanitary Water Board has taken the first step toward the realization of the silt-clearing program by issuing orders to the coal operators to discontinue any further excessive discharge of solids into the headwater streams.

4. The dredging and disposal operations are the joint responsibility of the Federal government and the Commonwealth of Pennsylvania. This work should be begun as soon as possible. The recommendations in this report are based on the assumption that work will be commenced in 1945.

5. I am in accord with your recommendations for the allocation of the responsibility for the dredging of the River between Philadelphia and Norristown to the Federal government, and the responsibility for similar operations in the section of the River above Norristown to the Commonwealth of Pennsylvania.

6. Of the thirty-two dams originally built in the river by the Schuylkill Navigation Company only seventeen, including Fairmount Dam belonging to and located in the City of Philadelphia, now are in existence. Many of these are in poor condition.

7. All of the sixteen dams now owned by the Schuylkill Navigation Company, together with its canal property, can be acquired by the Commonwealth of Pennsylvania at little or no cost. Such acquisition is recommended. Legislation and a special appropriation will be necessary to accomplish this. These steps should be taken at the next session of the Legislature.

8. After their acquisition, the two dams in the section of the river between Philadelphia and Norristown, Flat Rock and Plymouth, should be permanently maintained by the Commonwealth of Pennsylvania.

9. Of the fourteen remaining dams located in the section of the river at and above Norristown, two, the Norristown and Black Rock Dams, also should be maintained permanently. The remaining twelve should be removed from the River after the completion of the dredging program. Temporary repairs should be made to five of these twelve in order that they may be maintained and used as an integral part of the program for dredging operations.

10. The canal itself should be abandoned as a canal. It cannot be effectively utilized as a state park. Sections of it may be determined to be useful as a right of way for highway purposes, or for water supply, recreational or other purposes. This is a matter for determination by the Commonwealth of Pennsylvania, subsequent to its acquisition of the properties.

11. The approximate cost of removing the dams above Norristown, and placing the Black Rock, Plymouth and Flat Rock dams in first class condition is $470,000. The annual maintenance costs thereafter will be about $6,500.

STATEMENT OF PROBLEM

The plan for solving the pollution and silting problem in the Schuylkill River system as presented by your Commission at the conference in the office of the Attorney General of the Commonwealth of Pennsylvania on April 26, 1944, is logical, sound and practical. For the first time during the many years of discussion of this matter a definite action program including specific recommendations as to the obligations of the agencies responsible for its execution has been advanced.

The accomplishment of the desired objectives consists of two steps; one, the prevention of the future discharge of coal silt and culm into the headwater streams; and two, the dredging and proper disposal of the existing 25 to 30 million tons of waste which have accumulated in the river as the result of the past 140 years of mining.

As pointed out in your report, the responsibility for the accomplishment of the first step rests with the anthracite coal operators. The Sanitary Water Board with the approval of the Attorney General has put the coal companies on notice as to this requirement.

The execution of the dredging operations, the second step, properly has been allocated by your Commission to the Federal government and the Commonwealth of Pennsylvania.

Such dredging operations are closely related to the problem which has arisen concerning the future use and disposition of the dams in the river. This study has been made with particular reference to the interrelation between these two questions.

PAST AND PRESENT CONDITIONS

The Schuylkill River was developed over a century ago for navigation purposes to carry coal from the anthracite fields in the upper-headwater regions to Philadelphia. This was accomplished by the construction of thirty-two dams under authority granted to the Schuylkill Navigation Company by a special act of the General Assembly of Pennsylvania approved March 8, 1815. By the act the Company also was empowered to use, sell or lease water power from the river and the canal. The works extended between Port Carbon and Philadelphia, a distance of 108 miles and was fully completed in 1828.

With the advent of the railroad the use of the river and canal for navigation declined rapidly. As a result, during the last half century such use has been gradually abandoned. Today there is no nagivation in the stream whatsoever. Coincident with the disuse of the canal and river for navigation, the dams creating the pools have been permitted to deteriorate. At the present time, only seventeen of the original thirty-two structures remain intact. This includes Fairmount Dam in Philadelphia which is now the property of that City. The remaining sixteen dams still are owned by the Schuylkill Navigation Company. Many of them are in very poor condition.

It is understood that the Schuylkill Navigation Company desires to dispose of its properties. It is believed that they can be acquired by the Commonwealth of Pennsylvania at little or no cost. It is recommended that the State should take them over on this basis, not only in order that it may have proper control over the execution of its part of the program for clearing the river but also because it is the only agency to which the properties should be reverted.

RECOMMENDED PROGRAM

The program for dredging the Schuylkill River involves the use of the pools behind the existing dams. Here are deposited the larger accumulations of silt. It is proposed that they be removed from these pools by dredging. The recommendations herein, refer particularly to questions as to the necessity for the maintenance of the dams during the progress of the dredging operations as well as to their disposition after the work is completed.

In the section of the river between Philadelphia and Norristown the two dams recommended to be acquired by the State, Flat Rock and Plymouth, should be permanently maintained. Of the fourteen remaining dams, all of which are located in the section of the river above Norristown, the lower two, Norristown and Black Rock, also should be maintained permanently. The remaining twelve dams should be removed from the river after the completion of the dredging program. Of these twelve it will be necessary to make temporary repairs to five in order to protect them against failure prior to and during the dredging operations.

Table I presents a list of the dams now in the river above Norristown together with a tabulation indicating the recommendations contained in the Army Engineers' 1938 report relative to the dredging of this section

Name of Dam	Location of Dam		Army Engineers Program for Dredging and Disposal (From H.D. No. 183, 76th Cong., 1st Sess., Published in 1938)			Charles E. Ryder Findings and Recommendation June, 1944		
	Distance Above Norristown (Miles)	*Distance Below Next High Dam*	*Use of Dam*	*Estimated Culm in Pools Back of Dam (cu. yds.)*	*Estimated Capacity Disposal Areas (cu. yds.)*	*Present Condition of Dam*	*Recommended Disposition of Dam*	
							For Dredging Operations	*After Dredging Operations*
Lord's	80.3	0.0	Remove	....	....	Out	Remove	Remove
Hummel's	79.3	1.0	Remove	....	....	Out	Remove	Remove
Blue Mountain	77.3	2.0	Drg. Pools	2,057,000	1,802,000	Breached	Remove	Remove
Kernsville	76.3	1.0				Poor	Repair	Remove
Herbines	63.8	2.5	Drg. Pool	639,000	1,540,000	Poor	Repair	Remove
Leizes	56.0	1.5	Drg. Pool	3,397,000	891,000	Fair	Maintain	Remove
Shepp's	54.7	1.3	Remove	....	....	Fair	Remove	Remove
Kissengers	53.2	1.5	Remove	....	....	Poor	Remove	Remove
Poplar Neck	48.7	4.5	Remove	....	....	Poor	Remove	Remove
Big Reading	46.2	2.5	Drg. Pool	6,000,000	3,600,000	Fair	Repair	Remove
(Temporary)			Drg. Pool	2,464,000	4,441,000	....	Construct	Remove
(Temporary)						....	Construct	Remove
(Temporary)			Dredging			....	Construct	Remove
				2,863,000	4,772,000			
(Temporary)			Pools			....	Construct	Remove
(Temporary)						....	Construct	Remove
Vincent's	21.2	25.0				Fair	Maintain	Remove
Black Rock	13.0	8.2	Drg. Pool	1,463,000	1,041,000	Fair	Maintain	Maintain
Pawling's	8.0	5.0				Poor	Repair	Remove
Catfish	4.0	4.0	Drg. Pools	3,056,000	3,352,000	Poor	Repair	Remove
Norristown	0.0	4.0				Good	Maintain	Maintain
Totals				21,939,000	21,439,000			

of the river, as well as a summary of the recommendations of this report as to the use of the dams during the period required for dredging and as to their disposition after the completion of such program.

It is estimated that the total cost for the acquisition, repair and maintenance of the dams will be $470,000. This includes the cost of the reconstruction of the three dams which are recommended to be permanently maintained, Flat Rock, Plymouth and Black Rock; the cost of temporary repairs to Kernsville, Herbines, and Big Reading Dams; and the cost for the removal of the dams after the dredging has been completed. The estimated annual cost of maintenance for the dams which are to be preserved will be about $6,500 a year.

THE DREDGING PROGRAM

The procedure for clearing the channel of accumulated silt and culm will be to operate suction dredges in the pools behind the various dams. In general the dredging should begin in the upper end of the river at or near Port Clinton, and be carried progressively down stream behind each dam, following which the dams scheduled for permanent removal should be taken from the channel so as to leave it free and unobstructed through its entire width.

Referring to Table I, the first two dams shown, Lord's and Hummel's, were included as part of the Army Engineers' program. They, however, are no longer in the river and the culm behind them has been washed down stream into lower pools.

Blue Mountain Dam has been destroyed by floods since the time of the Army Engineers' survey and should be completely removed from the river immediately following its acquisition by the Commonwealth. It is suggested that any culm remaining in this pool should be sluiced into the Kernsville pool, immediately below.

Kernsville Dam is in bad condition. It is recommended that it should be repaired in order to maintain the accumulation of culm now in the pool behind it so that the disposal areas immediately accessible may be utilized to dispose of the material dredged from the pool. The same recommendations apply to Herbines Dam.

Leizes Dam is in fairly good condition and should be so maintained until the dredging operations have been made. It is believed that no repairs will be required for this purpose.

The next three dams, Shepp's, Kissengers and Poplar Neck, are in poor condition and may be immediately removed upon acquisition. This should

be done to permit the accumulated culm to be washed down stream to the next lower pool at Reading.

It is recommended that the Big Reading Dam (Lewis No. 24) which was breached by recent floods should be temporarily repaired in order that the culm deposits may be dredged at this point and disposed of in the conveniently accessible disposal areas.

Between Big Reading Dam and Vincent's Dam the Army Engineers' plan calls for the construction of five temporary structures in order to take advantage of convenient disposal areas. These recommendations should be followed.

Vincent's Dam and Black Rock Dam both are in fair condition. They should be maintained during the dredging operations. No repairs seem to be required.

Pawling's Dam and Catfish Dam are in poor condition. They should be repaired in order that the dredging program can be carried out in the manner recommended by the Army Engineers.

The Norristown Dam now is maintained by the Philadelphia Electric Company and is in good condition. There is no reason to assume that this or some similar arrangement should not be continued.

In the section of the river below Norristown, the Army Engineers, in 1938, suggested that the culm should be permitted to be gradually washed down stream and only removed from the river after it has passed over Fairmount Dam into the navigable section at Philadelphia. I strongly concur with the position taken by your Commission in taking exception to this proposal. The silt in this section of the river should be removed concurrently with the program for the river above Norristown.

FINAL DISPOSITION OF DAMS

Insofar as navigation is concerned, the Schuylkill canal has, in effect, been abandoned for many years and no commodities have been recorded as being carried by canal in the section of the river above Fairmount Dam since the year 1932. The canal below Phoenixville has been used in the interim to a limited extent for small pleasure craft, but the income derived from this source is small. Above Phoenixville, the canal and river are so shoaled by culm and silt as to make navigation impossible, even if it were desirable.

The Schuylkill Navigation Company in the past has entered into agreements with various agencies covering water rights, some of which are understood to be permanent and others revocable. It is my understanding that no permanent grants exist above the Black Rock Dam at Phoenixville,

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so that above this point, there is no reason why all the dams may not be removed insofar as obligations of the Schuylkill Navigation Company are concerned.

The Borough of Phoenixville has a water supply intake in the Schuylkill River at the upper end of the Black Rock Dam and the Home Water Company of Royersford, a similar intake above the Vincent Dam, but there is no obligation on the part of the Company to maintain the dams because of these intakes.

In the dams at and below Norristown, a number of permanent agreements covering water rights are understood to exist and in addition there are other terminable grants. The City of Philadelphia obtains a portion of its water supply from the Schuylkill River with intakes in the pools above the Fairmount and Flat Rock Dams, while the Borough of Norristown is supplied with water from an intake in the pool above the Norristown Dam.

Recreation is an important consideration in the stretch of the river between Fairmount Dam and Norristown. The usefulness of the river for this purpose naturally declined as the culm moved downstream and gradually filled the pools, but it will be quickly revived after the culm has been removed.

Above Norristown, the recreational feature is not so important, although a number of cottages and cabins were built in the past along various stretches of the stream, principally between Norristown and Phoenixville. It is doubtful that the cost of the restoration, repair and maintenance of the Catfish and Pawling's dams, for recreational purposes alone, would be justified. It is believed that the estimates for restoring these structures, as given in the report of the Army Engineers, is much too low. The cost of reconstruction alone would probably amount to $100,000, with annual maintenance costs in the neighborhood of $4,000 per year.

Restoration of the river in the vicinity of Valley Forge to its condition as of the time of Washington's encampment, by the removal of the Catfish Dam, should have considerable appeal.

The removal of the dams above Norristown would reduce the flood hazard as, of course, would the removal of the culm from behind the dams at and below Norristown.

After careful consideration of these and other factors, I have reached the conclusion that if and when the property of the Schuylkill Navigation Company is acquired by the Commonwealth, the dams in the river, with the exception of Black Rock Dam, should be removed as the culm is dredged from the channel progressively downstream; and that only the

Black Rock, Norristown, Plymouth and Flat Rock dams should be permanently retained.

The sections of the canal along the river above Norristown under the above program would no longer be useful for navigation, and should be abandoned for that purpose. Parts of the canal possibly could be used as a right-of-way for highway improvements, or for local water supply or recreational purposes.

It also might be possible to utilize portions of the canal as disposal areas in cases where it is desirable to fill the old bed. The yardage thus available will be very small in comparison with the spoil areas selected by the Army Engineers. The latter are more than adequate to take care of all of the material dredged from the River above Norristown. The cost for filling the canal prism undoubtedly would greatly exceed that for pumping the culm into the areas specifically selected for the purpose.

It is estimated that the cost of removing the dams above Norristown would be approximately $300,000, following which there would, of course, be no annual maintenance charges. The cost of placing the Black Rock, Plymouth and Flat Rock dams in first class condition, would amount to $170,000, with annual maintenance costs thereafter of about $6,500.

One of the fundamental principles of representative government is that there should exist at all times a proper balance in relationships and responsibilities among the federal, state and local levels of government.

During recent years a decided trend has been going on toward the transfer of authority from local and state governments to the federal government in the matter of the development of our river watersheds. As a result relationships at the present time are in poor adjustment.

This problem and suggestive measures for its corrections are discussed in the following pages of Appendix C.

APPENDIX C

Federal-State Relationships

Effective utilization and control of the resources of river watersheds in this country in a manner which will best serve current requirements and those of generations to follow is one of the most important orders of the day.

The public is insisting with ever increasing vehemence that this job must be done. No one questions the objectives.

But there is a sharp difference of opinion as to *who* shall be responsible for the decisions regarding *how* the task is accomplished. Is this a problem solely of national interest and welfare which the Federal government alone should resolve? Or is it a question to which the answers are primarily the responsibility of the states located within the river basin involved?

When all the facts are taken into account it is obvious that the best solution will come from the coordinated efforts of the agencies of Federal, State and local governments affected, with the people of the region actively participating. All have a stake in the problem.

This still leaves unanswered, however, the basic question. To what agency shall be entrusted the job of coordinating all interests, and of making the final decisions?

Little thought was given to the problem until 1933 when in April of that year, only one month after he had taken office for the first term, President Roosevelt sent a message to Congress in which he said, in part:

> "I therefore, suggest to the Congress legislation to create a Tennessee Valley Authority—a corporation clothed with the power of government but possessed of the flexibility of a private enterprise. It should be clothed with the broadest duty of planning for the proper use, conservation and development of the natural resources of the Tennessee River drainage basin. . . . This Authority should also be clothed with the necessary power to carry these plans into effect. . . .
>
> "Many hard lessons have taught us the human waste that results from lack of planning. . . . It is time to extend planning to a wider field, in this instance comprehending in one great project many states directly concerned with the basin of one of our greatest rivers.
>
> *"If we are successful here we can march on, step by step, in a like development of other great territorial units within our borders."*

FEDERAL AUTHORITIES

When Congress, a few months later, acted favorably upon the President's recommendation and created the Tennessee Valley Authority, it delegated the responsibility for the development of the resources of that particular watershed region to a Federal agency. This action was taken in face of the fact that the commerce clause of the Constitution had been interpreted until then as limiting the authority of the Federal government in matters of river conrol to navigation. Upon this magic word—navigation—Congress rationalized its power to assume control over resource development in the Tennessee River watershed. Indeed, it is upon this peg that all the legislative and judicial cloaks giving the national administration full and complete control over every phase of watershed development have been hung.

The question whether Congress, under the Tennessee Valley Act, is exercising powers not delegated to it by the Constitution, although raised, has never been settled. In a suit brought by the Tennessee Electric Power Company, decided in 1936, the United States Supreme Court observed that only the states and local governments could object to the right of Congress to invade fields of action normally reserved to such units, and that all evidence indicated that the governments affected supported rather than opposed the program.

Incodel is not necessarily opposed to Federal authorities. If the people in a river watershed region want such an agency they should be privileged to have it.

But Incodel strongly believes that there should be no effort on the part of the Federal administration to clothe itself with supervisory powers in the over-all control of watershed development until the states directly involved fail to accept and meet their obligations in this field, after having been afforded a fair opportunity to do so.

Even then, provision for Federal jurisdiction should be accomplished in a manner about which there can be no reasonable question of constitutionality.

Until such time as the states authorize a constitutional amendment delegating power to Congress to expand its activities in the field of water resources control, the national administration should limit itself to projects clearly related to the improvement of navigation for the promotion of interstate and foreign commerce.

The Federal constitution intended that revisions necessary to meet new and changing conditions should be accomplished in this way. The goal

should not be reached by the employment of interpretive subterfuge and shortcuts.

Incodel is further convinced that the states in most cases can do a better job if banded together cooperatively for the promotion of their common problems and welfare than any Federal agency created for the purpose. However, it recognizes that it may not be possible to bring the states together in certain regions because of wide differences in social usages, political philosophies and other factors. In such instances a Federal authority may be desirable. If organized in accordance with obviously proper constitutional procedures and in accordance with the expressed desire of the people of the region, there can be no valid objection to its creation.

Legislation enacted for this purpose, however, should include adequate provision for the protection of the interests of the states in the region. It also should require that such part of the cost of projects constructed primarily for the benefit of the region and not for the nation as a whole should be borne by the beneficiaries.

LEGISLATIVE AND JUDICIAL EXPANSION

There is one condition respecting Federal-State relationships to which Incodel is utterly opposed. This is the situation which has arisen by reason of recent Congressional legislation and decisions of the United States Supreme Court. As the result of these events, Congress, if it were inclined, could acquire complete control of a river region without even going through the procedure of passing Authority Acts. It could acquire jurisdiction over almost every little creek and drainage area in every state in the union without regard to the desires of the states. All it has to do is to authorize an improvement making it possible to float a boat drawing two feet of water. Under the ruling of the Supreme Court in the New River Case (311 U.S. 377), decided in 1940, such action would automatically convert a little brook into a navigable waterway.

Some of the other links which have been forged into the chain of events justifying the Federal government's entrance into every phase of river control and watershed development are equally amazing.

Congress' action in removing the states from participation in flood control matters by its 1938 amendment to the original flood control act of 1936 (Public No. 738, 74th Congress) was the opening wedge. The Supreme Court decisions in the New River case and the Red River case (313 U. S. 508), decided June 2, 1941, completed the cleavage.

Particularly disturbing is the Court's observation in the New River decision that flood protection, watershed development, recovery of cost of improvements through utilization of power are parts of commerce control, regardless of their degree of beneficial effect. The Court stated:

> "It is for Congress alone to decide whether a particular project, by itself or as a part of a more comprehensive scheme, will have a beneficial effect on the arteries of interstate commerce as to warrant it."

These events are a long jump from Chief Justice Marshall's decision in the famous case of Gibbons vs. Ogden which determined that the Commerce clause of the Constitution gave the United States control over navigation on the rivers of the country. Control over navigation as laid down in Gibbons vs. Ogden to control over every little stream for any purpose having the remotest relation to navigation as laid down in the New River and Red River cases is a measure of the extent of the march of Federal power in the field of water resources control.

Incodel is convinced that this condition is undesirable and a centralization of governmental control which, if abused, could break the very backbone of democracy.

It is one of the situations which Congressman Hatton W. Sumners of Texas may have had in mind when he said in 1943:

> "The states must resume the status of responsible sovereign agencies of general government or democracy cannot live in America."

As a leading exponent of the principle of cooperation between the Federal and state governments in the matter of the development and control of the waters of interstate drainage basins, Incodel undertook to take an active part in efforts to secure the correction of this situation.

In cooperation with other state water resources agencies it concluded that relief could be obtained only through the action of Congress. It further decided that immediate action was imperative in view of the fact that the 1944 omnibus River and Harbor Bill (H. R. 3961) and the 1944 omnibus Flood Control Bill (H. R. 4485) now pending in Congress (August, 1944) contained authorizations for projects in which the interests of the states had been flagrantly disregarded.

As a start, it concluded that the first objective should be to secure a broad amendment to each of these bills to provide, among other things:

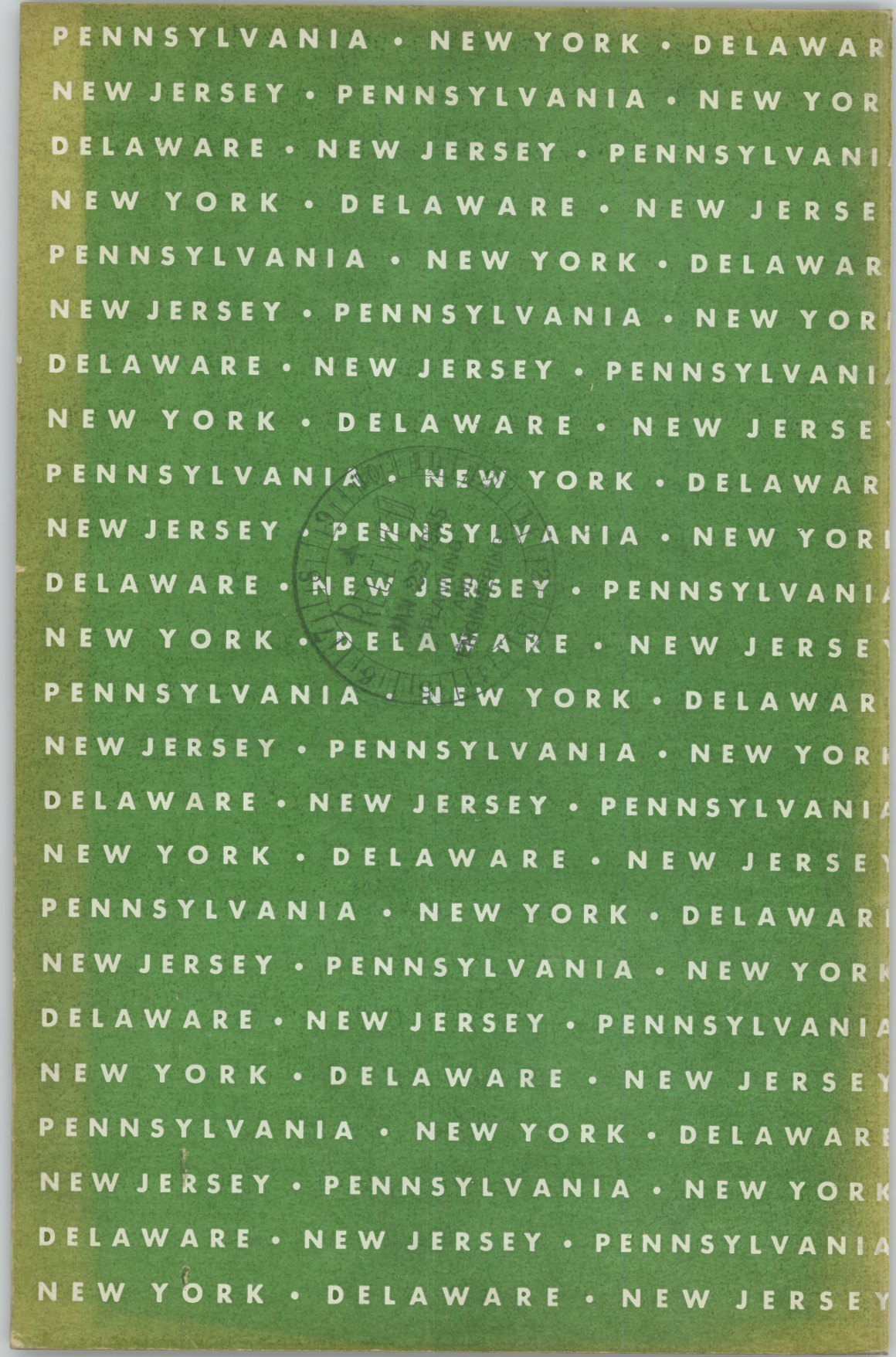
1. A declaration of policy on the part of Congress to recognize and protect states' interests, and their rights and responsibilities in the matter of the development of rivers and their watersheds.
2. That no project for navigation or flood control to be considered in the future shall be authorized by Congress until it had received a report from the Chief of Engineers of the United States Engineer Office incorporating the results of a survey made cooperatively by that Federal agency and responsible agencies of the states affected by that project; and that such report must clearly set forth the views of the states.
3. That the authorization of those projects included in the pending omnibus bills to which objections are filed by any of the states directly affected within ninety days after passage of the bill also shall be subject to the requirements of Item 2.

At hearings before the Senate Commerce Committee numerous objections were raised to the proposed amendments, including the charge that it was a "crazy" proposal. Careful analysis of all such objections showed that as far as principles were concerned none was well founded.

The most impressive argument was the fear expressed that the provision requiring review of projects in the pending bills in case objections were raised would "hamstring" the whole program. Although this point of view was not well-founded the section of the amendment involved was subsequently revised. In the latest draft the section will set forth a list of the projects which would be subject to re-investigation in case objections are filed to them. It is indicated that the number of projects in the list will be very limited.

At the time this report is being written it appears that the proposed amendments will not be brought to the floor of the Senate until November, 1944. Their approval by Congress is imperative if any semblance of balance in Federal-State relationships in the matter of watershed development is to be maintained.

The objective is not a new departure in Congressional policy. It is simply a reaffirmation of Congress' recognition of the wisdom and value of the participation of all levels of government in the development of river systems in this country.


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